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Australia: Selected Issues and Statistical Appendix

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AUSTRALIA

Selected Issues

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I. AUSTRALIA'S CURRENT ACCOUNT:
A CONSUMPTION-SMOOTHING APPROACH[1]

A. Introduction

1.   Australia's current account position has deteriorated since the mid-1980s. In the last 15 years, it has averaged about 4½ percent of GDP, compared with 2–3 percent that was the norm in the 1960s and 1970s. Because of the Asian crisis, Japan's economic slowdown, and strong domestic demand, the current account position has recently widened significantly above its average level of the past 15 years. Moreover, net external liabilities—at 60 percent of GDP—are already the second highest among the advanced economies and are likely to continue to rise in relation to GDP over the next several years as a result of the recent widening of the current account deficit.

2.   The Australian authorities clearly recognize the potential constraints associated with a low national saving rate, a sizable current account deficit, and high external debt. In the 1996/97 budget papers, for example, the authorities stated:

> "Increasing dependence on foreign savings, as reflected in growing net foreign liabilities, exposes the economy to sudden shifts in market confidence, leads to higher borrowing costs for Australian business, and makes the economy more vulnerable to external shocks. Inevitably, the effect of these risks is to place an external "speed limit" on the pace at which economic growth can be sustained" (Section I, page 9).

3.   As a general matter, the magnitude of a country's external borrowing does not necessarily carry any normative implications. Australia's relatively small current account deficits in the 1960s and 1970s, for example, may not have been desirable if they reflected the consequences of limited international capital mobility rather than optimizing behavior. Current account surpluses or deficits simply reflect intertemporal trade, which enables countries to smooth the path of aggregate consumption in the face of temporary shocks. If the public sector is in balance, then the current account is simply the difference between private investment and private saving. With profit opportunities determining investment and optimal consumption behavior determining saving, there is no implication for corrective policy measures.

4.   However, a current account deficit may be a problem because not all the conditions of the frictionless intertemporal model exist. There may, for example, be an externality in borrowing, so that at a microeconomic level, agents take on the optimal level of debt, but the country's total debt is sufficiently large to create a risk premium, which increases borrowing costs for all. This increased borrowing cost will inhibit investment and ultimately result in lower growth. In addition, financial markets may become less willing to finance large current

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account deficits on a sustained basis. A country with a large current account deficit, which is exposed to volatile export markets or has a small range of exports, will be more vulnerable to this type of reversal in sentiment.

5.	There are several analytical approaches to judging whether the current account is sustainable, two of which are used in this paper. The first approach, one of the simplest and most commonly applied, is to examine the conditions under which the ratio of net external liabilities to GDP will remain constant. The disadvantage of this approach is that there are no objective criteria to judge whether the ratio, once it stabilizes, does so at an appropriate level. The second approach is to base judgments about the current account on the empirical estimation of a theoretical model of "optimal" external borrowing, which can yield a benchmark for the optimal current account deficit and level of external liabilities.

6.	The remainder of this chapter is organized as follows. Section B implements the first approach, by asking how Australia's net external liability position is likely to evolve over time, based on assumptions of future growth and interest rates. Section C implements the second approach, by exploring the implications of a model of optimal external borrowing and lending. Section D presents the main conclusions. An appendix provides details of the model and empirical results.

B. Sustainability of External Liabilities

7.	A simple indicator of the sustainability of the current account is the stability of external liabilities in relation to GDP, which depends on such variables as the world real interest rate, the growth rate of the economy, and the ratio of the trade balance to GDP.[2] If the implicit rate of interest on external liabilities exceeds the economy's growth rate, then external liabilities will tend to grow faster than GDP, unless a country runs a trade surplus. Of course, the current account can be in permanent deficit and the liabilities to GDP ratio remain stable as long as the nominal growth rate of the economy is sufficiently positive.

8.	The interest rate on U.S. debt instruments plus an estimate of the country risk premium is often used as a proxy for the implicit cost of capital. In the second half of the 1980s, there was a significant risk premium (as proxied by the interest rate differential, which includes both inflation risk and sovereign risk) on Australian bonds, which reached about

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[2]The dynamics are described by the equation

$$\Delta NEL_{t+1} = \left(\frac{r-\gamma}{1+\gamma} \right) NEL_t - TB_t$$

where Δ indicates the change from the previous period, NEL is the net external liabilities to GDP ratio, TB is the trade balance (goods and services excluding interest payments) to GDP ratio, r is the implicit cost of capital on net external liabilities (encompassing any valuation effects from exchange rate fluctuations and market price changes), and γ is the economy's rate of nominal growth.

7 percentage points on two occasions (Figure I.1). However, in the 1990s, this risk premium has narrowed considerably, and in the past year it has virtually disappeared.

9.   There are a number of factors, apart from the risk premium, which affect the implicit cost of capital. Particularly important in Australia's case is the composition of external liabilities and assets. The returns on some external assets may be low or even negative, for example, where direct investment has not matured enough to become profitable. Similarly, investments in bonds denominated in strong currencies but carrying low yields, or in equities, often pay only small amounts in terms of current income.[3] The implied rates of return on debt and equity investments are shown in Table I.1, which reveals that equity investments in Australia require a higher return than debt, presumably to compensate for increased risk.[4] This higher income stream to external equity investors implies that Australia must run a higher trade surplus than if debt financing were used exclusively.

Table I.1. Australia: Average Implied Rates of Return on
External Assets and Liabilities, 1995–97

(In percent per annum)

	Equity	Debt	Total
Gross assets	2.5	5.8	4.0
Gross liabilities	6.0	5.0	5.3

Source: Australian Bureau of Statistics, *Balance of Payments and International Investment Position*, June 1998.

10.   An important feature of the effective cost of external capital relates to capital gains and losses.[5] Profits and losses caused by exchange rate fluctuations can potentially be very large, even swamping underlying capital flows (Table I.2). For example, in 1997, net equity inflows were nearly offset by exchange rate and asset price changes, while the net debt position worsened considerably, largely because of exchange rate movements.

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[3]About 40 percent of gross external debt is denominated in Australian dollars: 32 percent in U.S. dollars, and the rest in other currencies.

[4]Capital gains are excluded from the implicit returns and presumably they would be higher for equity.

[5]According to the IMF's *Balance of Payments Manual*, realized profits and losses are not reported in the current account balance but are recorded as a financial transaction. Unrealized profits and losses are not shown in the balance of payments.

Table I.2. Australia: Contributions to Net External Liabilities

(In percent of GDP)

Year	Net Equity			Net Debt			Net Liabilities		
	Capital Inflow	Price Change	Exchange Rate Change	Capital Inflow	Price Change	Exchange Rate Changes	Capital Inflow	Price Change	Exchange Rate Changes
1995	2.2	0.1	-0.6	3.9	0.4	0.8	6.1	0.5	0.2
1996	0.8	1.0	0.7	2.8	0.9	-1.1	3.6	1.9	-0.4
1997	2.3	-0.2	-1.7	0.7	-0.4	1.5	3.0	-0.6	-0.2

Source: Australian Bureau of Statistics, *Balance of Payments and International Investment Position,* June 1998.

11.   To understand the implications of these dynamics for Australia, some simulations were conducted. The simulations were formulated to calculate the current account balance required under three different assumptions about the target ratio of net external liabilities to GDP, *NEL*: (i) stabilize *NEL* at 60 percent (the level at end-March 1998 as a percent of annual GDP); (ii) reduce *NEL* to 50 percent over the next five years; and (iii) reduce *NEL* to 50 percent by 2010. These calculations assume that interest rates and growth rates remain constant over time, but a range of values for these rates are used to gauge the sensitivity of the results.

12.   Assuming that Australia's long-run real potential growth rate is 3½ percent per year, inflation averages 2½ percent (the midpoint of the Reserve Bank's target), and an interest rate of 6 percent (equal to the rate of nominal GDP growth), then to stabilize *NEL* at current levels, the trade account must be in approximate balance in the future. This results in a current account deficit of 3¾ percent of GDP, given the net income deficit. For each percentage point increase in the world interest rate or fall in the growth rate of the Australian economy, the required increase in the trade surplus to keep *NEL* constant is 0.6 percent of GDP.[6]

13.   If the goal were to reduce *NEL* to 50 percent of GDP by the year 2003, then under the same growth and inflation assumptions as above, there would need to be a current account deficit of 1.7 percent of GDP. If there was a less ambitious goal to reduce *NEL* to 50 percent of GDP by the year 2010, the current account deficit target would be 2.7 percent of GDP.

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[6] If there are nominal capital gains on external liabilities, the surplus on the trade account required to stabilize net external liabilities would be higher.

C. The Consumption-Smoothing Approach to the Current Account

14.   In the previous section, the question was to determine what level of the current account balance would be required to stabilize the net external liabilities ratio at its approximate current level, and also to consider some alternative scenarios to bring it down from the current level over different time horizons. No judgment was made as to the appropriate level of the current account, given the economic environment, or the appropriate level of external liabilities.

15.   The question of whether a given current account position is inappropriate can really only be answered within the context of some model that yields predictions about the "optimal" path of external imbalances. The most common such model is the consumption-smoothing model of the current account, in which the current account is used to smooth consumption in the face of shocks to the economy.[7]

16.   The model is narrowly focused on consumption and saving behavior and takes the supply side of the economy and the world real interest rate as given. In particular, the model assumes that output appears as stochastic returns to exogenously determined investment (which can be optimally chosen to maximize the net present value of income given the interest rate), and that the government has access to lump-sum taxation to finance its expenditure, choosing a spending and taxation path that results in intertemporal solvency. These assumptions are necessarily restrictive, and imply that the model omits certain factors that may impinge on the current account balance, including: terms of trade shocks; real interest rate shocks; changes in employment, investment, and productivity due to labor and product market reforms; and demographic factors.

17.   At its most basic level, the consumption-smoothing model predicts that the current account will be in deficit when future changes in net output (output net of investment and government consumption) are expected to be positive, so that future net output is transferred to the present (by external borrowing) to smooth the path of consumption. For example, if due to a temporary adverse export shock (such as the Asian crisis) net output falls below trend, the optimal response of consumers would be to borrow against this increase in expected future net output to absorb the shock. In this case, both the actual and warranted current account balances would deteriorate, other things equal, though not necessarily by the same amount. In contrast, if the shock were expected to be permanent, then the optimal response would be to adjust consumption downward immediately; in this case, there would be no change in the warranted current account balance.

18.   The actual current account and the warranted current account as generated by the model are shown in lower panel of Figure I.1 (see Appendix I.1 for details of the derivation of the warranted current account). The figure shows that the consumption-smoothing model fits quite well, particularly in the 1990s, and this is confirmed by the more formal tests of the

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[7]Details of the model and a technical explanation of how the model was empirically implemented using Australian data can be found in Appendix I.1 and in Cashin and McDermott (1996).

model discussed in Appendix I.1. The model appears to be capturing economically and statistically significant elements of actual external borrowing behavior. This can be seen both by the close correlation between the two series as well as by the model's ability, in a number of cases, to capture the timing of peaks and troughs in the actual pattern of external borrowing.

19.   One question is how to interpret deviations between the actual and optimal current account generated by the model. Part of the reason for the difference between the series is simply sampling error. However, another reason may be related to too much external borrowing or lending. In fact, as can be seen in Figure I.1 (also see Appendix I.1), periods in which actual external borrowing exceeds the warranted level are not offset over the sample by periods in which actual borrowing falls short of the warranted level of borrowing. Indeed, on average over the entire sample, the actual deficit exceeds the warranted deficit by nearly ¾ percent per year, although the unwarranted accumulation of external liabilities was significantly less in the 1990s than in the 1980s (see Table I.1), perhaps reflecting the impact of structural reforms that improved economic performance and reduced distortions affecting saving and investment decisions.[8] The cumulative impact over the entire sample is to have raised external liabilities above their warranted level—by nearly 10 percent of GDP—according to the benchmark provided by the model.

20.   As seen in Figure I.1, the actual deficit is larger than the warranted deficit mainly in three distinct episodes: 1984–86, 1988–90, and 1994–95. The 1984–86 episode followed the liberalization of financial markets coupled with an income contraction from an adverse terms-of-trade shock.[9] The financial liberalization reduced credit constraints allowing maintenance of consumption even if, over the long term, it was not optimal to do so. Adding to this problem, public savings deteriorated sharply in this period (as the underlying Commonwealth budget deficit widened to 3½ percent of GDP in 1983/84), reducing the pool of domestic savings available and increasing the reliance on external savings. The 1988–90 episode was associated with an investment boom as the interaction between the tax system and inflation created an incentive for highly leveraged investment in assets such as property and stocks rather than plant and equipment (Macfarlane, 1989, 1990). In the 1994–95 episode, strong growth in imports of investment goods coupled with a drought that reduced rural exports was a major cause of the rise in the current account deficit.

D. Summary and Conclusions

21.   This chapter presented a simple sustainability analysis showing that for Australia to stabilize the net external liabilities ratio at current levels, the current account deficit would

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[8] The data were adjusted to exclude gold sales by the Reserve Bank in 1997 ($A 1.8 billion in the June quarter and $A 0.7 billion in September quarter) from the current account.

[9] An attempt was made to extend the model to examine how changes in the terms of trade affect the current account. The empirical results, however, were poor and suggested that inclusion of the terms of trade does not improve the correlation of the warranted and actual current account deficits.

need to be brought down to about 3¾ percent of GDP. A higher external deficit would imply that net external liabilities would continue to rise in relation to GDP, other things equal. The chapter went on to examine the same issue in a more formal framework that provided a benchmark against which to evaluate whether actual current account imbalances have been too large or not. The framework was based on the permanent-income theory of consumption applied to a small open economy with access to international capital markets. In such a model, it is optimal for a country to use the current account to smooth consumption when faced with temporary disturbances to productivity, investment, or government spending.

22.   The main finding from the consumption-smoothing model was that, since the early 1980s, the warranted level of the current account deficit has averaged about 3¾ percent of GDP. With the actual current account deficit having averaged 4½ percent of GDP, the model suggested that there was an unwarranted accumulation of external liabilities, on average over the sample, of about ¾ percent of GDP per year. This unwarranted accumulation, however, was significantly lower in the 1990s than in the 1980s and, during the 1990s, largely reflected the experience in 1994–95 (as discussed above). As a result of these higher-than-warranted current account deficits, Australia's net external liabilities were found by the model to exceed—by about 10 percent of GDP—their warranted level.

23.   The consumption-smoothing model developed in this chapter clearly ignores a range of other potentially important aspects of current account sustainability. Broader indicators of sustainability—for example, inflation, the fiscal consolidation program, structural reforms in factor and product markets, and the soundness of the financial system—are all clearly favorable in Australia's case. Indeed, the strength of Australia's underlying fundamentals has undoubtedly been a factor driving the reduction in long-term bond rates to international levels in the recent past. This said, the empirical results in this chapter may nevertheless underline the risks associated with the present widening of the current account deficit, given the legacy from the past accumulation of external liabilities.

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FIGURE I.1
AUSTRALIA

FOREIGN LIABILITIES, INTEREST RATES, AND CURRENT ACCOUNT BALANCE
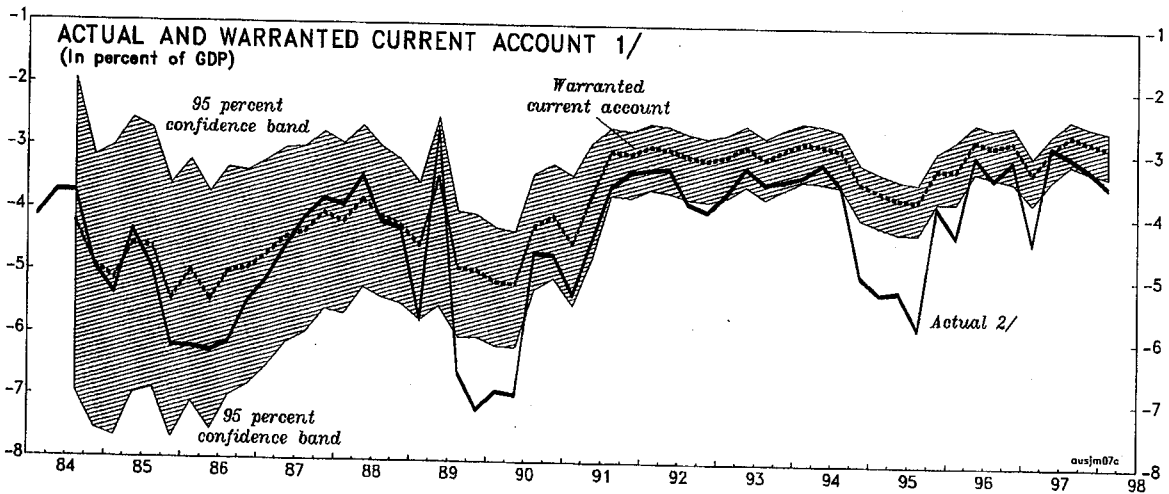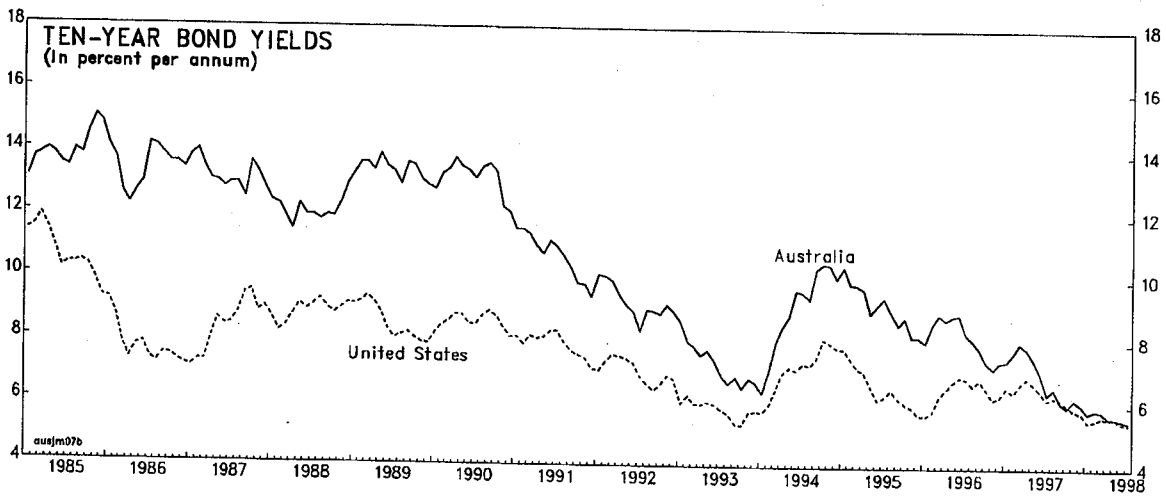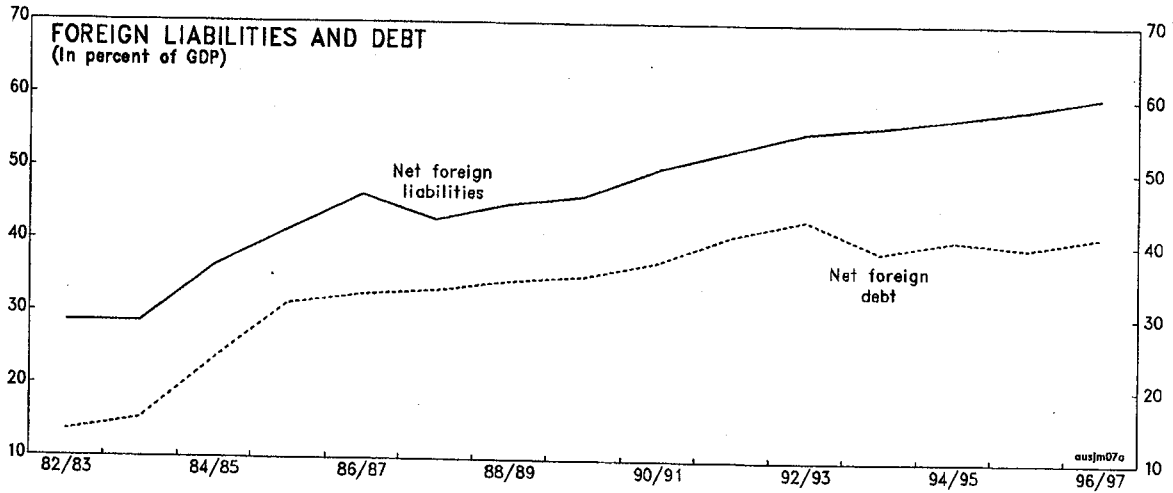
Sources: Australian Bureau of Statistics; Reserve Bank of Australia; IMF, International Financial Statistics;
WEFA, INTLINE Database; and Fund staff estimates.

1/ National accounts basis.
2/ Excludes sale of gold in June and September 1997.

THE CONSUMPTION-SMOOTHING MODEL AND EMPIRICAL RESULTS

The consumption-smoothing model of the current account assumes a small open economy with access to world capital markets, in which the representative consumer maximizes

$$E_t \sum_{j=0}^{\infty} \beta^j u(c_{t+j}), \qquad 0<\beta<1, \tag{1}$$

where E_t is the expectations operator, c_t is private consumption at time t, $u(\ )$ is a separable utility function such that $u'>0$, $u''<0$, and β is the subjective discount factor. If $\beta >1/(1+r)$, then a country will *tilt* consumption into the future, and vice-versa. The real world interest, r, is exogenously given. Letting b_t denote the economy's stock of net external liabilities at the beginning of period t, q_t real output (GDP), i_t real investment, g_t real government consumption, and Δ the first difference operator, the consumer's budget constraint can be written as:

$$\Delta b_{t+1} = rb_t - (q_t - c_t - i_t - g_t). \tag{2}$$

For the purpose of the empirical implementation, a quadratic utility function is chosen. The optimal path of consumption in this case is given by

$$c_t^* = (r/\Theta)\left[-b_t + (1+r)^{-1}E_t\left(\sum_{j=0}^{\infty}(1+r)^{-j}z_{t+j}\right)\right] \tag{3}$$

where $\Theta = (\beta(1+r)^2-1)/\beta r(1+r)$ measures the degree of consumption-tilting and $z_t = q_t - i_t - g_t$ is known as net output or national cash flow (GDP net of investment and government expenditure). When $\Theta < 1$ ($\Theta>1$), the country consumes more (less) than its permanent cash flow or tilts consumption toward the present (future). Defining the optimal consumption-smoothing current account balance as $ca_t^* = z_t - \Theta c_t^* - rb_t$, we have

$$ca_t^* = -E_t\left[\sum_{j=1}^{\infty}(1+r)^{-j}\Delta z_{t+j}\right]. \tag{4}$$

An estimate of the optimal current account can be obtained by using current and lagged current accounts to form some proxy of the expected values in (4). This can formally be accomplished by estimating a bivariate autoregressive model of the current account balance and national cash flow of the form $W_t = AW_{t-1} + \epsilon_t$, where $W_t = (\Delta z_t, ca_t^*)'$, ϵ_t is a 2×1 vector of disturbance terms, and A is a 2×2 matrix of coefficients. With the estimate of A from the VAR and using the fact that $E_t[W_{t+j}] = A^j W_t$, an estimate of the optimal consumption-smoothing component of the current account can be computed as

$$ca_t^* = [-1 \ 0][(1+r)^{-1}A][I_2 - (1+r)^{-1}A]^{-1}W_t \equiv \Gamma W_t \tag{5}$$

For statistical purposes, it is necessary to remove any nonstationary components of the current account.[1] This is achieved by defining the current account as the residuals of a cointegrating regression of consumption on national cash flow less interest payments. The slope coefficient from this regression yields an estimate of the consumption-tilting parameter.

To implement the consumption-smoothing model, national account data on GNP, GDP, private consumption, investment, and government consumption are required. The data source is the IMF's *International Financial Statistics*. The nominal national accounts data are deflated by the implicit GDP price deflator in order to obtain all real magnitudes on a consistent basis. The model was estimated with quarterly data (seasonally adjusted, at annual rates from 1984:1 to 1998:1, with a break point estimated to be at 1990:4). The "consumption-tilting" component of the current account was removed from the data prior to estimation.

The next step in the empirical exercise is to evaluate the performance of the consumption-smoothing model. The easiest method is to compare the correlation of the actual and optimal current accounts. While this correlation was negative in the 1984–90 period it has risen to about 85 percent in the 1990s (first column of Table 1). A more formal (Wald) test of the model is also available. To pass this test, the actual current account (denoted by *ca*) must be equal to the warranted current account as predicted by the model (denoted by *ca**). The result from this test indicates that the restriction is rejected for the earlier part of the sample but is not rejected by the data in the 1990s, (second column of Table 1). Furthermore, the average gap between the actual and warranted current account deficits in the 1990s is about half as large as the gap in the 1980s.

Table 1. Australia. The Consumption-Smoothing Model: Statistical Results

Period[1]	Corr(*ca,ca**)	Wald Test[2] *ca = ca**	Gap between actual and warranted current account deficits[3]
1984q1–90q4	-0.77	rejected	1.17
1991q1–98q1	0.85	accepted	0.49

Source: Fund staff calculations.

[1] A structural-break test was used to determine whether there was a change in behavior over the sample. The test indicated there was a break in 1990q4.
[2] Rejected means that the Wald test of the null hypothesis that *ca = ca** exceeds the critical value of the $\chi^2(2)$ distribution at the 5 percent level.
[3] In percent of GDP.

[1] See example, Ghosh (1995), and Ghosh and Ostry (1995).

II. The Causes of Australia's High Unemployment Rate[1]

A. Introduction and Summary

1.   Australia's unemployment rate has shown a strong upward trend over the past 25 years. It rose from very low levels in the mid-1970s to a historical peak of 11 percent in 1992, following the recession of the early 1990s. Since then, the rate has fallen to just over 8 percent as economic growth has rebounded, but remains more than 2 percentage points above the level at a similar stage of the 1980s economic recovery. Although Australia's unemployment rate is not high when compared with continental Europe, it is above that for most other advanced countries, including New Zealand, the United Kingdom, and the United States.

2.   This chapter investigates the reasons for high unemployment in Australia. The approach taken is first to look at existing cross-country studies of unemployment to identify some factors that explain differences in the unemployment rate between Australia and other countries. Second, the chapter estimates a model of the labor market in Australia, in order to get at some of the underlying causes of Australia's high unemployment rate.

3.   The results suggest that the increase in the replacement rate for the unemployment benefit (i.e., the ratio of the unemployment benefit to earnings) has been a significant contributor to the level of structural unemployment in Australia. Another key finding is a lack of responsiveness of real wages to unemployment, which may help to explain the persistence of unemployment in Australia. The inflexibility of real wages may be due to features of the wage bargaining system, including union power and the award system. In addition, increased social welfare benefit payments in the 1990s are found to have contributed to a fall in labor force participation, particularly for the young and old-age cohorts. While lower participation helped to reduce unemployment, it is also likely to have detracted from Australia's employment and output growth. Recent reforms to wage bargaining and the social welfare system will help address the unemployment problem, but more fundamental reforms are likely to be required to achieve decisive progress in bringing unemployment down and improving wage flexibility.

B. Recent Developments in the Labor Market

4.   The main feature of Australia's labor market in the past 25 years has been the upward trend in unemployment. The rate rose from about 2 percent in the early 1970s to 8 percent in mid-1998, with cyclical peaks of 10–11 percent in the early 1980s and early 1990s, and a cyclical trough of less than 6 percent in the late 1980s (Figure II.1, top panel). Each cyclical economic contraction has pushed the unemployment rate higher, while subsequent economic expansions have not reduced the rate sufficiently to reach earlier levels. By mid 1998, after six

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years of economic expansion, the unemployment rate was more than 2 percentage points above the level in late 1989 (which was a similar stage of the 1980s expansion).

5.   Slow employment growth in the most recent expansion contrasts sharply with strong employment growth in the 1980s expansion (Figure II.1, middle panel), and appears to be related to more rapid growth of real product wages during the current expansion. Over the period 1983–89, employment grew at one of the strongest rates among the advanced countries, and was sufficient to reduce the unemployment rate to about 6 percent, despite rapid growth in labor force participation, particularly among women. In the expansion of the 1990s, employment growth was strong in 1994–95 (particularly in the service sector), but slowed in recent years. Employment appears to have been adversely affected by the strong growth in real product wages in the 1990s expansion, in contrast with virtually no increase on real product wages in the 1980s expansion (Figure II.1, bottom panel).

6.   A comparison with New Zealand's experience is of particular interest, as its wage bargaining and social welfare systems were similar to Australia's until fundamental reforms that decentralized wage bargaining and reduced welfare benefits were introduced in 1991. In part, reforms in New Zealand were in response to a very sharp contraction in employment and rise in unemployment in the late 1980s and early 1990s. By 1996, however, following the reforms, the unemployment rate in New Zealand had fallen significantly below Australian levels. While unemployment has recently increased in New Zealand with the sharp cyclical slowdown, the rate is still about ½ percentage point below that in Australia, and was 2–2½ percentage points lower in 1996–97.

C. Evidence from Cross-Country Studies of Unemployment

7.   A number of recent studies have examined the causes of differences in unemployment between countries. Jackman and others (1996) undertook an analysis of the determinants of unemployment in 20 OECD countries during 1983–88 and 1989–94. They found that the relatively high rate of unemployment in Australia was explained by the longer duration of unemployment benefits, and the higher level of union coverage in Australia than in most other countries.[2] According to the study, these factors raised Australia's unemployment rate by about 2¾ percentage points in the period 1989–94.

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[2]Average unemployment benefit replacement rates in Australia for a couple with no children in the first year of unemployment are quite low (about 50 percent in 1995 compared with the OECD average of about 60 percent). However, given that benefits are independent of previous earnings, persons in the bottom 10 percent of the earnings distribution face replacement rates that are close to or even above 100 percent. Furthermore, the fact that benefits are paid indefinitely results in the Australian system being more generous for the long-term unemployed than the OECD average (with a replacement rate of 40 percent for a couple with no children compared with a comparable replacement rate of 19 percent for the OECD).

8.   Ball (1996) examined causes of changes in the non-accelerating-inflation-rate of unemployment (NAIRU) for 20 OECD countries between 1980 and 1990. He found that the increase in the NAIRU in Australia was explained mainly by the unlimited duration of unemployment benefits, which reduced the incentive for job search.

9.   Other cross-country studies have focused on the role of wage bargaining systems. Calmfors and Driffill (1988), for example, have argued that highly centralized or highly decentralized industrial relations systems yield superior labor market outcomes compared with in-between systems.[3] The current Australian industrial relations system is an "in-between" system, with elements of both centralized and decentralized bargaining. More recent analysis by the OECD (1997), however, which updated the work of Calmfors and Driffill, found no statistical relationship between economic performance and the extent of collective bargaining for a range of OECD countries.

D. A Simple Model of the Labor Market in Australia

10.   This section estimates a model of the labor market to analyze the reasons for Australia's high unemployment rate. The model consists of equations for employment, wages, and labor supply. A disaggregated approach is taken, with employment and wage equations estimated for the economy as a whole and for two sectors—manufacturing and services—separately. This is motivated by the fact that the slow employment growth in the 1990s can be traced largely to slower growth in the manufacturing sector. Labor supply equations are also disaggregated by gender and by age-group, given the differing trends in participation (Figure II.2).

11.   Appendix II.1 outlines the model. In short, employment is derived from a simple constant elasticity of substitution (CES) production function, with employment expected to be positively related to output, and negatively related to real product wages. Wages are expected to be positively related to productivity and the unemployment benefit replacement rate, but negatively related to unemployment (adjusted by union density to capture the extent of "insider" power in wage bargaining).[4] Finally, wages are expected to be positively related to the terms of trade of the sector.

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[3]The argument is that centralization of wage bargaining can help promote wage moderation, while decentralized bargaining enables wages to be closely linked to circumstances at the enterprise level. If unions are industry-specific and wage bargaining is not coordinated across industries, unions have an incentive to seek higher wages. This is because an increase in the output price of that industry (needed to offset the impact of higher nominal wages) will only have a limited impact on the aggregate real wage.

[4]Insider power refers to the extent to which unions bargain to improve the position of their members ("insiders") and ignore non-union members among the ranks of the unemployed ("outsiders").

12.   In the labor supply equation, wages could be either positively or negatively related to participation, depending on income and substitution effects. Non-labor income is expected to be negatively related to participation, as higher non-labor income reduces the need to work. The unemployment rate could be positively or negatively related to participation, depending on whether the 'discouraged worker effect' of higher unemployment outweighs the 'encouraged' worker effect.[5] The relationship of demographic and structural variables with participation depends on the nature of the variable. For instance, the share of the population under 15 should be negatively related to participation, as changes in child care responsibilities affect the capacity to work, particularly for females.

13.   Long-run cointegrating relationships in the levels of the variables are estimated using the Johansen (1988) method (Table II.1). Error correction models are also estimated in order to gauge the dynamics toward long-run equilibrium. The estimation results are found to be generally statistically satisfactory, with most coefficients having the expected sign, where strong priors exist. Further details are available in Brooks (forthcoming).

E. Why Has Unemployment Remained High in Recent Years?

14.   The estimation results can be used to gain some further insight into why unemployment remained high in the 1990s. Two approaches to this analysis are taken. First, the equations are used separately to quantify the impact of various factors on the behavior of employment, real wages, and labor supply. Second, a simple model consisting of the employment, wage, and labor supply equations, together with a production function, is simulated dynamically to assess the impact of changes in two policy variables—the unemployment benefit, and other social welfare benefits—on the key labor market variables, including unemployment.

Single equation analysis

15.   The single equation analysis highlights three main factors affecting unemployment:

●   higher real product wages detracted from employment growth, by about 4 percentage points, in the 1990s, particularly in the manufacturing sector (Table II.1).[6]

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[5]The encouraged worker effect arises when other members of the household enter the workforce in response to a reduction in household income if a member of the household becomes unemployed.

[6]Restricting the coefficient for output to equal one in the aggregate employment equation (as in the Australian Treasury's TRYM model) raises the impact of real wages on employment.

- the increase in real product wages in the 1990s was driven largely by productivity increases, but almost one-third of the increase was related to the increase in the unemployment benefit replacement rate (Figure II.3, top panel).[7] These influences were partly offset by the negative impact on wages of the rise in unemployment and fall in union density (Figure II.3, middle panel).

- an increase in social welfare benefits (excluding unemployment benefits and pensions) was the main factor holding down both male and female labor force participation in the 1990s (Table II.2). These benefits, which comprise government payments for sickness, permanent disability, and family and child benefits, grew significantly in the 1990s. (Figure II.3, bottom panel.)

Simulation analysis

16.   Two policy experiments were simulated with the model, that focus on possible channels for public policy to reduce unemployment and raise labor force participation. First, the unemployment replacement rate was held at the 1990 level, and second, social welfare benefits were reduced by 10 percent. In addition to the aggregate employment, wage and labor supply error-correction equations used in the simulations, a production function was included to allow for an endogenous output response.[8]

17.   In the first exercise, the model was dynamically simulated over the period June 1990 to June 1997, holding the unemployment replacement rate at the June 1990 level. The main result from this simulation is that the unemployment rate falls by about 1¾ percentage points after three years in response to the cut in unemployment benefits, and stays at around this level until the end of the simulation period (Figure II.4, top panel).[9] Unemployment falls because real wages fall by 6 percent in response to the lower replacement rate, and this raises employment. In turn, this feeds through to higher output, and drives a further increase in employment, despite a slight increase in labor supply resulting from the encouraged worker effect of lower unemployment.

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[7]The unemployment benefit replacement rate rose from about 37 percent in 1990 to 42 percent in 1997. This was largely due to increases in housing assistance to the unemployed in the early 1990s. As noted in the "One Nation" statement by Prime Minister Keating in February 1992, the real value of unemployment benefits for a single adult receiving the accommodation benefit (if renting privately) rose by 53 percent between 1983 and 1992.

[8]See Brooks (forthcoming) for details of the error-correction models, and Chapter II of Singh and others (1998) for the production function.

[9]The impact of the replacement rate on unemployment is somewhat larger than in earlier Australian studies (see, for example, Fahrer and Pease, 1993).

18.   The second simulation involves reducing real social welfare benefits per person by 10 percent from June 1990 in the male and female labor supply equations.[10] This policy change results in a rise in the labor force by 0.6 percent after three years (Figure II.4, bottom panel). In turn, this contributes to a rise in the unemployment rate by 0.4 percentage points over the same period, and unemployment remains at this higher level through the remainder of the simulation. The rise in the unemployment rate contributes to a fall in the real wage by ½ percent, which raises employment (and output), offsetting only part of the impact of the rise in participation on the unemployment rate.

Comparison with New Zealand

19.   It is useful to compare the outcome of the simulated cut in social welfare benefits in Australia with the experience of an actual cut of a similar magnitude in New Zealand. Social welfare benefits (in real terms, excluding unemployment benefits) in New Zealand were cut sharply in the early 1990s, although by the mid-1990s they had returned to about 90 percent of the levels of the late 1980s (Box II.1, Figure II.5). At the same time, unemployment benefits were reduced, and eligibility for the government old-age pension was tightened.

20.   In order to assess the role of social welfare benefit reforms in New Zealand, labor supply equations were estimated in the same fashion as those estimated above for Australia. The estimation results obtained were qualitatively similar to those for Australia (see Brooks (forthcoming) for details), confirming that a rise in participation in New Zealand in the 1990s was due in part to the benefit reforms (Table II.3). In addition, the dramatic rise in participation for the population aged 55 and over was found to be related to pension reform, with the increase in the age of eligibility for pensions lifting participation by 4–5 percentage points for this age cohort.

21.   A key difference between the labor market experience of the two countries in the 1990s is that the unemployment rate fell in New Zealand more sharply than in Australia (as noted in section B), despite the rise in participation. This contrasts with the simulated effects of the cut in social welfare benefits in Australia, in which the unemployment rate rose in tandem with the rise in participation. The different outcomes suggest that other factors were at play in the New Zealand labor market to deliver a better outcome for unemployment. These factors are likely to include the cuts to unemployment benefits in 1991 and the fundamental reform of the wage bargaining system (Box II.2), which acted to improve wage flexibility, contain wage growth, and raise employment growth.

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[10]This is only a relatively small adjustment given that real social welfare benefits per person of working age (yg) rose by more than 50 percent between 1990 and 1997.

Box II.1. Social Welfare Reforms in the 1990s:
A Comparison of Australia and New Zealand

Australia's and New Zealand's social welfare systems are similar in many respects. Unemployment benefits are available for an unlimited duration, a wide range of other benefits are targeted at families and individuals with sicknesses or disabilities, and universal government old-age pensions are available. Social welfare spending, however, grew more rapidly in New Zealand than Australia in the 1980s—but the opposite occurred, on average, for the 1990s.

In 1990, the New Zealand government introduced far-reaching reforms following the rapid growth of social spending in the 1980s. The reforms aimed at encouraging job search, raising labor force participation, and reducing the fiscal cost of the social welfare system. A wide range of benefit rates were cut, including the unemployment, sickness and domestic purposes benefit. The cuts averaged about 10 percent, but ranged between 3 and 25 percent, with the deepest cuts made to youth unemployment benefits. At the same time, eligibility criteria for some benefits were tightened, particularly for student allowances. New Zealand's National Superannuation, the pay-as-you-go government pension scheme, was also reformed. The eligibility age was increased to 61 years in April 1992, with further increases scheduled to take the eligibility age to 65 years by 2001. These reforms were successful in sharply reducing social welfare spending in the early 1990s, but spending on some benefits (especially the sickness and invalidity benefits) picked up in the mid-1990s. By 1996/97, however, social welfare spending was about ¾ percent of GDP lower than in 1989/90 (excluding unemployment benefits, which fell a further ⅓ percent of GDP).

In Australia, despite some reforms introduced with "Working Nation" in 1994,[1] spending on social welfare programs grew by 2 percent of GDP between 1989/90 and 1996/97 (excluding unemployment benefits which grew by nearly ½ percent of GDP). The growth in spending stemmed from higher rates of payments and the introduction of supplementary payments for families with children and people with disabilities in the early 1990s.

---

[1]"Working Nation" introduced a number of reforms, including the easing of the rate at which benefits were withdrawn for extra income earned. In other reforms, the government moved to achieve parity between the old-age pension eligibility criteria for women and men (set at 65 years, to be achieved by 2013) and tightened the unemployment benefit activity test (a requirement to search for jobs or lose support).

F. Conclusions

22.   The analysis in this chapter suggests that the rise in the replacement rate for the unemployment benefit over the past decade contributed to the rise in structural unemployment in Australia. One implication is that reducing the unemployment benefit replacement ratio to earlier levels would have a significant impact on unemployment. The cross-country study results would also suggest the need to limit the duration of the unemployment benefit.

23.   Another key finding is that increased social welfare benefit payments contributed to a fall in labor force participation, particularly for the young and old age cohorts. While lower participation may have helped to reduce unemployment slightly, it is also likely to have

detracted from Australia's employment and output growth. An implication is that potential growth rates could be raised by lowering social welfare benefits, while still retaining an effective social safety net. More importantly, the main reason for the rise in unemployment in response to a reduction in social welfare benefits is likely to be a lack of responsiveness of real wage, the root causes of which would seen to reside in inflexibilities in the wage bargaining system, possibly due to union power and the award system.

24. The experience of New Zealand provides a sharp contrast to that of Australia. New Zealand's far-reaching social welfare reforms of the early 1990s contributed to a rise in labor force participation in the 1990s. At the same time, the unemployment rate fell. This suggests that the reforms to wage-bargaining in New Zealand were effective in improving wage flexibility, and facilitating the move into jobs of new labor force participants.

25. The Australian authorities have taken a number of measures to address the unemployment problem. Reforms to industrial relations were introduced in 1996; the unemployment benefit was subject to a tighter activity test (a requirement to search for jobs or lose support); government-funded labor market, training and education programs are being reformed; and broader product market reforms are continuing. These reforms are steps in the right direction, and are likely to reduce structural unemployment over time. The magnitude of their impact, however, is difficult to gauge at this stage since the reforms were implemented only recently and, in some cases, the beneficial impact is still likely to be in the pipeline. The reforms, however, were not as far-reaching as in New Zealand. This suggests that a more fundamental break from the past industrial relations and social welfare systems may be desirable, in order to accelerate reductions in structural unemployment and improve growth prospects.

Box II.2. Industrial Relations Reform:
A Comparison of Australia and New Zealand

The industrial relations systems in Australia and New Zealand have traditionally shared many common features: compulsory arbitration of industrial disputes; a registration process that ensures recognition of unions before industrial tribunals, and that prevents competition for members of existing unions; and a system of awards setting out wages and terms of employment.

During the 1980s, both Australia and New Zealand made tentative steps toward deregulating their labor markets. In 1987, the Labour Government in New Zealand introduced the Labour Relations Act, which attempted to rationalize the number of trade unions and required the formation of single bargaining units to negotiate at the enterprise level with large employers. However, the most dramatic shift, and one that caused a significant divergence between the industrial relations systems in Australia and New Zealand, came with the introduction of the Employment Contracts Act in 1991.

Under the Act, industry-wide awards were abolished and replaced with a system of free contracting aimed at facilitating agreements negotiated directly between employees and employers at the enterprise level. Individual employees can either negotiate their own contracts or appoint a bargaining agent to represent them. Contracts must meet minimum standards relating to employment conditions such as wages, leave, hours of work, and grievance procedures. These changes effectively brought to an end compulsory unionism, closed shops, and preference arrangements for union members. Although the Act does not mention unions, legislative protection for their role is provided under the Trade Unions Act.

A comparison between New Zealand's Employment Contracts Act and Australia's 1996 Workplace Relations Act reveals significant differences between the wage bargaining system in the two countries. Most important, Australia still maintains a system of awards and a significant role for trade unions in wage bargaining. Awards continue to be a reference point for workplace agreements through the application of the so-called global no-disadvantage test (that is agreements must not result in a reduction in employees' overall terms and conditions of employment when compared with the relevant award). Awards are also to be the mechanism for implementing safety net wage increases for workers unable to gain wage increases through enterprise bargaining. While the monopoly power of trade unions has been removed, unions are nonetheless guaranteed a role in bargaining over most enterprise agreements, provided a member requests their involvement.

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Table II.1. Australia: Factors Related to Employment and Real Wage Growth
(Percent change June 1990–97)

	Manufacturing	Services	Total
Employment (actual)	-4.6	10.0	6.0
Employment (fitted, from cointegration equation)[1]	-5.0[2]	12.0[3]	9.0[4]
Contribution of change in:			
Output (y)	9.0	16.0	13.0
Real product wage (rw)	-14.0	-4.0	-4.0
Real product wage (actual, rw)	16.3	10.0	20.0
Real product wage (fitted, from cointegration equation)[1]	20.3[5]	11.7[6]	24.0[7]
Contribution of change in:			
Productivity (prod)	13.9	5.3	21.0
Unemployment adjusted for union density (U.(1-UD))	-9.6	-2.9	-4.0
Unemployment benefit replacement rate (rr)	12.5	7.2	7.0
Terms of trade (tot)	3.5	2.2	--

Source: Fund staff estimates.

[1]The cointegrating equations for services and total employment were statistically satisfactory, while the manufacturing equation was less satisfactory. See Brooks (forthcoming) for further details. See data appendix for definition of the data.

[2]Based on the equation: log (manufacturing employment) = 0.91 log(y) - 0.85 log(rw)

[3]Based on the equation: log (services employment) = 0.71 log(y) - 0.41 log(rw)

[4]Based on the equation: log (total employment) = 0.73 log(y) - 0.27 log(rw).

[5]Based on equation: log(manufacturing real wage) = 0.97 log (prod) - 0.22 log(U.(1-UD))+0.98 log(rr) + 0.57 log(tot).

[6]Based on equation: log (services real wage) = 0.43 log(prod)-0.07 log(U.(1-UD))+0.56 log(rr)+0.19 log (tot).

[7]Based on equation: log (total real wage) = 1.2 log(prod)-0.18 log (U.(1-UD))+0.83 log(rr)-0.23 log(tot).

Table II.2. Australia: Factors Related to Labor Force Participation Rate

(Percent change June 1990–97)

	Males	Females
Participation rate (actual)	-2.6	1.5
Participation rate (fitted from cointegration equation)[1]	-2.1[2]	1.9[3]
Contribution of change in:		
Real after tax wages (wtm)	2.5	--
Unemployment rate (um)	-1.9	--
Government benefits (yg)	-3.4	-2.8
Nonlabor income (yo)	0.7	--
Population under 15 (pop<15)	--	2.6
Service sector growth (serv)	--	2.1

Source: Fund staff estimates.

[1]Equations for total male and female labor force participation and the three-age cohorts (15–24, 25–54, 55 and over) were statistically satisfactory (see Brooks (forthcoming)).
[2]Based on aggregate male equation:

$\log$ (male participation rate) $= \log 0.29$ (wtm) $- 0.08 \log$ (um) $- 0.10 \log$(yg) $- 0.08 \log$ (yo).
[3]Based on aggregate female equation:

$\log$ (female participation rate) $= -0.12 \log$(yg) $- 1.22 \log$ (pop<15) $+ 2.08 \log$ (serv).

Table II.3. New Zealand: Factors Related to Labor Force Participation Rate

(Percentage point change June 1990–97)

	Males	Females
Total Working Age Population		
Participation rate (actual)	0.4	2.9
Participation rate (fitted from cointegration equation)[1]	-0.8[2]	2.3[3]
Contribution of change in:		
Real after tax wages (wtm)	-1.7	--
Unemployment rate (um)	0.7	--
Government benefits (yg)	0.2	0.4
Female students (fstud)	--	-4.6
Service sector growth (serv)	--	6.6
Population Aged 55 and Over		
Participation rate (actual)	5.3	4.4
Participation rate (fitted from cointegration equation)[1]	5.9[4]	4.9[5]
Contribution of change in:		
Unemployment rate (u)	0.9	0.4
Government benefits (yg)	0.7	-0.1
Government pension (ypen)	4.3	4.6

Source: Fund staff estimates.

[1]The cointegrating equations for total male and female participation and the age cohorts (15–24, 25–54, 55 and over) were generally statistically satisfactory. See Brooks (forthcoming) for further details. See the data appendix for definition of the data.
[2]Based on aggregate rate equation:

log (male participation rate) = - 0.25 log (wtm) - 0.06 log (um) - 0.05 log (yg)

[3]Based on aggregate female equation:

log (female participation rate) = -0.13 log (yg) + 1.79 log (serv) - 0.27 log (student)

[4]Based on equation for males aged 55 and over =

log (male participation rate 55+) = -0.16 log (u) - 0.32 log (yg) - 0.73 log (ypen)

[5]Based on equation for females aged 55 and over:

log (female participation rate, 55+) = -0.09 log (u) - 0.35 log (yg) - 1.60 log (ypen)

FIGURE II.1
AUSTRALIA
UNEMPLOYMENT, EMPLOYMENT AND WAGES
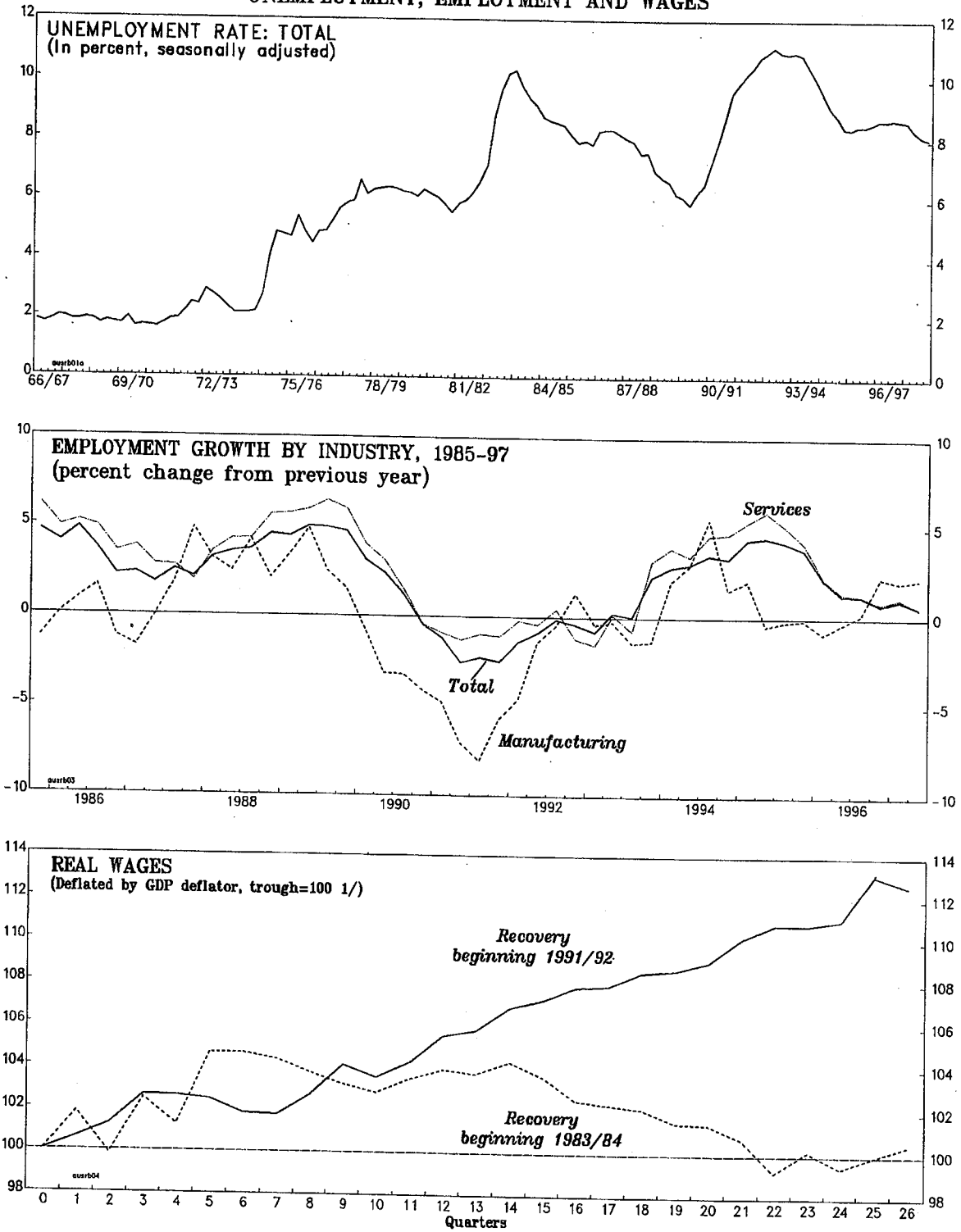
Source: Australian Bureau of Statistics; and staff estimate.

1/ The troughs are as follows: 1983Q1 for the 1983/84 recovery and 1991Q2 for the 1991/92 recovery.

FIGURE II.2
AUSTRALIA
LABOR FORCE PARTICIPATION
(In percent)

TOTAL PARTICIPATION RATES

Males

Total

Females

ausrb06a

1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997

PARTICIPATION RATE BY AGE GROUP
(As at June 1997)

Males

Females

ausrb06b

15–19   20–24   25–34   35–44   45–54   55–59   60–64   65 and over
Age group
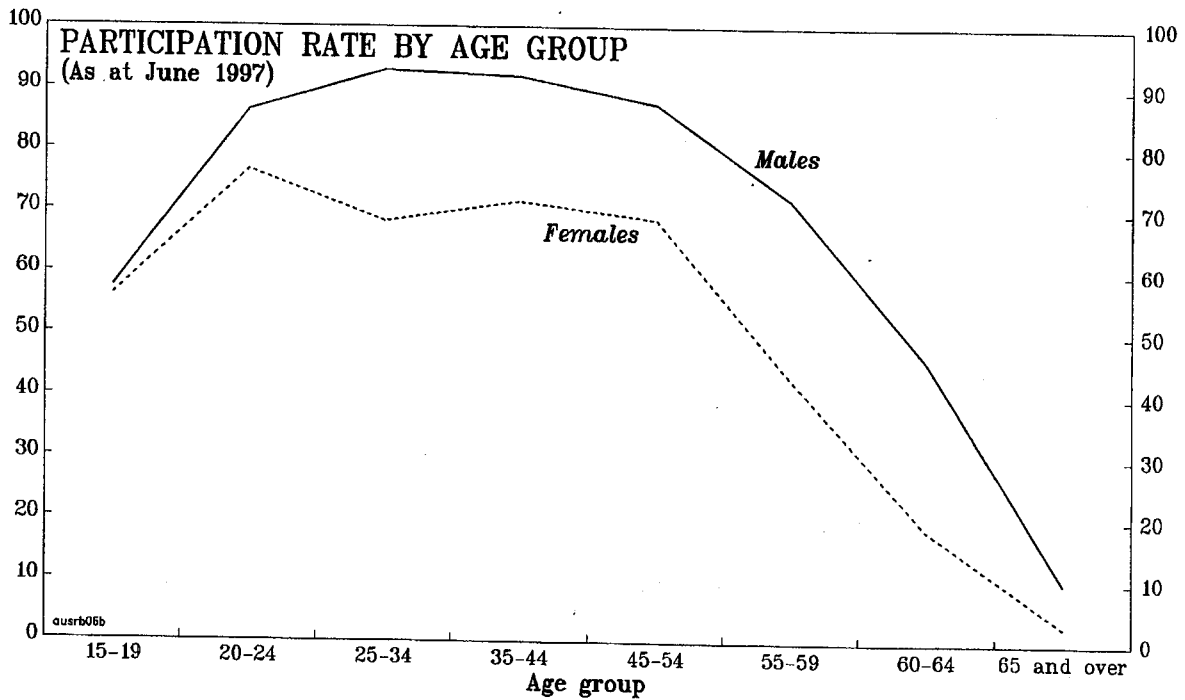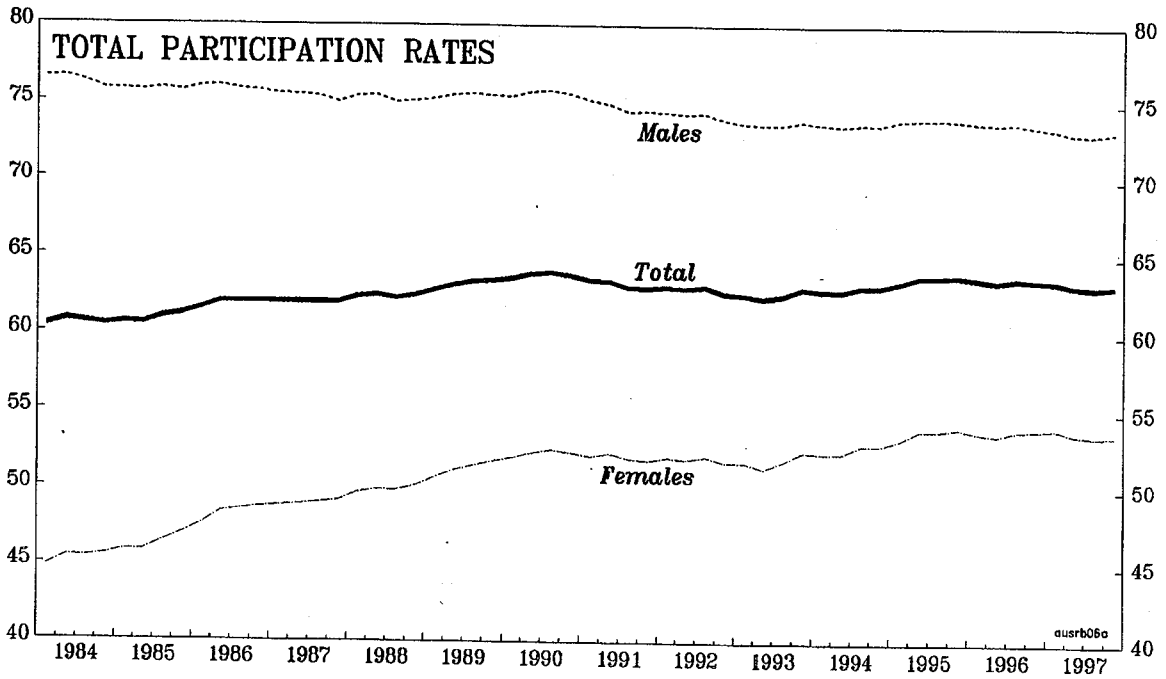
Source: Australian Bureau of Statistics.

FIGURE II.3
AUSTRALIA
UNION DENSITY AND SOCIAL WELFARE BENEFITS

UNEMPLOYMENT BENEFIT REPLACEMENT RATE
(benefit as percent of earnings)

UNION DENSITY
(union members as percent of total employment)

Manufacturing

Services

REAL SOCIAL WELFARE BENEFITS
(excluding pensions and unemployment benefit
in 1989/90 dollars, per person of working age)
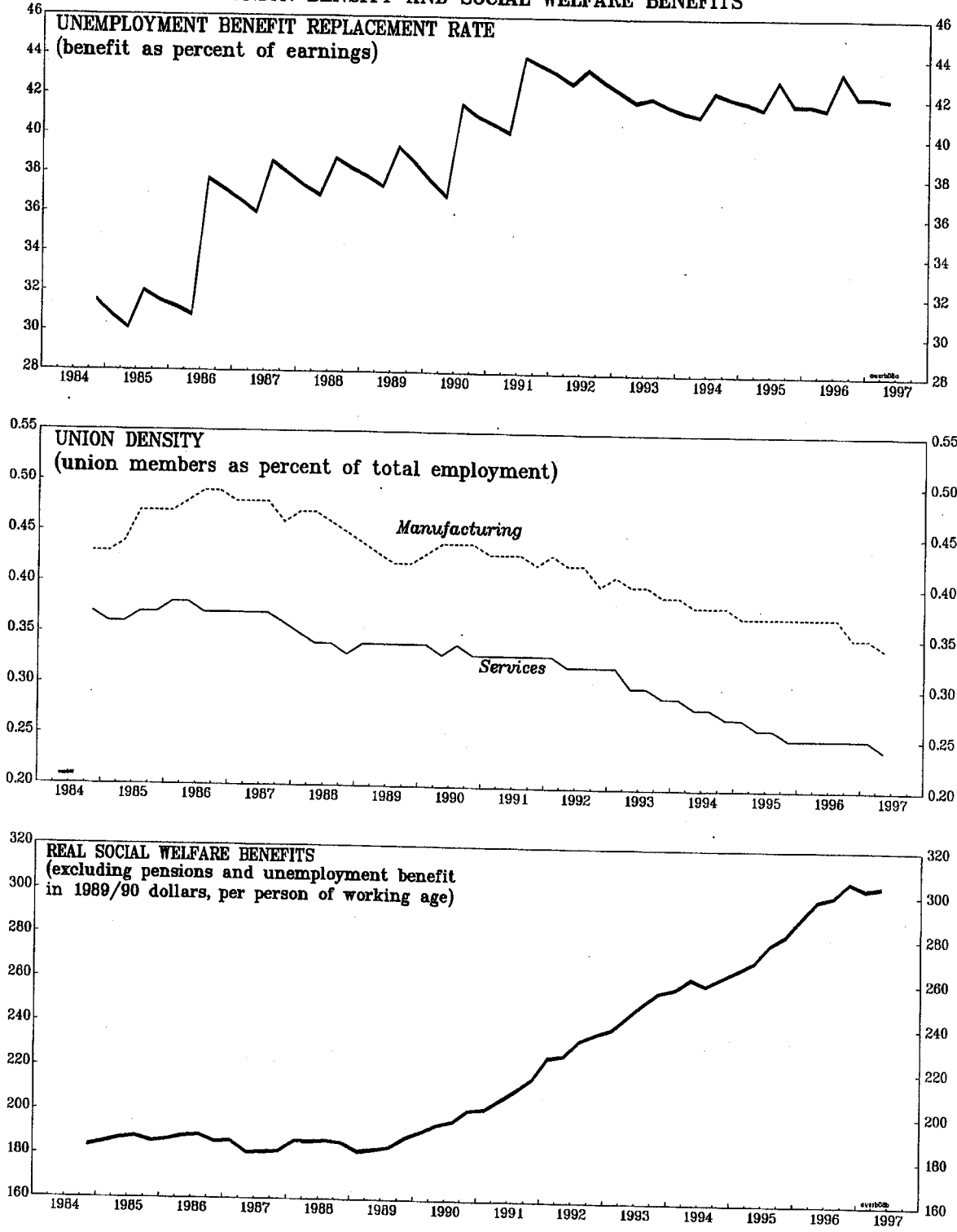
Source: Australian Bureau of Statistics.

FIGURE II.4
AUSTRALIA
UNEMPLOYMENT RATE

SIMULATION WITH UNEMPLOYMENT REPLACEMENT RATE (RR) HELD AT 1990 LEVELS

Actual

Simulated 1/

SIMULATED 10 PERCENT CUT IN
SOCIAL WELFARE BENEFITS (YG)

Simulated 1/

Actual
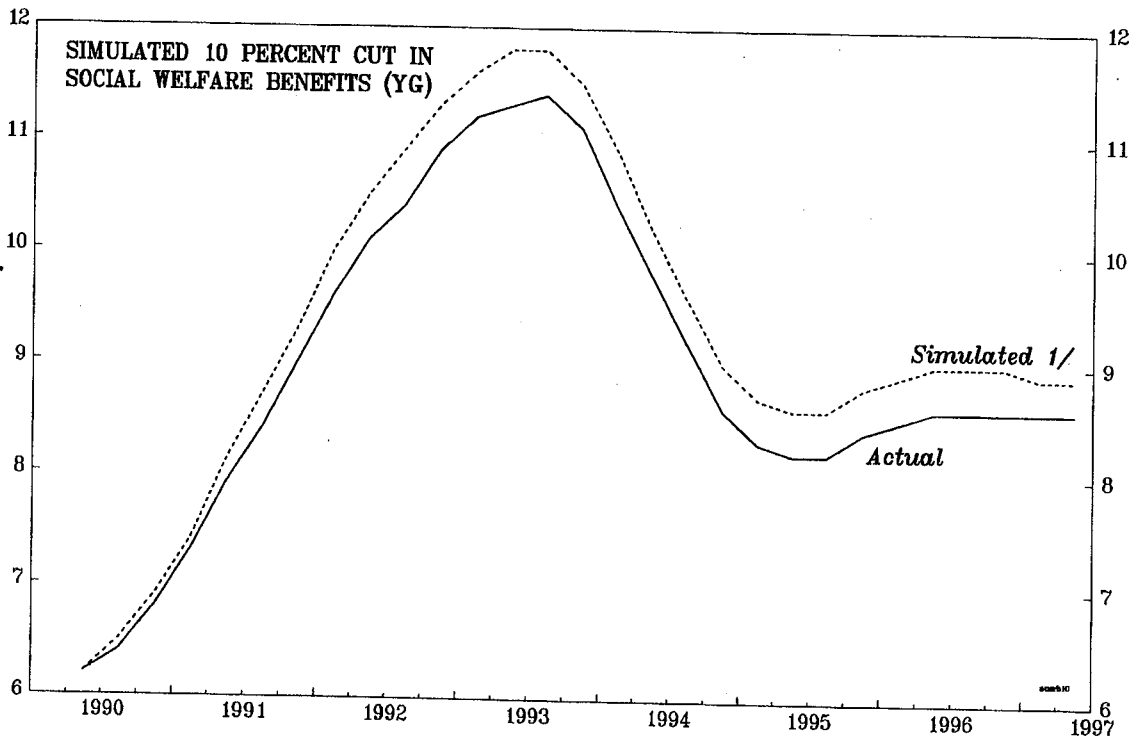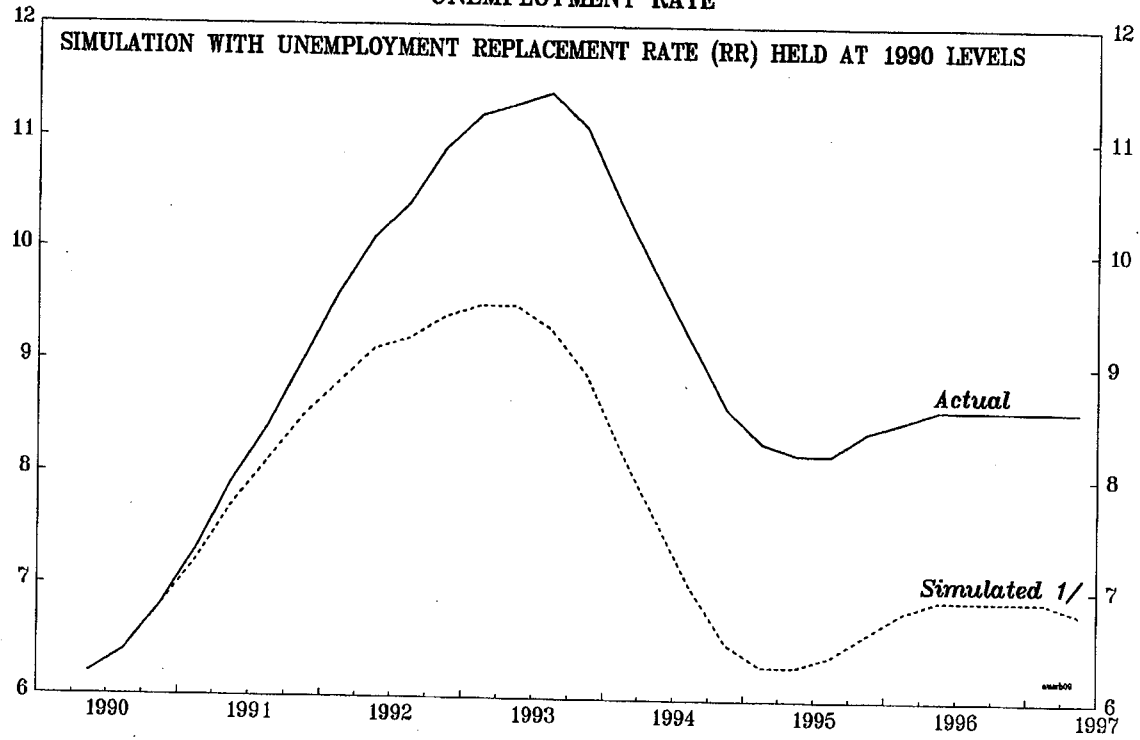
Source: Staff calculations.

1/ Derived from a dynamic simulation of the error correction equations for employment, wages, and male and female labor supply (along with a production function). See Brooks (forthcoming) for further details.

FIGURE II.5
AUSTRALIA AND NEW ZEALAND
LABOR FORCE PARTICIPATION AND SOCIAL WELFARE BENEFITS, 1980–97
(In percent unless otherwise stated)
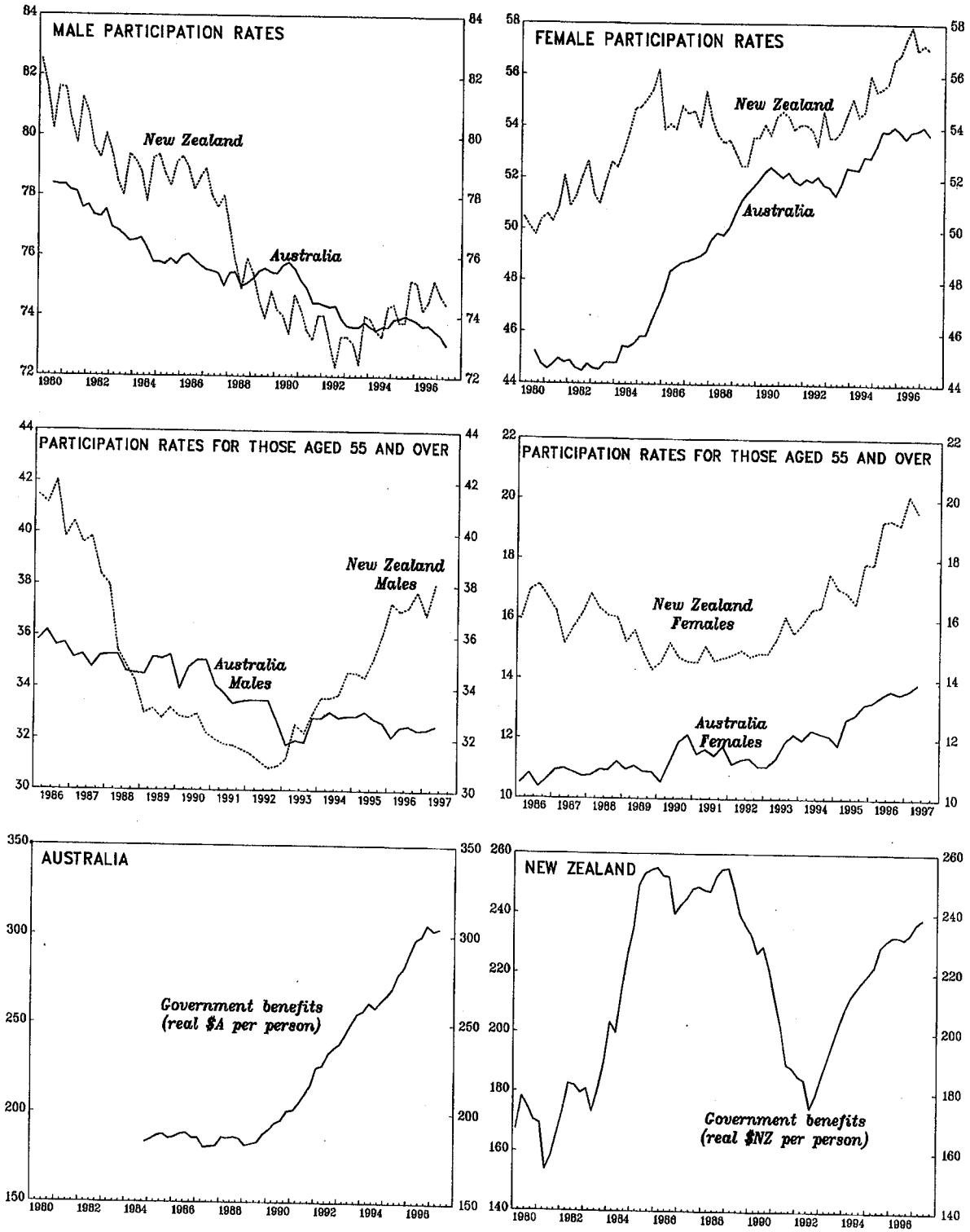
Sources: Australian Bureau of Statistics; and Statistics New Zealand.

THE LABOR MARKET MODEL

The specification of the model follows Henry and Snower (1996) and Jackman, Layard, and Nickell (1991). The employment equation is derived from a standard CES production function (similar to Henry and Snower and Ferguson, 1969), with output and the real wage the key determinants of employment. The wage equation is based on a "competing claims" model of union-firm behavior (following Jackman, Layard, and Nickell). The real wage is the outcome of a bargain between the firm and the union, where once the wage is determined the firm sets the employment level. In this model, wages are dependent upon real unemployment benefits, productivity, unemployment and an index of union strength. The labor supply equation is standard, and is a variant of that outlined in Pencavel (1986) and derived from Hicks (1946). Further details of the model are provided in Brooks (forthcoming). The model is outlined below, with all lower case variables in logs:

Employment

$$n_i = \alpha_1 y_i + \alpha_2 (w_i - po_i) + \text{seasonals}$$

Wages

$$w_i - po_i = \beta_1 (y_i - n_i) + \beta_2 \log U*(1-UD_i) + \beta_3 rr + \beta_4 (po_i - pi_i) + \text{seasonals}$$

Labor force participation

$$lf_j = \gamma_1 wt_j + \gamma_2 z_j + \gamma_3 d_j + \gamma_4 u_j + \text{seasonals}$$

where: n = numbers employed
       y = output
       w = nominal wage
       po = price index of outputs
       pi = price index of inputs
       U = unemployment rate
       UD = union density, i.e., union members as a proportion of numbers employed
       rr = replacement rate for the unemployment benefit
       lf = labor force participation rate
       wt = real-after-tax wage
       z = real income from sources other than labor (e.g., social welfare benefits, pensions)
       d = demographic variables or structural change variables
       u = unemployment rate
       i = ith sector (aggregate economy, manufacturing or service sector)
       j = sex or age group

DATA APPENDIX

This appendix provides the definition and source of data used in the model (lower case variables are in logs).

Australia

lf = labor force participation rate, seasonally adjusted, from ABS catalogue 6202–2; ratio of the total number employed and unemployed to the population aged 15 and over (lff for females, lfm for males).

n = numbers employed from ABS group LEHQ.UNAAZ-UNQQZ. Service sector defined as the total less agriculture, mining, manufacturing and government administration.

pi = input prices, for manufacturing defined a price of articles purchased. For services, weighted average of import prices and goods sold by manufacturers.

po = output prices. GDP deflator for whole economy; price of manufacturing goods sold for manufacturing sector; CPI services component for the service sector.

pop<15 = population under 15/total population.

prod = productivity per worker (y/n).

rr = unemployment benefit replacement rate, defined as the ratio of the unemployment benefit for a single adult without dependents (including maximum rent assistance), to the average weekly wage for the lowest quartile of wage-earners.

rw = real product wage, w - po.

serv = service sector output/total output.

tot = terms of trade. For the whole economy, defined as the ratio of export to import prices; for manufacturing and services, defined as the ratio of output (po) to input prices (pi).

UD = union density, ratio of union members to employment, interpolated from annual data from ABS catalogue no. 6325.

U = unemployment rate, ratio of unemployed to the population of working age (aged 15 and over), from ABS catalogue 6202–2 (uf for females, um for males).

w = average weekly ordinary time earnings (AWOTE) for full-time adults (ABS catalogue 6302), adjusted for superannuation contributions and payroll tax.

wt = real-after-tax wage rates, defined as w less average tax rate on household income, deflated by the headline CPI (wtf for females, wtm for males)

y =   total output, defined as production based GDP, from ABS group NADQ. Service
          sector defined as for n above.

yg =   real government social welfare benefit payments per person of working age, derived
          from ABS catalogue 5206–37 as the sum of the following series: Commonwealth
          government social security payments (for sickness, permanent disability, family and
          child benefits, and other) and other Commonwealth personal benefits payments.

yo   =   real other income from non-labor sources. Sum of income from unincorporated
          enterprises, ownership of dwellings, interest and dividends (ABS catalogue, 5206–28).

New Zealand

lf =   labor force participation rate, defined as for Australia (Statistics NZ HLFq.sae1az),
          but available from December 1985 only. Backdated to 1980 using data from NZIER,
          see Garbey and others (1993) (lff for females, lfm for males).

pop<15 = population under 15/total population (Statistics NZ INFOS group DAE).

fstud =   ratio of female students aged 15–25 to female population aged 15–25.

serv =   service sector output/total output (Statistics NZ SN3Q.S2AQT/SNBQ.SZAZT).

u   =   unemployment rate, defined as the ratio of persons unemployed (Statistics NZ
          HLFQ.S1B3S) to the population of working age (HLFQ.S2D3QZ). Backdated to
          1980 using Garbey (1993) (uf for females, um for males).

wt =   average weekly ordinary time earnings, total all industries (Statistics NZ
          QESQ.SD1Z9A) less net direct tax on labor income (TD from Reserve Bank of New
          Zealand database), deflated by the headline CPI (wtf for females, wtm for males).

yg =   real government social welfare benefit payments per person, derived from Statistics
          N.Z. (Statistics NZ SOWA). Sum of: domestic purposes, invalidity, sickness, family,
          and family-care benefits and accommodation supplement (backdated using GFS
          housing subsidy). Annual data was converted to quarterly data using a cubic spline.

yo =   real other income from nonlabor sources. Sum of income from interest, dividends and
          current transfers. Annual data was converted to quarterly data using a cubic spline.

ypen =   real government pension payments (National Superannuation) per person aged 60 and
          over, derived from Statistics NZ (SOWA). Annual data was converted to quarterly
          data using a cubic spline.

III. Monetary Policy and Uncertainty in the Unemployment-Inflation Process: How Aggressively Should Policymakers Experiment to Find the NAIRU?[1]

A. Introduction

1.   In countries enjoying subdued inflation, such as Australia, monetary policy faces the challenge of deciding how much the economy can be allowed (or induced) to expand without permitting the unemployment rate to fall significantly below the nonaccelerating inflation rate of unemployment (NAIRU). The challenge is magnified by the fact that econometric estimates of the NAIRU are very imprecise.[2]

2.   In the ongoing debate over monetary policy strategies, some economists have suggested that "experimentation" with pushing unemployment lower can yield more accurate information about the NAIRU and therefore potentially raise welfare by allowing policymakers to move the economy closer to the NAIRU without compromising inflation performance. In Australia's case, the current unemployment rate is only about ½ percentage point above the median estimate of the NAIRU, so the issue is potentially of significant policy relevance. The uncertainty associated with the level of the NAIRU in Australia—which is likely to have been affected to some degree by recent labor market reform—compounds the dilemma faced by policymakers.

3.   How aggressive should policymakers be in experimenting to find the NAIRU? The answer depends on an assessment of the possible macroeconomic consequences and welfare costs of allowing the unemployment rate to fall below the NAIRU. Such an assessment in turn depends critically on how the unemployment-inflation process is modeled. The analysis in this chapter assumes a convex Phillips curve relationship between inflation and unemployment. It also treats policy credibility as imperfect and endogenously related to the monetary authorities' success in delivering low inflation.

4.   Section B of this chapter summarizes the model that is used in Section C to undertake stochastic simulation experiments comparing macroeconomic performance under alternative monetary policy reaction functions. The chapter illustrates the relative attractiveness of a base-case rule in which the monetary authorities react to deviations of an inflation forecast from target and deviations of the unemployment rate from the NAIRU, as well as to the degree of bias in inflation expectations (or the degree to which policy credibility is imperfect). The presence of NAIRU uncertainty and endogenous policy credibility magnifies the gains from

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[1]This chapter was prepared by Peter Isard and Douglas Laxton. The chapter was presented at a seminar during the 1998 Article IV consultation mission to Australia, and the authors are grateful to the participants and discussants for helpful comments and suggestions.

[2]Staiger, Stock, and Watson (1997) provide perspectives on the degree of imprecision.

pursuing an inflation-forecast targeting strategy—that is, a strategy which tightens (loosens) policy whenever forecast inflation is above (below) the target—relative to a conventional inflation targeting strategy—that is, a strategy which adjusts policy as a result of deviations between actual (as opposed to forecast) and target inflation.

5.   Section D turns to the issue of experimentally probing for the NAIRU. The results of some additional stochastic simulations suggest that modest experimental departures from a relatively attractive policy rule would not substantially improve macroeconomic performance. In other words, adding noise to the economy through experimentation does not substantially improve the authorities' ability to identify the NAIRU, given the amount of noise to which the economy is already subjected.

6.   Section E presents some simulations designed to gauge the potential benefits from improving the transparency of monetary policy. To do this, it takes the view that when the authorities are less than fully transparent about their policy performances, reaction function, or model of the economy, this can undermine policy credibility and thereby contribute to a bias in the public's inflationary expectations, i.e., a gap between those expectations and the authorities' target inflation rate. The simulation exercise attempts to evaluate the cost of this expectations bias, and the potential benefits from improving transparency. The analysis suggests potentially large welfare gains associated with eliminating inflation expectations bias.

7.   Section F provides concluding remarks.

B. A Model of the Australian Unemployment-Inflation Process

8.   The analytical frameworks that have been developed for addressing monetary policy issues for an open economy like Australia traditionally assume that the authorities control a short-term interest rate (rs) with the objective of influencing the rates of inflation (π) and unemployment (u). Changes in the policy instrument are transmitted to the policy target variables through several channels. Adjustments in the nominal interest rate can trigger movements in the nominal exchange rate (s), which are transmitted fairly directly to tradable goods prices and inflation and indirectly to unemployment through their effects on the real exchange rate (z) and the gap (y) between actual and potential domestic output. Changes in the nominal interest rate also affect the real interest rate ($rs - \pi^e$), both directly and through the response of inflation expectations (π^e). Changes in the real interest rate in turn influence unemployment through their effects on aggregate demand and the domestic output gap; and changes in the output gap and unemployment rate influence the inflation rate through channels summarized by the Phillips curve. In addition, important feedback mechanisms are at work over time, with inflation expectations responding to the history of inflation and inflation influenced in turn by changes in inflation expectations. The role of monetary policy in such models is to react to observed and anticipated changes in unemployment, inflation, and other

macroeconomic variables, taking account of the behavioral relationships among these variables.

9.   In reality, the operation of monetary policy is greatly complicated by two types of uncertainties: imperfect information about the magnitudes of the various transmission effects; and difficulties in identifying the effects on macroeconomic variables of various types of economic shocks. In principle, there can be exogenous shocks that directly affect the exchange rate, the observed inflation rate, or the expected inflation rate; and there can be exogenous shifts in the output gap associated with shocks to either aggregate demand or potential aggregate supply.

10.   The operation of monetary policy is also complicated by the fact that policy credibility is imperfect and can vary with the effectiveness of the monetary authorities in achieving desirable outcomes for policy target variables. The endogeneity of policy credibility and its role in the monetary policy transmission mechanism has not yet been adequately incorporated into the models that have been used to analyze monetary policy issues. The analysis in this chapter relies on a model of the Australian unemployment-inflation process that has been developed in Isard and Laxton (1998) and Isard, Laxton, and Eliasson (1998). It is an empirical model that features endogenous policy credibility, convexity in the Phillips curve, as well as uncertainty about the NAIRU. Important features of the model are that policy credibility depends upon the historical track record on inflation and that policy errors can result in a significant bias in inflation expectations. In addition, because the model embodies a convex Phillips curve, the average unemployment rate will be lower if policymakers are relatively successful at stabilizing the business cycle.

C. Comparisons of Policy Rules Under NAIRU Uncertainty

11.   In recent years, formal analysis of monetary policy strategies has identified various classes of policy reaction functions with "inflation targeting" or "inflation-forecast targeting," broadly defined as strategies in which the monetary policy instrument—most typically a short-term interest rate—is adjusted in response to, but not necessarily only in response to, deviations of the inflation rate (or an inflation forecast) from an explicit target. Under one prominent class of reaction functions, advocated by Taylor (1993) among others, the interest rate setting is linked to both the deviation of inflation from target and the deviation of the unemployment rate from the NAIRU. Under a second class of rules, proposed by Laxton, Rose, and Tetlow (1993), the interest rate setting is conditioned by an inflation forecast (relative to target), rather than the most recently observed inflation rate. Haldane and Baltini (1998) and others have referred to these as *inflation forecast based* or IFB rules.[3]

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[3]Forward-looking IFB rules have been used for almost a decade at the Bank of Canada to solve nonlinear macroeconomic models designed for policy analysis.

12.   As Taylor (1993) was careful to emphasize, "simple, algebraic formulations of . . . [policy] rules cannot and should not be mechanically followed by policymakers," (page 213). But analysis of the hypothetical performance of mechanical rules within simple but fairly realistic macroeconomic models can nevertheless provide valuable guidance about the general types of policy reactions that are likely to be effective for achieving and maintaining macroeconomic stability in the real world.

13.   From that perspective, this chapter describes some stochastic simulation experiments that support the following contentions:

- First, in a world with NAIRU uncertainty and imperfect policy credibility, conventional inflation-targeting strategies (Taylor rules) are likely to be significantly outperformed by inflation-forecast targeting strategies (IFB rules). In other words, there are gains to reacting to deviations of projected inflation from target rather than to actual inflation from target.

- Second, the interest rate setting should depend not only on deviations of the inflation forecast from target and the unemployment rate from the NAIRU, but also be positively related to—and thus designed to counteract—the degree of bias in the public's inflation expectations, or the degree to which policy credibility is imperfect.

- Third, although policymakers' estimates of the NAIRU may be highly inaccurate, a rule that places some weight on the estimated unemployment gap can be beneficial.

14.   The two classes of candidate rules that are considered—IFB rules and Taylor rules—can be respectively written in the general forms:

$$rr_t = rr^* + \alpha(\hat{\pi}_{t+3} - \pi^{TAR}) + \beta(E_t\pi4_{t+4} - \pi^{TAR}) + \gamma(\bar{u}_t - u_t) \qquad (1)$$

$$rr_t = rr^* + \alpha(\pi_t - \pi^{TAR}) + \gamma(\bar{u}_t - u_t) \qquad (2)$$

where

$$rr_t = rs_t - E_t\pi4_{t+4} \qquad (3)$$

Here rs_t is the nominal interest rate setting at time t; rr_t is the concept of the real interest rate on which aggregate demand depends; $E_t\pi4_{t+4}$ denotes the public's expectations at time t of the

inflation rate over the year ahead;[4] rr^* is a constant corresponding to the equilibrium real interest rate; π^{TAR} denotes the target rate of inflation; $\hat{\pi}_{t+3}$ is the authorities' model-consistent forecast of inflation in quarter $t+3$, based on information through quarter t-1; π_t and u_t denote the rates of inflation and unemployment in period t; and $\bar{u}_t$ is the authorities' estimate of the NAIRU based on observed data through period t-1.

15.   The two right-hand side terms in equation (2), and the first and third terms in equation (1), are relatively traditional components of proposed policy reaction functions, corresponding to the deviation of inflation (or the authorities' inflation forecast) from target and the deviation of the unemployment rate from the NAIRU. The second term in equation (1)—the deviation of the public's inflation expectations from the inflation target—reflects the bias in the public's inflation expectations, or the degree to which policy credibility is imperfect.

16.   Table III.1 summarizes the simulation results.[5] Each column corresponds to a different rule, with IFB rules (variants of equation (1)) shown in the first four columns and Taylor rules (variants of equation (2)) in the last two columns. For each rule, the selected parameter values for equations (1) or (2) are described in the top row of the table. The first column represents the base-case rule with $(\alpha, \beta, \gamma) = (1,1,1)$. The second and third columns present examples of inflation-forecast targeting strategies under which the interest rate is set independently of the degree of the bias in inflation expectations; in column 2, α and γ have the same values as in column 1, while in column 3, $\alpha + \beta$ and γ have the same values as in column 1. The fourth column shows an IFB rule with no weight on the unemployment rate. The fifth column shows an inflation-targeting rule with relatively low weight on the inflation rate, as initially suggested by Taylor (1993) in the U.S. context, while the sixth column shows a Taylor rule with more weight on inflation.

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[4]The original Taylor rule used a backward-looking measure of inflation expectations to measure the real interest rate.

[5]The model used and the simulation methodology are described in Isard and Laxton (1998).

Table III.1. Stochastic Simulations with Selected Policy Rules

	IFB Rules $(\alpha, \beta, \gamma)^1$				Taylor Rules $(\alpha, \gamma)^2$	
	Rule 1: (1,1,1)	Rule 2: (1,0,1)	Rule 3: (2,0,1)	Rule 4: (1,1,0)	Rule 5: (.5,1)	Rule 6: (1,1)
				Sample Means		
u	7.50	7.12	7.53	7.57	7.82	7.82
π	2.60	2.95	2.63	2.52	4.01	3.20
π^e	2.70	3.22	2.76	2.63	4.43	3.53
c	0.90	0.75	0.87	0.87	0.54	0.70
$r - \pi^e$	2.24	2.35	2.25	2.17	2.46	2.42

17.   Under the two Taylor rules, the means for unemployment and inflation significantly exceed their respective means under the IFB rules. By the same token, the average level of credibility (c) is lower under the Taylor rules, and the mean of inflation expectations (π^e) is higher.[6] Part of the explanation lies in the different weights that the different rules place on inflation or the inflation forecast; the best inflation performances are achieved under rules 1, 3, and 4, which place a combined weight of 2 on inflation objectives ($\alpha + \beta$), while the worst performance comes from rule 5, which gives inflation a weight of 0.5. But a comparison of rules 2 and 6, which place the same weights on both unemployment and inflation variables, illustrates the significant gains from policies that react to an inflation forecast rather than current inflation. Rule 2 delivers lower average values for unemployment, inflation, and expected inflation, as well as a higher average level of credibility.

18.   Some intuition for these results starts with the recognition that with considerable uncertainty about the NAIRU, policymakers are bound to make significant, and possibly persistent, errors in estimating the unemployment gap. Given that the Phillips curve transmits errors about the unemployment gap into inflation, the greater the uncertainty that surrounds estimates of the unemployment gap, the stronger should be the policy reaction to inflation relative to unemployment. Moreover, imperfect policy credibility and convexity in the Phillips

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[6]Policy credibility, c, is modeled as a stock that depends on the historical performance of the central bank in controlling inflation.

curve increases the costs of responding slowly to emerging inflation, thus magnifying the advantages of inflation-forecast targeting over conventional inflation targeting.

19.   The simulations suggest benefits from policy rules that place some weight on unemployment, however. A comparison of columns 1 and 4 speaks to this point. In particular, the base-case rule (column 1) achieves a lower mean unemployment rate than a rule that places no weight on the unemployment gap but is otherwise comparable (column 4). This does not necessarily imply, however, that the base-case rule dominates the rule shown in column 4, since the latter rule delivers a lower mean inflation rate.

20.   A comparison of Rule 1 and Rule 2 illustrates the potential tradeoff that policymakers face between inflation control and minimizing the level of unemployment. Policies that place a large weight on inflation and inflation expectations relative to unemployment—Rule 1—will experience better inflation performance and higher levels of policy credibility but at the cost of higher unemployment.

D. Are There Gains from Experimentation?

21.   Are there gains from experimenting with lower unemployment for purposes of pinpointing the NAIRU? In this section, the issue is explored under the assumption that monetary policy is guided—absent experimentation—by the base-case inflation-forecast targeting rule above, namely, equation (1) under the settings $(\alpha, \beta, \gamma) = (1, 1, 1)$.

22.   Traditional thinking, linked to an important contribution by Brainard (1967), suggests that monetary policy should deal with uncertainty by exercising more caution in adjusting policy in response to shocks. By contrast, a new line of thinking hypothesizes that well-designed experimental adjustments of policy instruments may enable monetary authorities to reduce their uncertainty about key variables such as the NAIRU. Wieland (1996), for example, has argued the case for modest experimentation to pinpoint the NAIRU.

23.   The experimentation undertaken in this section takes the form of deviations from rule-based policy settings, with the random probing oriented exclusively toward stimulating the economy and confined to periods during which the observed inflation rate lies below a specific threshold. The reason for defining experimentation in terms of random deviations from a policy rule, rather than deviations with nonrandom magnitudes linked to observed economic variables, is that the latter design would simply be equivalent to experimenting with a different policy rule.

24.   Experimentation is incorporated into the simulation framework by adding the term $EXPER_t$ to equation (1), where

$$EXPER_t = \begin{cases} \omega \; EXPER_{t-1} - ABS(\theta_t) & \text{if } \pi4_{t-1} < 2.5 + \lambda \\ 0 & \text{otherwise} \end{cases} \tag{4}$$

The term $2.5 + \lambda$ represents the threshold for the four-quarter inflation rate ($\pi4_{t-1}$) below which the authorities undertake experimentation; θ_t is drawn randomly from a normal distribution with zero mean and prespecified variance σ_θ^2, and ABS (θ_t) is the absolute value of θ_t. Note that EXPER is always less than or equal to zero, and that by assigning a magnitude to the parameter ω, the experimentation process can be defined to exhibit a specific degree of persistence.

25.   None of the experimentation outcomes succeeded in lowering the means of both the unemployment and the inflation rates. The result, however, suggested that experimentation could lead to small declines in average unemployment at the cost of small increases in average inflation, and in association with declines in average policy credibility. One simulation exercise suggested that reducing the average unemployment rate by 0.02 percentage points (say from 7.51 to 7.49) comes at the cost of raising the average inflation rate by more than 0.1 percentage point (from 2.6 to above 2.7 percent). This finding suggests that society would need relatively strong preferences for lower unemployment (at the margin) for experimentation to be welfare enhancing.

26.   By suggesting that any prospective gains from experimentation are relatively small, these simulation results suggest that experimental probing for the NAIRU does not warrant serious attention from policymakers. Put differently, it would appear that adding noise to the Australian economy through random experimentation would not significantly improve the authorities' ability to identify the NAIRU, given the level of noise to which the economy has historically been subjected. This further suggests that a strategy that continuously updates measures of the NAIRU based on new information about inflation and unemployment is more appropriate than policies that continuously "test the waters" and probe for lower unemployment rates.

E. The Gains from Transparency

27.   Economists have only just begun to try to analyze the gains from monetary policy transparency in formal models. In particular, Faust and Svensson (1998) have provided a formal analysis in which transparency is taken to connote the degree to which the public is able to infer the monetary authorities' intentions, formally defined as the share of the monetary authorities' control errors that the public can "observe."

28.   An attempt to extend the formal analysis of transparency is beyond the scope of this chapter. In the spirit of the Faust-Svensson definition, however, stochastic simulations are undertaken to illustrate the prospective gains from increasing transparency. The degree to which transparency is imperfect is proxied here by the inflation expectation bias, i.e., the gap between expected and target inflation. The argument would be that raising transparency about the authorities' policy preferences, reaction function, and model, would raise policy credibility and in time cause the public's expectations about inflation to converge to the authorities' inflation target, thus eliminating the bias. Raising transparency is thus equivalent in the context of the simulations undertaken in this section to reducing or eliminating the inflation expectation bias.

29.   Table III.2 presents stochastic simulations for the base-case IFB rule defined above and a Taylor rule. For each rule, the first column of simulation results is replicated from Table III.1, while the second set of results shows the implications of removing the bias term. The gains from extinguishing inflation expectations bias are shown in the third and sixth columns of the table. The difference in the average unemployment rate is 19 basis points under the IFB rule and 63 basis points under the Taylor rule; the difference in the average inflation rate is more than 1 percentage point under the Taylor rule. The gains from extinguishing inflation expectations bias are thus potentially quite significant.[7]

Table III. 2. The Costs of Inflation Expectations Bias

	IFB Rule (1.0, 1.0, 1.0)[1]			Taylor Rule (0.5, 1.0)[2]		
	$b \neq 0$	$b = 0$	Difference	$b \neq 0$	$b = 0$	Difference
	Sample Means					
u	7.50	7.32	-0.18	7.82	7.19	-0.63
π	2.60	2.60	+0.00	4.01	2.80	-1.21
π^e	2.70	2.58	-0.12	4.43	2.76	-1.67
$r-\pi^e$	2.24	2.16	-0.08	2.46	2.10	-0.36

[1]Derived from Equation 1.
[2]Derived from Equation 2.

[7]Green (1996) provides a recent discussion of related issues, which suggests that transparency about the policy framework, and the enhanced accountability that goes with it, can substantially increase the credibility of policy and reduce inflation expectations bias.

F. Conclusions

30.   This chapter has focused on the implications of NAIRU uncertainty for monetary policy, a topical issue at present in Australia, given the imprecision of most estimates of the NAIRU. Stochastic simulations have been employed to compare the attractiveness of different forms of inflation-targeting strategies and to consider the case for adjusting interest rates experimentally to gain information about the NAIRU.

31.   In evaluating monetary policy strategies, the chapter has compared the conventional inflation-targeting rules suggested by Taylor (1993) with forward-looking inflation-forecast based rules (i.e., rules that adjust policy to deviations between projected and target inflation rather than between actual and target inflation). The stochastic simulations suggested that IFB rules were relatively more effective in maintaining policy credibility and delivering low average rates of both unemployment and inflation.

32.   The chapter also analyzed the case for experimenting with lower unemployment as a strategy for trying to reduce uncertainty about the NAIRU. The stochastic simulations indicated that experimental departures from a relatively attractive inflation-forecast targeting rule would not substantially improve macroeconomic performance. This result was interpreted as suggesting that adding noise to the economy through random experimentation did not substantially improve the authorities' ability to identify the NAIRU, given the amount of noise to which the economy was already subjected. Modest experimentation could succeed in reducing the average unemployment rate very slightly at the cost of somewhat higher inflation, but this would only be welfare enhancing if society placed a very high value on marginal reductions in unemployment relative to marginal increases in inflation.

33.   As a final exercise, this chapter attempted to shed some light on the issue of the transparency of monetary policy and the potential gains from improving transparency. To model this issue, it was assumed that increasing transparency about the authorities' policy preferences, reaction function, and model of the economy could raise policy credibility and thereby reduce what the chapter referred to as inflation expectations bias, i.e., the gap between the public's expected inflation rate and the authorities' target for inflation. The simulation results suggested a potential for significant welfare gains from eliminating inflation expectations bias and increasing transparency.

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IV. IMPACT OF THE ASIAN CRISIS AND THE JAPANESE DOWNTURN ON AUSTRALIA: A SIMULATION APPROACH BASED ON MULTIMOD MARK III[1]

A. Introduction and Summary

1.   The Asian crisis and the downturn of the Japanese economy have had widespread effects in the Asia-Pacific region. The possible channels for the effects on Australia and other noncrisis countries include lower exports (as a result of both diminished domestic demand and a depreciated exchange rate in the crisis countries) and increased competition in third-country markets (as a result of the depreciated exchange rate). On the other hand, a positive impact on the noncrisis countries may arise from the redirection of capital inflows from the crisis countries to the noncrisis countries which may act to boost asset prices and lower interest rates in the noncrisis countries. Another potential effect, which is outside the scope of the model used in this study, may come through changes in commodity prices as a result of lower world demand.

2.   The seven countries most affected by the crisis (Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, and Thailand) account for about 40 percent of Australia's merchandise exports (with Japan accounting for just under 20 percent) and about 25 percent of merchandise imports (with Japan accounting for 13 percent). These countries also account for a significant share of Australia's trade in services, especially tourism receipts. Some of these countries (especially Japan and Korea) are also important competitors of Australia in third-country markets.

3.   This chapter uses an extension of the Mark III version of MULTIMOD to quantify the main effects of the Asian crisis and Japanese slowdown on Australia. The remainder of the chapter is organized as follows. Section B discusses the model and the methodology that is used to measure the major external shocks that have affected the Australian economy. Section C presents the key results, which are obtained by using the change between the projections presented in the (precrisis) May 1997 *World Economic Outlook* and the latest IMF staff projections (as of mid-July 1998) as a measure of the underlying shock.

B. The MULTIMOD Framework and the Simulation Methodology

4.   MULTIMOD is a dynamic multicountry macroeconomic model of the world economy that has been designed to study the transmission of shocks across countries as well as the short-run and medium-run consequences of alternative monetary and fiscal policies. It has several variants, the current versions of which are referred to as the Mark III generation. The core Mark III model includes explicit country submodels for each of the seven largest industrial countries and an aggregate grouping of smaller industrial countries, developing countries, and transition economies. In order to simulate the effects of the Asian crisis, this

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[1]This chapter was prepared by Douglas Laxton and Michael Sarel.

framework has been expanded to include additional individual blocks for Australia, Indonesia, and Korea, and one additional block aggregating Malaysia, Philippines, and Thailand.

5.   The basic structure and properties of MULTIMOD are meant to represent well-established views about how modern industrial economies function and interact with each other.[2] A consistent theoretical structure is employed for all industrial economies, and cross-country differences in the behavior of agents (or the functioning of markets) are reflected in different estimated parameter values. The model converges to a balanced-growth path that is characterized by a full stock-flow equilibrium in which debtor countries service the interest payments on their net external liabilities with positive trade balances. Despite the focus on medium- and long-run properties, MULTIMOD also exhibits important short-run Keynesian dynamics that result from significant inertia in the inflation process. MULTIMOD assumes that behavior is completely forward-looking in asset markets and partially forward-looking in goods markets. The model is solved with state-of-the-art simulation algorithms that have been designed specifically for solving large systems of equations.

6.   Consumption-saving behavior is based on the assumption that agents have finite planning horizons, and a significant proportion of consumption may be constrained by disposable income insofar as households are unable to borrow against future labor income streams. Investment behavior is based on Tobin's q theory, according to which the desired rate of investment exceeds the steady-state rate as long as the expected marginal product of capital is greater than its replacement cost. The model allows for significant adjustment costs.

7.   MULTIMOD has a standard specification of import and export behavior that embodies the notion that countries trade in diversified products. Import volumes are a function of the main components of aggregate demand, with import contents of the different components calibrated on the basis of information from input-output tables. Exchange rates and interest rates are related by an adjusted interest parity condition that can allow for persistent risk premia.

8.   A key assumption in the simulations described below relates to the choice of baseline, which is taken to be the May 1997 (precrisis) *World Economic Outlook* projections. Using MULTIMOD, the magnitude of the shocks in Asia and Japan are gauged using the change between the projections presented in the May 1997 *World Economic Outlook* and the latest IMF staff projections (as of mid-July 1998). These latest projections contain significant changes from those made more than a year earlier. Another assumption used in the simulations was that consumption decisions adjusted only gradually to the full impact of the Asian crisis, given the evolving nature of the crisis during 1997–98.

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[2]For documentation of the Mark III version of MULTIMOD, see *"MULTIMOD Mark III: The Core Dynamic and Steady State Models,"* IMF Occasional Paper No. 164.

C. Assessment of Spillover Effects to Australia

9.   The key results are as follows:

- The combined shocks significantly decrease Australia's exports (compared with the May 1997 baseline). This, combined with a reduction in Australia's domestic demand, results in a reduction in output in Australia of ¾ percent in 1998–99. However, beginning in 2001, the effect on output turns positive in response to an easing in real monetary conditions associated with both lower interest rates and the weaker Australian dollar. Starting in 1999, there is also a modest decline in inflationary pressures relative to the baseline, with the effect of lower domestic demand pressures offsetting that of higher import prices.

- The effect on the current account balance is strongly negative. The current account balance deteriorates by about 2 percent of GDP in 1998–99. However, a simulated depreciation of the real effective exchange rate helps to reduce the current account deficit over the medium term.[3]

- In qualitative terms, the effects on Australia of the Asian crisis and the Japanese recession are similar. However, the Asian crisis' effects are much larger than those of the Japanese downturn (about four times as large) because the magnitude of the shocks in Asia is significantly higher.

- The short-term effects on Australia are much stronger than the effects on any of the major advanced countries. This reflects Australia's stronger trade links with Asia.

10.   The simulation is only illustrative, however, and the response of the main variables will be sensitive to a number of key assumptions. In addition, because factors other than the deterioration in the external outlook associated with the Asian shock will continue to affect Australia's economic performance, the simulation does not provide the basis for a complete economic forecast.

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[3]This depreciation from the model simulation is consistent with the depreciation implied by actual exchange rate movements that occurred through July 1998.

V. FINANCIAL SECTOR REFORM[1]

A. Introduction

1.   Australia's financial system has undergone profound change since the early 1980s, reflecting the effects of rapid technological innovation as well as deregulation measures introduced over 15 years ago. Notwithstanding past reform, however, the financial system remained subject to a wide array of regulations and entry restrictions through the mid-1990s. For example, merger rules in the financial sector were more stringent than in the rest of the economy as were the regulations relating to foreign acquisitions of major financial entities. Moreover, the blurring of lines between banking and other financial institutions had given rise to a perception of inconsistencies in the way institutions were regulated.

2.   To address these and other related issues, the Australian government established an Inquiry in 1996 to recommend ways to update the regulatory framework in light of the changing financial landscape, including the proliferation of participants and financial products. The objectives of the Inquiry included an assessment of the effects of past deregulation, identifying the forces that would shape the future of the financial industry, and developing recommendations for improving the structure of consumer protection legislation. The report of the Wallis Inquiry (named after the chairman Mr. Stan Wallis) was released in April 1997, and the government announced in September 1997 that it would implement most of its recommendations.

3.   The remainder of this chapter is organized as follows. Section B provides some background to the Wallis Inquiry and explains the motivation for it. Section C outlines the key recommendations of the Inquiry, while Section D compares its recommendations to recent changes in financial regulation in other countries. Section E presents some conclusions.

B. Background to the Wallis Inquiry

4.   In 1979, an inquiry into the Australian financial system (the Campbell Inquiry) was established with a wide-ranging brief to recommend regulatory and other changes impinging on the financial sector. Its final report, presented in 1981, recommended four broad sets of changes: liberalization of the foreign exchange system; decontrol of domestic financial markets; strengthening of financial system prudential regulations; and easing of barriers to entry to the financial system.

5.   A majority of the recommendations of the Campbell Report were implemented in the three years following completion of the review. The exchange rate was floated and exchange controls were dismantled in December 1983; interest rates on government securities became market-determined from 1982 onward; quantitative controls on interest rates were largely

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[1]This chapter was prepared by John McDermott.

removed in 1982;[2] and new licenses were issued for foreign banks in 1985. Prudential reforms recommended by the Campbell report were refinements of policies in place at the time—but were mostly implemented by 1986.

6.   The Campbell reforms contributed positively to the growth and efficiency of the financial sector. The main successes included: greater choice and availability of finance at all levels; increased innovation and greater flexibility of services; closer integration with international capital markets; deepening of domestic financial markets; and improved cost efficiency. The legacy of the reforms was, however, more mixed in other areas, including: excessive credit expansion in the mid- to late-1980s, coupled with declining lending standards that exacerbated the effects of the 1991 recession; a rise in poor selling practices for some financial products (such as life insurance products); insufficient price competition between banks (including with respect to home mortgage lending);[3] and, partly related, sizable cost inefficiencies among domestic banks in the key retail and small to medium-size enterprise markets.[4] The latter may have been related to the fact that, by most accounts, Australia is over-banked.[5]

C.   The Wallis Inquiry

7.   The Wallis Inquiry proposals focused on two principal areas: prudential supervision and depositor protection; and competition.

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[2]Although a cap of 13½ percent applied to all housing loans (less than $A 100,000) until April 1986. The cap remains for housing loans taken out before 1986, but market rates (currently less than 7 percent for variable rate loans) are now well below this level.

[3]The sector remains dominated by four Australian banks—Australia and New Zealand Bank, Westpac, the Commonwealth Bank of Australia, and National Australia Bank. This is generally believed to have been a contributing factor explaining the absence of significant price competition in home mortgage lending until the last three to four years, when the entry of nonbank mortgage lenders increased competition significantly.

[4]Over the period 1986–94, Australian banks charged customers the equivalent of 4.3 percent of assets on average for services, slightly less than in the United States and the United Kingdom, but significantly more than in Switzerland, Germany, and the Netherlands.

[5]Australia's branch density of 3.8 branches per 10,000 inhabitants is higher than Canada's—the best comparator of branch density for Australia based on factors such as geography and accessibility of branch substitutes. If Australia had Canada's density of bank branches, there would be approximately 1,000 fewer branches in Australia. Closure of bank branches has accelerated in the last few years, especially in rural areas, partly reflecting the removal of cross subsidies by banks.

Prudential supervision and depositor protection

8.   The principal change to the system of prudential supervision results from the establishment of a single regulatory body, the Australian Prudential Regulation Authority (APRA), to assume responsibility for the supervision of all deposit-taking institutions, as well as super funds and life offices, with traditional supervision to be reinforced by more public disclosure by financial institutions. APRA will take over the prudential regulatory functions carried out by the Insurance and Superannuation Commission (ISC), and the Reserve Bank of Australia.[6] The move to a single regulatory authority is in line with the Inquiry's recommendation that all financial services should be regulated in the same way, irrespective of whether the provider institution is a bank or credit union.

9.   A second newly established institution, the Australian Securities and Investments Commission (ASIC), is to take over the functions hitherto carried out by the Australian Securities Commission and will now have responsibility for monitoring consumer protection and disclosure integrity.[7] This institution should ensure that Australian consumers face greater consistency with respect to: standards of competence of financial institutions; licensing requirements; disclosure by providers of financial services; access to an efficient complaints resolution mechanism; and policing by a single consumer protection body.

10.   The Reserve Bank, which sheds its prudential responsibilities, will retain responsibility for stability of the financial system, liquidity management, the payments system,[8] and the regulation of payment instruments such as smart cards and electronic cash. The Reserve Bank's powers over the payments system have been enhanced as a result of the establishment—within the Reserve Bank—of a new Payments System Board.[9]

11.   A high level Council of Financial Regulators will further facilitate cooperation and collaboration between the three financial regulators, the RBA, ASIC, and APRA, by extending cooperation across the full range of regulatory functions. While the APRA, ASIC, and the Reserve Bank will have their own responsibilities, there will exist some issues of

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[6]APRA will also, subject to the final agreement by State and Territory governments, assume the prudential regulation of the Australian Financial Institutions Commission (AFIC), which is currently run by those governments.

[7]ASIC will also take over these functions from ISC, RBA, and subject to agreement by governments, AFIC.

[8]Which allows for the transfer of funds by check, money order, credit card, and automatic teller machines.

[9]This board will be a second board of the Reserve Bank, operating in parallel with the main Reserve Bank Board.

common interest, for example, where the financial distress of an institution threatened either payments or financial system stability. Information sharing, coordination on some activities, and cross-Board representation in the APRA and the Reserve Bank will be helpful in addressing these issues. In addition, a Financial Sector Advisory Council, consisting of representatives from the private financial sector, will advise the Treasurer on financial sector policy, and provide information on developments within the financial sector.

12.   The rationale for the amalgamation within the APRA of functions previously carried out by separate institutions relates to the notion that the growing trend toward financial conglomerates, as well as an increased blurring across products and institutional boundaries, makes the traditional distinction between financial institutions less relevant. Broadly speaking, in the past, financial institutions could be categorized by the type of contract they made with investors. Those deposit-taking institutions that bore the risk (for example, banks) required an entirely different form of supervision from institutions that offered to manage investors' money on a "best endeavors" basis (for example, retirement savings and mutual funds), where the risk of loss lies with the investor.

13.   With institutions increasingly offering both types of contracts to investors, the need for different forms of supervision diminished. Nowadays, there is a considerable degree of overlap in the services offered by deposit-taking institutions, insurance providers, and superannuation funds, with a number of closely substitutable products emerging across the spectrum of banking and life insurance businesses. Some savings products now offered by life insurance companies have checkbook and card access facilities, while banks are increasingly moving into the superannuation business.[10]

14.   However, the traditional distinction does partly remain. Nonsuperannuation investments will be regulated by ASIC. Only those investment funds which provide superannuation facilities will come within the responsibility of the APRA. The decision to make the APRA responsible for supervising superannuation funds was influenced heavily by the compulsory nature of superannuation in Australia. The authorities took the view that people being required to save for retirement were entitled to a heightened level of assurance that their savings would be available down the road.

15.   Existing depositor protection provisions will be retained under the Banking Act, but will be extended to all licensed deposit-taking institutions, as opposed to just banks (as hitherto). Although there is no funded deposit insurance scheme in Australia, depositors will continue to have first call on the assets of an institution in the event of liquidation. The rationale for giving depositors first call on the assets of a failed financial institution, rather than adopting a formal deposit protection scheme, is that, in the Inquiry's view, this provides

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[10]Although to date, the checkbooks and cards offered by insurance companies have been as agencies for banks. Two insurance companies now own banks (one of these acquired a bank two years before the Wallis Inquiry).

a sufficient level of depositor protection, while avoiding moral hazard issues associated with explicit deposit insurance. Moral hazard problems may also be lessened by the fact that in contrast to the central bank, the APRA has no balance sheet with which to reimburse depositors.

16.   The reason for extending similar arrangements to all deposit-taking institutions (as opposed to just banks, as under the previous regime), is that any competitive advantage that banks have gained in the past from the perceived greater safety of their deposits would be removed. The new arrangement would thus put all deposit-taking institutions on a more even footing.

17.   Measures were introduced to enable the APRA to intervene more effectively in problem institutions. In particular, existing depositor protection mechanisms under the Banking Act (1959) have been strengthened to allow for earlier intervention and clearer mechanisms for taking control of problem institutions in the event that this became necessary.

Competition

18.   The Inquiry was concerned about the lack of competition in financial services in Australia, and the resulting inefficiencies and relatively high costs. To address such issues, the Inquiry recommended a number of changes, including: an accelerated shift to electronic commerce and transaction services; simplification of disclosure and licensing requirements; fostering greater competition between banks and nonbanks; and opening the door to efficiency-enhancing mergers among the large banks.

19.   One significant reform aims to improve the competitive position of nonbanking institutions by providing a framework for broader access to the payments system, and thereby allowing them to compete more effectively with banks. Building societies and credit unions, for example, will now be able to have exchange settlement accounts at the Reserve Bank, and will therefore be able to settle in their own right, rather than using a bank as agent. In addition, companies outside the financial sector—such as American Express, Australia Post, and Telstra (Australia)—will be allowed to sell new financial services. As a result, the state-owned Australia Post will have the potential to capture a significant share of the banking services market in rural areas, where many banks have closed branches in the rationalizations of the mid-1990s.

20.   Even before the Wallis Inquiry reforms, however, there had been a growing number of nonbanks providing deposit, and deposit-like services, as well as loans in competition with banks. The impact of this growing competition has been a decline in the interest rate spread of the major banks from about 5 percent in the 1980s to just over 3 percent in early 1998. The Wallis Inquiry reforms are likely to further bolster competitive pressures, as evidenced, for example, by the recent announcement that several nonbanks will provide many banking services with low or zero-associated fees and charges.

21.   A further measure aimed at improving competition is to make merger rules in the financial sector the same as those that apply in the rest of the economy. Formally, this is to be accomplished by requiring that the provisions of the Trade Practices Act govern mergers among financial institutions, just as it does elsewhere in the economy. While the high concentration of banking services in Australia may place an obstacle to intended mergers, mergers could potentially be authorized if there were a sufficient public benefit, including through efficiency gains and cost reductions. This said, in April 1997, the government indicated that mergers among the four large banks would not be permitted until competition had increased sufficiently.[11] Any increase in a person's stake in a financial sector company over 15 percent is subject to the Treasurer's approval on national interest criteria under the Financial Sector (Shareholdings) Act 1998.

22.   The government accepted the Inquiry's recommendation in relation to potential foreign acquisitions of major financial entities. General foreign investment rules under the Foreign Acquisitions and Takeovers Act will henceforth apply to the financial system (as it does to other sectors), which usually means that foreign acquisitions will be approved unless judged to be contrary to the national interest.[12] However, the government stated that it will apply the principle that any large scale transfer of Australian ownership of the financial system to foreign hands would be contrary to the national interest.

D.   International Best Practice

23.   The government adopted the Wallis Inquiry recommendations as part of its drive to make Australia a world leader in financial sector regulation. Similar views on the future of regulation are increasingly being promoted elsewhere, and the government's decision fits an emerging international consensus on the need to reform the manner in which financial services are regulated.

24.   Over the past decade, a number of countries have moved toward the amalgamation of financial regulators. Prudential regulation of banking, insurance, and pension funds was combined in Canada in 1988; Denmark in 1990; Norway in 1986; and Sweden in 1991. More recently, the United Kingdom has gone further than the Wallis report's recommendation on prudential supervision, by merging all regulatory functions into a single regulator. Also, in the United States, the Securities and Exchange Commission (SEC) has argued for the need to update financial services regulation as distinctions between banking and other financial services have become increasingly blurred.

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[11]The so-called "six pillars" policy, which prohibited mergers among the four largest banks and two largest insurance companies, was replaced by a new "four pillars" policy, banning mergers among the four largest banks until competition increased sufficiently.

[12]Precise criteria for approval were not provided, however.

25.   While some amalgamations of financial regulators have occurred in response to concerns raised by failures of financial institutions, others have reflected perceptions that the convergence of banking, insurance, and securities businesses requires their supervision to be better integrated. A number of countries have bodies separate from the central bank that are responsible for the prudential regulation of banks (Canada, Denmark, Germany, Japan, Norway, Sweden, Switzerland, and the United Kingdom). The advantage of this arrangement has been to remove the potential conflicts between prudential regulation and the macroeconomic policy objectives of the central bank.

E. Conclusion

26.   The Wallis Inquiry into the financial system was a pioneering initiative to assess the implications of global trends in finance for the regulatory structure of the financial system. Implementation of these reforms will lift Australia to the forefront of international standards in prudential supervision and the regulatory reforms may expose the sector to greater competitive pressures from both overseas and domestic nonbank financial institutions, while helping to promote growth in the provision of financial services.

27.   The concentration of responsibility for regulation and oversight in a single agency—the APRA—is an appropriate step, given the increased integration of the different subsectors of the financial system, and the blurring of distinctions between activities in these markets. The different institutions will work closely together, sharing information that is relevant for prudential and financial systems stability reasons. In particular, with the Reserve Bank retaining responsibility for payments system stability and policy, it will necessarily continue its intensive monitoring of financial institutions which will be facilitated by ready access to the relevant information from the APRA.

28.   Competition should be enhanced by allowing nonbanks to gain access to the payments system; and by making merger and foreign investment rules for the financial sector consistent with those applying to the rest of the economy.

VI. Tax Reform Proposal of August 13, 1998[1]

1.   This chapter describes the main elements of the Australian government's tax reform proposal which was announced on August 13, 1998 and would become effective in 2000/01. It also outlines the main impact of the tax reform proposal on the budgetary positions of the Commonwealth and States.

A. The Main Features of the Package

2.   A goods and services tax (GST)—based on the value-added-tax model—would be introduced in July 2000 and levied at 10 percent. The GST would apply to most goods and services, including food and clothing. However, a number of goods and services would not be subject to GST, including education, health, child-care services, noncommercial activities of charities, local government charges, and exports.[2] The GST would replace the wholesale sales tax (which currently excludes services and has many rates) and several of the States' and territories' inefficient indirect taxes, including the financial institutions duty; the debit tax; business stamp duties; accommodation taxes; and business franchise fee replacement taxes. The government has proposed that the rate could only be changed at the unanimous request of the six States and two Territories and with the approval of both houses of the federal parliament, in order to address public concerns that the GST rate would be increased following its introduction.

3.   Personal income tax rates would be cut. Marginal income tax rates would be reduced, with the 34 percent and 43 percent rates falling to 30 percent (Table VI.1). Some 80 percent of taxpayers would face a marginal tax rate of no more than 30 percent, thereby improving incentives to work and save. The top marginal tax rate, however, would remain unchanged at 47 percent, but the income level at which it applies would be increased significantly. Furthermore, effective marginal tax rates for many families would be cut from 85½ percent to 61½ percent (including Medicare levy), due to the income tax cuts and a reduction in the child benefit withdrawal rate for extra income earned.

4.   Commonwealth-State financial relations would be overhauled, with State and Territory governments receiving all the GST revenue. This revenue would fully compensate the states for the loss of revenue from the abolition of some indirect taxes and would replace general-purpose grants from the Commonwealth, giving the states a more reliable and buoyant

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[1]This chapter was prepared by Ray Brooks and John McDermott.

[2]These activities will be known as "GST-free," i.e., they will be zero-rated but credit will be allowed for GST paid on inputs. In addition, financial services, housing, and rent will not be subject to GST but tax would be paid on inputs.

source of revenue.[3] Individual state governments would receive GST in accordance with an allocation formula that reflects their capacities and needs, similar to the formula currently used to allocate grants. Commonwealth government funding for local governments would be discontinued with the states required to provide adequate funding.

5.   Budgetary assistance to families, the aged, and those receiving social security benefits would be increased. Additional family assistance would take the form of higher tax-free thresholds for single-income families and allowing more income to be earned before family tax benefits are withdrawn (thereby reducing work disincentives). In addition, the delivery of family assistance, which currently includes an array of schemes, would be simplified. Overall, the combination of personal tax cuts and increased family assistance implies that middle-income families would receive increases in real disposable income ranging from 2 percent to 10 percent (after adjusting for the impact of GST). The package would also deliver increased assistance to all recipients of pensions and other social security benefits (such as disability support pensions and sickness allowances). Such government income support would be increased by 4 percent, around twice the estimated impact of the tax reform package on consumer prices. In addition, the aged would receive one-off "saving" bonuses of up to $A 3,000 as compensation for the GST eroding the purchasing power of their retirement funds.

6.   Private health insurance coverage would be encouraged. A 30 percent tax rebate or benefit would apply to health insurance premiums paid by all families and individuals, with no means testing. The rebate/benefit would apply from January 1, 1999.

7.   Complicated business taxes would be simplified. Several payment systems would be amalgamated into one system, with the provisional tax system replaced by a "pay-as-you go" system based on a single quarterly tax payment for most businesses. Other changes would include mandatory franking of dividends,[4] refundability of imputation credits for resident individuals and pension funds, and a consistent tax regime for companies, cooperatives, life insurance companies, discretionary trusts, and unit trusts. The government would also hold consultations with the business sector on further company tax reform with the possibility of reducing the capital gains tax and lowering the company tax rate from 36 to 30 percent, subject to the need to maintain revenue neutrality.

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[3]State governments would be required to pay a fee to the Commonwealth government for collecting the GST.

[4]Tax paid by the company (currently at a rate of 36 percent) is imputed to shareholders by way of imputation credits attached to dividends paid out of after-tax profits. These are known as franked dividends. Under the proposed full franking system, all distribution of profits would be franked, in contrast with the present system where dividends paid from tax-preferred profits are unfranked.

8.   Tax administration would be improved. Antiavoidance provisions, targeted in particular at trusts, will be implemented immediately.

B. Impact on the Commonwealth and State Budgets

9.   The proposed package involves budgetary costs, as a result of lower tax revenue and higher payments to families and the aged. The authorities project that Commonwealth government surpluses would be lowered by about ¾ percent of GDP in 2000/01 and 2001/02 and by about 1 percent of GDP in 2002/03 and beyond.

10.   In the first year of the tax changes (2000/01), Commonwealth government revenue from personal income tax would fall by almost 2 percent of GDP due to the lower marginal income tax rates and higher income tax thresholds. This would be partly offset by extra revenue collected from businesses, largely as a result of the shift to "pay-as-you-go" tax payments, and an increased tax take due to better administration.

11.   The Commonwealth's indirect tax revenue would also fall. The abolition of wholesale sales tax would lower indirect tax revenue by more than 2 percent of GDP. This would be partly offset by taxes on cigarettes, alcohol, and petrol that were previously collected by the Commonwealth and paid to the states, but will now revert entirely to the Commonwealth.

12.   Overall, the Commonwealth's revenue would fall by more than 2½ percent of GDP in 2000/01, while outlays would fall by about 1¾ percent of GDP as a result of the reforms. Outlays would be lower primarily because of the abolition of general purpose grants to the States, but this would be offset in part by the increased assistance to families, the aged, and social security beneficiaries.

13.   State tax revenues would rise by almost 3 percent of GDP because of the GST, offset in part by the abolition of some indirect taxes. The abolition of Commonwealth grants to State and local governments, however, would leave the overall State financial position approximately unchanged.

Table VI.1. Australia: Proposed New Income Tax Rates

The New Scale		The Old Scale	
Taxable Annual Income (In Australian dollars)	Tax Rate (In percent)	Taxable Annual Income (In Australian dollars)	Tax Rate (In percent)
0 – 6,000	0	0 – 5,400	0
6,001 – 20,000	17	5,401 – 20,700	20
20,001 – 50,000	30	20,701 – 38,000	34
50,001 – 75,000	40	38,001 – 50,000	43
75,001 plus	47	50,001 plus	47

Source: Australian Treasury.

INTERNATIONAL MONETARY FUND

AUSTRALIA

Statistical Appendix

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Approved by Asia and Pacific Department

August 28, 1998

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Table 1. Australia: Selected National Accounts Aggregates at 1989/90 Prices, 1992/93-1997/98 1/

	1992/93	1993/94	1994/95	1995/96	1996/97	Sep. Qtr.	Dec. Qtr.	Mar. Qtr.
						1997/98		
	(In billions of Australian dollars)							
Private consumption	233.2	241.3	253.3	263.7	270.3	69.4	70.6	70.6
Government consumption	65.7	67.4	69.4	71.7	72.9	18.6	18.6	18.3
Gross fixed capital formation	80.3	84.6	93.6	96.0	104.1	28.1	28.4	28.4
Private business investment	35.9	38.2	44.1	50.6	59.5	16.3	15.9	17.8
Equipment	25.4	27.5	32.4	36.2	42.2	12.0	12.0	11.5
Nondwelling construction	10.4	10.8	11.7	14.4	17.3	4.3	3.9	6.3
Residential construction 2/	25.3	28.3	29.0	25.6	26.0	7.2	7.4	7.5
Public sector investment	19.1	18.1	20.5	19.8	18.6	4.5	5.1	3.0
Stockbuilding and work in progress	0.6	1.0	2.4	1.6	-2.1	-1.0	-0.6	2.3
Gross national expenditure	379.8	394.3	418.6	433.1	445.2	115.1	117.0	119.5
Exports of goods and services	78.2	86.0	89.8	99.1	109.2	29.3	28.4	27.8
Imports of goods and services	70.8	76.3	90.0	95.6	107.1	29.5	29.8	30.7
Net exports	7.4	9.7	-0.2	3.5	2.0	-0.2	-1.4	-2.9
Statistical discrepancy	-3.9	-3.1	2.5	0.4	4.8	0.8	0.7	1.8
Gross domestic product								
Income	383.3	400.9	420.9	437.0	452.0	115.7	116.3	118.3
Expenditure	387.2	404.0	418.4	436.6	447.2	114.9	115.6	116.6
Production	383.0	401.0	419.4	436.3	449.5	115.4	116.4	117.9
Average 3/	384.5	402.0	419.6	436.7	449.6	115.3	116.1	117.6
	(Percent change from previous year)							
Private consumption	3.0	3.5	5.0	4.1	2.5	3.9	4.6	4.5
Government consumption	1.0	2.5	3.0	3.3	1.7	2.3	2.0	0.4
Gross fixed capital formation	4.6	5.4	10.5	2.6	8.5	12.7	11.5	7.3
Private business investment	6.0	6.6	15.4	14.8	17.5	13.8	10.9	22.5
Equipment	13.1	8.0	18.2	11.7	16.5	22.2	18.9	14.1
Nondwelling construction	-7.9	3.2	8.3	23.6	20.1	-4.6	-8.2	41.7
Residential construction 2/	11.6	11.8	2.5	-11.8	1.9	17.4	18.2	13.4
Public sector investment	-5.6	-5.2	12.9	-3.2	-6.2	2.4	4.4	-43.1
Stockbuilding and work in progress 4/	0.8	0.1	0.3	-0.2	-0.9	-1.5	-0.8	3.0
Gross national expenditure	3.8	3.8	6.2	3.5	2.8	4.0	5.0	7.6
Exports of goods and services	6.0	10.0	4.5	10.4	10.2	13.6	8.1	2.8
Imports of goods and services	7.4	7.8	18.0	6.2	12.1	17.7	12.6	14.2
Net exports 4/	-0.1	0.6	-2.5	0.9	-0.3	-0.8	-1.1	-2.7
Statistical discrepancy 4/	-0.1	0.2	1.4	-0.5	1.0	0.1	-0.8	0.4
Gross domestic product								
Income	3.5	4.6	5.0	3.8	3.4	3.3	3.0	5.1
Expenditure	3.6	4.3	3.6	4.3	2.4	3.2	3.9	4.8
Production	3.3	4.7	4.6	4.0	3.0	4.2	4.3	4.7
Average 3/	3.5	4.5	4.4	4.1	3.0	3.6	3.8	4.9

Source: Australian Bureau of Statistics, *National Accounts* .

1/ Quarterly data are seasonally adjusted. Fiscal year aggregates are cumulated on seasonally adjusted quarterly data.
2/ Includes real estate transfer expenses.
3/ Average of income, expenditure, and production measures.
4/ Contributions to GDP(income) growth, at annual rates.

Table 2. Australia: Sectoral Components of Gross Domestic Product at 1989/90 Prices, 1992/93-1997/98 1/

	1992/93	1993/94	1994/95	1995/96	1996/97	Sep. Qtr. 1997/98	Dec. Qtr. 1997/98	Mar. Qtr. 1997/98
				(In billions of Australian dollars)				
Agriculture, forestry, and fishing	16.0	16.3	13.0	16.1	18.4	4.4	4.4	4.5
Mining	16.8	17.1	17.8	18.7	19.4	5.0	5.2	5.2
Manufacturing	54.8	57.6	59.8	60.5	61.1	15.4	15.2	15.6
Electricity, gas, and water	13.2	13.6	14.0	14.1	14.3	3.6	3.7	3.7
Construction	23.6	25.2	26.7	27.1	28.2	7.1	7.5	7.9
Wholesale and retail trade	63.1	66.7	72.8	76.2	77.9	20.2	19.9	20.1
Communication services	11.2	12.3	13.9	15.8	17.6	4.7	4.9	5.3
Finance and insurance	21.4	22.2	23.1	24.6	26.1	6.7	6.8	7.0
Transport and storage	20.7	22.2	24.0	24.9	25.5	6.6	6.5	6.5
Property and business services	32.2	33.1	35.2	35.5	37.1	10.1	10.2	10.1
Government administration 2/	13.8	14.3	14.9	15.5	15.5	3.9	3.9	3.9
Other sectors	96.2	100.1	104.2	107.4	108.5	27.7	28.0	28.0
Gross domestic product 3/	383.0	401.0	419.4	436.3	449.5	115.4	116.4	117.9
				(Percent change from previous year)				
Agriculture, forestry, and fishing	5.6	2.5	-20.4	23.5	14.3	-2.0	-2.9	-3.8
Mining	1.0	1.4	4.3	5.1	3.5	3.9	6.3	9.4
Manufacturing	1.7	5.1	3.8	1.1	1.1	0.5	0.4	2.8
Electricity, gas, and water	1.9	3.5	2.7	0.4	1.5	2.5	4.9	2.9
Construction	3.8	6.8	6.1	1.4	4.2	2.1	7.9	11.4
Wholesale and retail trade	1.1	5.8	9.1	4.7	2.2	5.5	3.1	3.1
Communication services	13.4	9.8	12.6	13.6	11.8	11.0	13.1	18.5
Finance and insurance	2.4	4.0	3.8	6.7	5.7	5.4	5.9	6.6
Transport and storage	1.4	7.2	7.9	3.7	2.4	5.4	2.5	2.5
Property and business services	8.8	2.7	6.4	0.8	4.3	12.6	11.9	8.3
Government administration 2/	2.4	4.2	4.2	4.1	-0.5	2.1	2.3	0.7
Other sectors	3.9	4.1	4.0	3.1	1.1	3.2	3.7	3.2
Gross domestic product 3/	3.3	4.7	4.6	4.0	3.0	4.2	4.3	4.7
Memorandum item: Gross domestic product at current market prices 4/	408.9	431.6	460.3	492.0	518.1	133.6	135.4	138.1

Source: Australian Bureau of Statistics, *National Accounts*.

1/ Quarterly data are seasonally adjusted. Fiscal year aggregates are cumulated on seasonally adjusted quarterly data.
2/ Includes defense.
3/ Production-based measure.
4/ Income-based measure.

Table 3. Australia: Household Income, Expenditure, and Savings, 1992/93-1997/98 1/

	1992/93	1993/94	1994/95	1995/96	1996/97	Sep. Qtr.	Dec. Qtr.	Mar. Qtr.
							1997/98	
				(In billions of Australian dollars)				
Wages, salaries, and supplements	201.9	211.5	225.8	241.3	258.3	66.4	67.6	68.4
Income from unincorporated farms	2.9	3.6	1.8	4.8	6.3	1.5	1.6	1.4
Income of other unincorporated enterprises 2/	59.5	58.0	68.1	71.9	75.1	19.3	19.7	19.9
Personal benefit payments	46.2	49.1	52.0	55.9	58.8	14.8	15.1	15.1
Other receipts 3/	9.1	10.3	11.5	13.3	14.0	3.4	3.5	3.6
Household income	319.7	332.6	359.2	387.2	412.4	105.6	107.4	108.4
Less direct taxes 4/	55.7	58.5	63.2	69.6	76.3	19.3	20.1	21.0
Household disposable income	264.0	274.1	296.0	317.6	336.1	86.2	87.3	87.3
Private consumption	256.7	269.7	286.6	306.3	318.8	82.4	84.0	84.4
Savings 5/	7.3	4.4	9.4	11.3	17.3	3.9	3.2	2.9
Real household income 6/	290.4	297.6	317.5	333.4	349.6	89.0	90.2	90.6
Real household disposable income 6/	239.8	245.3	261.7	273.5	284.9	72.7	73.3	73.0
Real private consumption	233.2	241.3	253.3	263.7	270.3	69.4	70.6	70.6
				(Percent change from previous year)				
Wages, salaries, and supplements	3.8	4.8	6.8	6.9	7.0	3.1	4.2	4.6
Income from unincorporated farms	53.8	26.2	-51.3	173.5	30.2	-4.8	-2.8	-12.0
Income of other unincorporated enterprises 2/	-4.2	-2.5	17.4	5.5	4.4	5.5	5.0	2.8
Personal benefit payments	8.3	6.2	6.0	7.5	5.2	0.7	1.7	1.4
Other receipts 3/	-11.0	12.5	11.5	15.7	5.4	-0.4	-2.1	-5.1
Household income	2.6	4.0	8.0	7.8	6.5	3.0	3.7	3.2
Less direct taxes 4/	-0.3	5.0	8.0	10.2	9.6	2.2	6.3	4.1
Household disposable income	3.3	3.8	8.0	7.3	5.8	3.1	3.1	3.0
Private consumption	5.1	5.0	6.3	6.9	4.1	3.9	5.1	4.0
Savings 5/	-36.2	-39.0	113.4	19.8	52.8	-10.7	-30.8	-20.5
Real household income 6/	0.6	2.5	6.7	5.0	4.9	2.0	3.1	2.3
Real household disposable income 6/	1.2	2.3	6.7	4.5	4.2	2.2	2.5	2.1
Real private consumption	3.0	3.5	5.0	4.1	2.5	2.9	4.5	3.2
Memorandum item:								
Household savings ratio (in percent) 7/	2.7	1.6	3.2	3.6	5.1	4.5	3.7	3.3

Source: Australian Bureau of Statistics, *National Accounts*.

1/ Quarterly data are seasonally adjusted. Fiscal year aggregates are cumulated on seasonally adjusted quarterly data.
2/ Includes the income of other unincorporated enterprises, rent from dwellings, interest, and dividends.
3/ Includes third-party insurance transfers, transfers from overseas, and current grants to nonprofit organizations.
4/ Includes income tax, other direct taxes, fees, fines, consumer debt interest, and unrequited transfers to overseas.
5/ Savings is derived as a balancing item.
6/ Deflated by the implicit price deflator for private consumption expenditure.
7/ Savings as a percent of household disposable income.

Table 4. Australia: Saving and Investment Balances, 1992/93-1996/97

(In percent of GDP)

	1992/93	1993/94	1994/95	1995/96	1996/97
Sources of funds for gross accumulation					
Saving	0.2	1.7	2.5	3.4	4.5
Of which:					
Households	1.8	1.4	2.0	2.1	3.2
General government	-3.9	-3.3	-2.0	-0.8	0.7
Consumption of fixed capital	15.4	15.1	14.5	14.1	14.0
National saving 1/	15.6	16.8	17.0	17.5	18.5
Net borrowing from overseas	3.4	3.4	5.3	3.3	2.6
Uses of funds					
Investment 2/	20.3	20.8	21.8	20.9	20.1
Fixed investment	20.2	20.5	21.2	20.4	20.4
Private sector	15.4	16.2	16.7	16.3	16.7
Dwellings	4.9	5.3	5.3	4.4	4.2
Nonresidential construction	2.5	2.5	2.6	3.0	3.5
Equipment	6.8	7.1	7.6	7.7	7.8
Real estate transfers	1.2	1.3	1.2	1.1	1.2
Public sector	4.8	4.3	4.5	4.1	3.7
General government fixed investment	2.3	2.1	2.1	1.9	1.9
Public enterprises' fixed investment	2.5	2.2	2.5	2.2	1.8
Changes in stocks	0.1	0.3	0.6	0.5	-0.2
Statistical discrepancy	-1.3	-0.6	0.5	0.0	1.0

Source: Australian Bureau of Statistics, *National Accounts.*

1/ National accounts basis, as measured by the authorities.
2/ Cumulated on seasonally adjusted data.

Table 5. Australia: Selected Price Indices, 1992/93-1997/98

(Percent change from previous year)

| | GDP Deflator | GDP Deflator (Nonfarm) | Private Consumption Deflator | Consumer price index | | | Import Deflator 2/ | Export Deflator 2/ | Manufacturing Sector | |
				Total	Treasury Underlying 1/	Non-food			Articles Produced By	Articles Used In
1992/93	1.4	1.4	2.1	1.0	2.0	0.9	6.8	3.5	2.3	4.9
1993/94	0.9	0.8	1.5	1.8	2.1	1.8	0.1	-1.8	1.1	-1.6
1994/95	1.6	1.0	1.2	3.2	2.1	3.4	-2.9	1.2	2.3	2.8
1995/96	2.9	3.0	2.6	4.2	3.2	4.4	-2.4	2.1	2.5	2.2
1996/97	2.1	2.2	1.6	1.3	2.1	0.9	-8.7	-3.4	0.5	-3.7
1997/98	...	...	...	0.0	1.5	-0.4	...	...	1.4	1.0
1994/95										
Sep. qtr.	1.2	0.6	1.0	1.9	2.0	2.0	-6.7	-4.8	0.5	-1.9
Dec. qtr.	0.9	0.2	0.7	2.5	2.1	2.9	-6.9	-3.2	1.2	-0.7
Mar. qtr.	1.5	1.0	1.4	3.9	1.9	4.1	-1.2	4.3	3.4	5.2
Jun. qtr.	2.5	2.1	1.9	4.5	2.5	4.7	3.8	8.9	3.9	8.8
1995/96										
Sep. qtr.	3.0	2.9	2.8	5.1	3.1	5.3	2.0	8.2	4.0	5.9
Dec. qtr.	3.3	3.3	3.0	5.1	3.2	5.1	1.1	4.3	3.2	4.7
Mar. qtr.	2.8	2.9	2.6	3.7	3.3	4.0	-2.6	1.1	2.2	2.5
Jun. qtr.	2.7	2.9	2.2	3.1	3.1	3.1	-9.8	-4.7	0.7	-3.7
1996/97										
Sep. qtr.	1.9	2.1	1.7	2.1	2.4	2.1	-9.2	-5.1	0.1	-4.7
Dec. qtr.	2.0	2.1	1.5	1.5	2.1	1.3	-9.4	-3.5	0.5	-3.5
Mar. qtr.	2.4	2.6	1.7	1.3	2.1	0.8	-8.9	-3.6	0.6	-3.9
Jun. qtr.	2.0	1.9	1.5	0.3	1.7	-0.3	-7.2	-1.3	1.0	-2.6
1997/98										
Sep. qtr.	1.7	1.7	1.1	-0.3	1.5	-0.9	-3.6	1.3	1.6	0.4
Dec. qtr.	1.9	1.9	1.3	-0.2	1.4	-0.7	0.3	4.6	1.8	2.0
Mar. qtr.	1.2	1.2	1.0	-0.2	1.5	-0.5	1.9	3.2	0.9	-0.1
Jun. qtr.	...	...	...	0.7	1.6	0.5	...	...	1.1	1.6

Sources: Australian Bureau of Statistics, *National Accounts*; and Reserve Bank of Australia, *Bulletin*.

1/ The consumer price index excluding interest charges, petrol, and certain other items; used as an indicator of underlying inflation.
2/ Goods and services.

Table 6. Australia: Labor Market, 1992/93-1997/98 1/

| | Labor Force | | | | | Employed | | | | Unemployed | | | | |
| | Total | | Participation Rate 3/ | | | Total | | Full-time | Part-time | Total | Unemployment Rate 4/ | | | |
	In Thousands	Percent Change 2/	Total	Male	Female	In Thousands	Percent Change 2/	Percent Change 2/		in Thousands	Total	Male	Female	Long-term 5/
1992/93	8,575	0.7	62.6	73.9	51.7	7,634	0.0	-0.8	2.6	941	11.0	11.7	10.0	4.1
1993/94	8,697	1.4	62.8	73.7	52.2	7,781	1.9	1.6	3.1	916	10.5	10.9	10.0	4.0
1994/95	8,888	2.2	63.3	73.8	53.2	8,093	4.0	3.2	6.6	795	9.0	9.1	8.7	3.2
1995/96	9,066	2.0	63.7	73.9	53.8	8,300	2.6	2.3	3.3	767	8.5	8.8	8.0	2.6
1996/97	9,185	1.3	63.5	73.4	53.9	8,389	1.1	0.3	3.4	796	8.7	8.9	8.4	2.6
1997/98	9,270	0.9	63.2	73.0	53.7	8,501	1.3	0.8	2.9	769	8.3	8.5	8.0	2.7
1995/96														
Sep. qtr.	9,027	2.5	63.8	74.0	53.9	8,270	3.7	3.3	5.1	757	8.4	8.8	7.8	2.6
Dec. qtr.	9,069	2.6	63.8	73.9	54.0	8,303	3.3	3.0	4.4	766	8.5	8.8	8.0	2.6
Mar. qtr.	9,077	1.8	63.7	73.8	53.8	8,309	2.2	2.3	2.1	768	8.5	8.8	8.0	2.7
Jun. qtr.	9,093	1.1	63.5	73.7	53.6	8,316	0.9	0.7	1.5	777	8.6	8.7	8.3	2.4
1996/97														
Sep. qtr.	9,157	1.4	63.7	73.7	53.9	8,363	1.1	0.7	2.5	794	8.7	8.9	8.4	2.5
Dec. qtr.	9,182	1.2	63.6	73.5	54.0	8,388	1.0	0.6	2.4	794	8.7	8.8	8.4	2.5
Mar. qtr.	9,208	1.4	63.5	73.4	54.0	8,408	1.2	0.1	4.5	800	8.7	8.9	8.4	2.7
Jun. qtr.	9,195	1.1	63.2	73.1	53.7	8,397	1.0	-0.1	4.4	797	8.7	8.8	8.5	2.7
1997/98														
Sep. qtr.	9,212	0.6	63.1	73.0	53.5	8,417	0.6	-0.3	3.4	795	8.6	8.9	8.3	2.8
Dec. qtr.	9,265	0.9	63.2	73.2	53.6	8,494	1.3	0.4	3.7	771	8.3	8.6	8.0	2.8
Mar. qtr.	9,275	0.7	63.1	73.0	53.5	8,519	1.3	1.2	1.6	755	8.1	8.3	7.9	2.8
Jun. qtr.	9,329	1.5	63.3	72.9	53.9	8,576	2.1	1.8	3.0	753	8.1	8.2	7.8	2.5

Source: Australian Bureau of Statistics, *Labor Force, Australia* .

1/ Quarterly data are seasonally adjusted. Fiscal year aggregates are cumulated on seasonally adjusted quarterly data.
2/ From previous year.
3/ Labor force as a percent of population aged 15 and over.
4/ In percent of labor force.
5/ Persons unemployed for more than one year.

Table 7. Australia: Changes in Employees' Average Awards and Weekly Earnings, 1992/93-1997/98 1/

(Percent change from previous year)

	Award Rates of Pay: Adult Wage and Salary Earners 1/	Average Weekly Earnings					Average Earnings: National Accounts Basis 3/	
		Ordinary Time: Full-Time Adults	Total Earnings					
			Public: Nominal Terms	Private: Nominal Terms	All Employees		Nominal Terms	Real Terms 2/
					Nominal Terms	Real Terms 2/		
1992/93	1.3	1.8	3.9	1.2	2.0	0.0	4.4	2.3
1993/94	1.1	3.1	3.0	3.1	2.9	1.4	2.7	1.2
1994/95	1.3	4.1	2.5	4.6	3.4	2.2	2.1	0.8
1995/96	2.0	4.5	2.7	2.9	2.5	-0.1	4.2	1.5
1996/97	1.5	3.9	5.1	2.9	3.0	1.4	5.3	3.6
1997/98	...	4.0	...	...	3.1	...	...	...
1994/95								
Sep. qtr.	1.4	2.9	1.9	4.4	3.1	2.1	1.8	0.8
Dec. qtr.	1.4	4.2	3.3	4.8	3.9	3.2	2.5	1.9
Mar. qtr.	1.0	4.4	2.2	5.1	3.7	2.3	2.5	1.1
Jun. qtr.	1.5	4.8	2.5	4.1	3.0	1.0	1.4	-0.5
1995/96								
Sep. qtr.	2.1	5.2	3.2	2.1	1.9	-0.8	2.8	0.0
Dec. qtr.	2.1	4.8	2.0	2.9	2.4	-0.5	4.6	1.5
Mar. qtr.	2.1	4.2	3.0	3.0	2.6	0.0	4.5	1.8
Jun. qtr.	1.9	3.9	2.7	3.5	3.0	0.8	4.9	2.6
1996/97								
Sep. qtr.	1.5	3.8	3.8	3.9	3.5	1.8	5.8	4.1
Dec. qtr.	1.6	3.9	5.2	2.7	2.8	1.3	5.1	3.6
Mar. qtr.	1.5	4.3	5.4	3.3	3,4	1.7	5.1	3.4
Jun. qtr.	1.4	3.5	6.0	1.8	2.3	0.9	5.0	3.5
1997/98								
Sep. qtr.	...	4.5	5.6	2.1	2.7	1.5	5.4	4.2
Dec. qtr.	...	3.7	4.5	3.9	4.0	2.6	4.6	3.3
Mar. qtr.	...	4.1	4.9	2.2	2.7	2.0	4.5	3.4
Jun. qtr.	...	4.1	...	...	2.9	...	...	...

Sources: Australian Bureau of Statistics, *National Accounts* and *Average Weekly Earnings*; and Reserve Bank of Australia, *Bulletin*.

1/ Quarterly data are seasonally adjusted. Fiscal year aggregates are cumulated on seasonally adjusted quarterly data.
2/ The difference between increases in award rates of pay and ordinary time earnings is commonly used as a measure of wage drift. However, differences may also reflect compositional and timing factors.
3/ Deflated by the implicit price deflator for private final consumption expenditure.
4/ Nonfarm wages, salaries, and supplements per nonfarm wage and salary earner.

Table 8. Australia: Developments in Unit Labor Costs in the Nonfarm Sector, 1992/93-1997/98

(Percent change from previous year)

	Produc-tivity 1/	Unit Labor Costs 2/	Implicit Deflator of Nonfarm GDP	Real Unit Labor Costs, Nonfarm Sector 3/	
				Index 4/	Percent change
1992/93	1.7	0.5	1.5	100.6	-1.0
1993/94	3.2	0.0	0.8	99.1	-0.9
1994/95	2.4	1.0	1.0	97.6	0.0
1995/96	3.1	3.5	2.8	99.4	0.6
1996/97	2.8	4.4	2.3	102.1	2.0
1994/95					
Sep. qtr.	3.6	-1.2	0.4	97.6	-1.6
Dec. qtr.	2.6	0.2	0.5	98.0	-0.2
Mar. qtr.	2.0	2.7	1.2	99.8	1.5
Jun. qtr.	1.3	2.4	2.0	99.8	0.3
1995/96					
Sep. qtr.	1.4	4.7	2.7	99.4	1.9
Dec. qtr.	2.6	4.8	3.0	99.7	1.8
Mar. qtr.	3.8	1.6	2.9	98.5	-1.3
Jun. qtr.	4.4	2.8	2.6	99.9	0.2
1996/97					
Sep. qtr.	3.5	5.1	2.3	102.1	2.7
Dec. qtr.	2.3	4.9	2.4	102.1	2.5
Mar. qtr.	2.2	5.4	2.4	101.4	2.9
Jun. qtr.	3.3	2.3	2.2	100.0	0.1
1997/98					
Sep. qtr.	4.8	0.1	1.8	100.4	-1.7
Dec. qtr.	5.3	0.3	1.6	100.9	-1.2
Mar. qtr.	4.7	0.5	1.7	100.2	-1.2

Source: Australian Bureau of Statistics, *National Accounts.*

1/ Ratio of gross nonfarm product (at constant prices) to hours worked by all persons employed in the nonfarm sector.
2/ Calculated as nonfarm labor costs divided by nonfarm labor productivity.
3/ Unit labor costs divided by the nonfarm GDP deflator.
4/ Average 1989/90 = 100.

Table 9. Australia: Selected Fiscal Indicators, 1992/93-1997/98 1/

(In percent of GDP)

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98 Budget 2/	1997/98 Est.
Public sector underlying balance 3/, 4/	-4.5	-3.1	-1.9	-1.3	0.1	-0.2	0.5
Commonwealth underlying budget balance	-4.2	-3.9	-2.9	-2.1	-0.9	-0.2	0.2
Commonwealth revenues	23.3	23.3	24.0	24.7	25.3	24.9	25.2
Tax revenues	21.9	21.7	23.0	23.7	24.3	24.1	24.4
Of which: Direct taxes	16.1	15.7	16.7	17.4	18.1	17.9	18.2
Commonwealth underlying expenditure	27.5	27.3	26.9	26.9	26.3	25.1	25.0
State, territory, and local general government underlying balance 3/	-0.4	-0.1	0.2	0.6	0.8	0.0	0.4
Public trading enterprises balance	0.4	0.9	0.8	0.1	0.3	0.0	0.0
Memorandum items:							
Commonwealth headline budget balance	-3.6	-3.2	-2.5	-1.0	0.5	2.3	2.8
Total public sector debt, net	35.7	35.7	35.6	31.9	28.7	23.8	23.5
Of which: Commonwealth	13.5	16.2	18.1	19.5	18.3	15.3	15.0

Sources: Commonwealth of Australia, *Budget Strategy and Outlook*, 1998/99; and Fund staff estimates.

1/ Fiscal year ends June 30.
2/ Revised, as presented in May 1998 *Budget Strategy and Outlook* for Commonwealth. For States and PTEs, based on ABS projections (including from state government budgets).
3/ The underlying balance excludes asset sales and other one-off factors.
4/ The Commonwealth, state, and public enterprise balances may not add up to the public sector balance due to the effect of consolidation.

Table 10. Commonwealth Government Budget, 1992/93-1997/98

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98 Budget 1/	1997/98 Est.
				(In billions of Australian dollars)			
Total revenue	95.1	100.7	110.4	121.7	131.0	135.4	137.0
Total expenditure	109.6	114.4	122.0	126.7	128.5	122.7	121.9
Net advances	-2.5	-3.4	-1.6	-5.3	-7.5	-13.9	-13.9
Underlying expenditure 2/	112.1	117.8	123.6	132.0	135.9	136.6	135.8
Headline balance	-14.6	-13.6	-11.6	-5.0	2.6	12.8	15.1
Underlying balance 2/	-17.0	-17.1	-13.1	-10.3	-4.9	-1.2	1.2
				(In percent of GDP)			
Total revenue	23.3	23.3	24.0	24.7	25.3	24.9	25.2
Total expenditure	26.9	26.4	26.5	25.8	24.8	22.6	22.4
Underlying expenditure 2/	27.5	27.3	26.9	26.9	26.3	25.1	25.0
Headline Budget balance	-3.6	-3.2	-2.5	-1.0	0.5	2.3	2.8
Underlying balance 2/	-4.2	-3.9	-2.9	-2.1	-0.9	-0.2	0.2
Memorandum items:							
Underlying primary balance 1/							
(In $A billions)	-14.2	-12.5	-6.8	-2.5	3.5	6.3	...
(In percent of GDP)	-3.5	-2.9	-1.5	-0.5	0.7	1.2	...
Public debt interest payments							
(In $A billions)	5.4	6.6	8.1	9.2	9.6	8.4	...
(In percent of GDP)	1.3	1.5	1.8	1.9	1.8	1.6	...

Source: Commonwealth of Australia, *Budget Strategy and Outlook,* 1998/99; and Fund staff estimates.

1/ Revised, as presented in May 1998 *Budget Strategy and Outlook.*
2/ Excludes net advances.

Table 11. Australia: Commonwealth Budget Revenue, 1992/93-1997/98

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98 Budget 1/
	(In billions of Australian dollars)					
Tax revenue	89.4	94.0	105.7	116.4	125.8	130.8
Income tax	65.6	67.8	76.7	85.5	93.8	97.2
Individuals	47.5	50.6	54.6	60.4	66.5	70.2
Of which: Gross PAYE	43.0	44.5	48.1	53.3	57.4	62.0
Companies	13.1	12.7	15.6	18.3	19.2	18.8
Other	5.0	4.6	6.4	6.8	8.1	8.2
Indirect taxes and other	23.8	26.2	29.0	30.9	32.0	33.6
Indirect taxes	22.3	24.5	27.1	28.9	29.9	31.3
Sales	9.3	10.4	11.6	13.0	13.3	14.1
Excise	9.7	10.8	12.0	12.8	13.3	13.6
Import duties	3.3	3.2	3.5	3.1	3.3	3.6
Other	1.6	1.7	1.9	2.0	2.2	2.3
Nontax revenue	5.6	6.7	4.7	5.3	5.2	4.6
Of which: Interest	2.5	2.1	1.8	1.4	1.1	1.0
Total revenue	95.1	100.7	110.4	121.7	131.0	135.4
	(In percent of GDP)					
Tax revenue	21.9	21.7	23.0	23.7	24.3	24.1
Income tax	16.1	15.7	16.7	17.4	18.1	17.9
Individuals	11.6	11.7	11.9	12.3	12.8	12.9
Of which: Gross PAYE	10.5	10.3	10.4	10.8	11.1	11.4
Companies	3.2	2.9	3.4	3.7	3.7	3.5
Other	1.2	1.1	1.4	1.4	1.6	1.5
Indirect taxes and other	5.8	6.1	6.3	6.3	6.2	6.2
Indirect taxes	5.5	5.7	5.9	5.9	5.8	5.8
Sales	2.3	2.4	2.5	2.6	2.6	2.6
Excise	2.4	2.5	2.6	2.6	2.6	2.5
Import duties	0.8	0.7	0.8	0.6	0.6	0.7
Other	0.4	0.4	0.4	0.4	0.4	0.4
Nontax revenue	1.4	1.6	1.0	1.1	1.0	0.9
Of which: Interest	0.6	0.5	0.4	0.3	0.2	0.2
Total revenue	23.3	23.3	24.0	24.7	25.3	24.9

Source: Commonwealth of Australia, *Budget Strategy and Outlook*, 1998/99.

1/ Revised, as presented in May 1998 *Budget Strategy and Outlook*; detailed actual data are not yet available.

Table 12. Australia: Commonwealth Budget Expenditures, 1992/93-1997/98

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98 Budget 1/
	(In billions of Australian dollars)					
Current expenditures	105.7	113.4	119.8	128.1	131.8	134.5
Goods and services	19.3	20.0	20.4	21.5	21.8	23.5
Of which: Salaries	8.2	8.5	7.9	8.4	8.5	7.5
Transfers	86.5	93.3	99.3	106.6	110.0	111.0
Interest	5.4	6.6	8.1	9.2	9.6	8.4
Personal benefit payments	38.2	41.1	42.4	45.5	48.0	48.6
Grants to States	21.4	22.1	23.0	24.1	24.7	25.3
Grants to nonbudget sector	10.2	11.3	12.3	13.3	13.3	14.4
Other grants 2/	8.7	9.6	10.8	11.4	11.3	10.9
Other	2.7	2.6	2.8	3.0	3.2	3.4
Capital	3.9	1.0	2.3	-1.4	-3.3	-11.8
Goods and land	0.7	0.4	0.5	0.6	0.5	-0.6
Transfers	5.7	4.0	3.4	3.3	3.6	2.7
Of which: Grants to States	4.5	3.3	2.6	2.6	2.7	2.1
Net advances	-2.5	-3.4	-1.6	-5.3	-7.5	-13.9
Total expenditure	109.6	114.4	122.0	126.7	128.5	122.7
Total underlying expenditure 3/	112.1	117.8	123.6	132.0	135.9	136.6
	(In percent of GDP)					
Current expenditures	25.9	26.2	26.0	26.0	25.5	24.8
Goods and services	4.7	4.6	4.4	4.4	4.2	4.3
Of which: Salaries	2.0	2.0	1.7	1.7	1.6	1.4
Transfers	21.2	21.6	21.6	21.7	21.3	20.4
Interest	1.3	1.5	1.8	1.9	1.8	1.6
Personal benefit payments	9.4	9.5	9.2	9.3	9.3	8.9
Grants to States	5.2	5.1	5.0	4.9	4.8	4.6
Grants to nonbudget sector	2.5	2.6	2.7	2.7	2.6	2.6
Other grants 2/	2.1	2.2	2.3	2.3	2.2	2.0
Other	0.7	0.6	0.6	0.6	0.6	0.6
Capital	1.0	0.2	0.5	-0.3	-0.6	-2.2
Goods and land	0.2	0.1	0.1	0.1	0.1	-0.1
Transfers	1.4	0.9	0.7	0.7	0.7	0.5
Of which: Grants to States	1.1	0.8	0.6	0.5	0.5	0.4
Net advances	-0.6	-0.8	-0.3	-1.1	-1.4	-2.6
Total expenditure	26.9	26.4	26.5	25.8	24.8	22.6
Total underlying expenditure 3/	27.5	27.3	26.9	26.9	26.3	25.1
Memorandum items:						
Total grants to states						
(In $A billion)	25.9	25.3	25.6	26.7	27.4	27.4
(in percent of GDP)	6.3	5.9	5.6	5.4	5.3	5.0

Source: Commonwealth of Australia, *Budget Strategy and Outlook*, 1998/99.

1/ Revised, as presented in May 1998 *Budget Strategy and Outlook;* detailed actual data are not yet available.
2/ Includes grants made through state governments and directly to local governments.
3/ Excludes net advances.

Table 13. Australia: Commonwealth Budget Expenditures by Function, 1992/93-1997/98

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98 Budget 1/
	(In billions of Australian dollars)					
Defense	9.6	9.8	9.7	10.1	10.1	10.4
Education	8.6	9.2	9.8	10.1	10.3	10.8
Health	14.8	16.1	17.1	18.6	19.2	20.7
Social Security and Welfare	38.6	42.0	43.6	46.8	49.6	50.4
Economic Services	8.6	7.9	8.4	9.3	8.6	8.4
Public Debt Interest	5.3	6.5	8.0	9.1	9.4	8.3
General purpose inter-government transactions	16.7	16.5	17.0	17.8	18.2	17.9
Other	7.4	6.4	8.5	4.9	3.1	-4.2
Total expenditure	109.6	114.4	122.0	126.7	128.5	122.7
Total underlying expenditure 2/	112.1	117.8	123.6	132.0	135.9	136.6
	(In percent of GDP)					
Defense	2.4	2.3	2.1	2.0	1.9	1.9
Education	2.1	2.1	2.1	2.1	2.0	2.0
Health	3.6	3.7	3.7	3.8	3.7	3.8
Social Security and Welfare	9.5	9.7	9.5	9.5	9.6	9.3
Economic Services	2.1	1.8	1.8	1.9	1.7	1.5
Public Debt Interest	1.3	1.5	1.7	1.9	1.8	1.5
General purpose inter-government transactions	4.1	3.8	3.7	3.6	3.5	3.3
Other	1.8	1.5	1.8	1.0	0.6	-0.8
Total expenditure	26.9	26.4	26.5	25.8	24.8	22.6
Total underlying expenditure 2/	27.5	27.3	26.9	26.9	26.3	25.1

Source: Commonwealth of Australia, *Budget Strategy and Outlook*, 1998/99.

1/ Revised, as presented in May 1998 *Budget Strategy and Outlook;* detailed actual data are not yet available.
2/ Excludes net advances.

Table 14. Australia: State General Government Finances, 1992/93-1997/98

	1992/93	1993/94	1994/95	1995/96	1996/97 Preliminary	1997/98 Budget 1/
(In billions of Australian dollars)						
Revenue	66.2	68.6	71.7	76.8	81.2	80.9
Own-source revenue	36.3	40.0	42.3	46.0	50.0	49.4
Taxes, fees, and fines	29.1	31.9	33.4	35.8	38.3	39.2
Other	7.3	8.1	8.9	10.2	11.7	10.2
Grants received	29.8	28.6	29.4	30.7	31.1	31.5
Underlying expenditure 2/	68.0	69.2	70.9	73.9	77.2	80.7
Current expenditure	58.2	59.8	61.2	64.0	66.7	68.9
Of which:						
Subsidies to public enterprises	2.4	2.4	2.1	2.0	2.9	2.8
Interest payments	8.0	7.9	7.7	7.4	5.7	5.6
Capital expenditure 2/	9.8	9.5	9.8	9.9	10.5	11.8
Increase in provisions (net)	0.0	0.0	0.0	0.0	0.0	0.0
Underlying balance 2/ 3/	-1.8	-0.6	0.7	2.9	3.9	0.2
(In percent of GDP)						
Revenue	16.2	15.9	15.6	15.6	15.7	14.9
Own-source revenue	8.9	9.3	9.2	9.4	9.7	9.1
Taxes, fees, and fines	7.1	7.4	7.3	7.3	7.4	7.2
Other	1.8	1.9	1.9	2.1	2.3	1.9
Grants received	7.3	6.6	6.4	6.2	6.0	5.8
Underlying expenditure 2/	16.7	16.0	15.4	15.0	14.9	14.8
Current expenditure	14.3	13.8	13.3	13.0	12.9	12.7
Of which:						
Subsidies to public enterprises	0.6	0.6	0.5	0.4	0.6	0.5
Interest payments	2.0	1.8	1.7	1.5	1.1	1.0
Capital expenditure 2/	2.4	2.2	2.1	2.0	2.0	2.2
Underlying balance 2/ 3/	-0.4	-0.1	0.2	0.6	0.8	0.0

Source: Australian Bureau of Statistics, *Government Financial Estimates, Australia,* 1997/98.

1/ ABS projection, based on 1997/98 state government budgets. Detailed actual data are not yet available.
2/ Excludes net advances.
3/ +/- surplus/deficit.

Table 15. Australia: Public Trading Enterprises Operations, 1992/93-1997/98

	1992/93	1993/94	1994/95	1995/96	1996/97 Preliminary	1997/98 Est. 1/
			(In billions of Australian dollars)			
Revenue	68.7	74.9	77.6	74.1	73.8	69.9
Sales of goods and services	62.1	68.1	70.8	67.7	66.2	63.8
Subsidies received	2.9	3.0	2.6	2.6	3.4	3.1
Other	3.7	3.8	4.2	3.7	4.2	3.0
of which: Interest received	0.8	0.6	0.8	0.8	0.9	0.6
Underlying expenditure 2/	74.6	77.5	82.7	81.6	79.7	77.3
Current expenditure	64.2	69.1	72.2	71.2	70.4	66.1
Operating expenditure	53.5	58.1	61.4	59.0	58.1	54.3
Other	10.7	11.0	10.9	12.1	12.3	11.9
Of which: Interest payments	7.1	6.2	6.0	6.1	4.7	4.4
Capital expenditure 2/	10.4	8.3	10.4	10.5	9.3	11.2
Increase in provisions (net)	7.4	6.6	8.7	7.9	7.6	7.2
Underlying balance 2/ 3/	1.5	4.0	3.7	0.4	1.6	-0.2
			(In percent of GDP)			
Revenue	16.8	17.3	16.9	15.1	14.3	12.9
Sales of goods and services	15.2	15.8	15.4	13.8	12.8	11.7
Subsidies received	0.7	0.7	0.6	0.5	0.7	0.6
Other	0.9	0.9	0.9	0.8	0.8	0.6
of which: Interest received	0.2	0.1	0.2	0.2	0.2	0.1
Underlying expenditure 2/	18.3	17.9	18.0	16.6	15.4	14.2
Current expenditure	15.7	16.0	15.7	14.5	13.6	12.2
Operating expenditure	13.1	13.4	13.3	12.0	11.2	10.0
Other	2.6	2.6	2.4	2.5	2.4	2.2
Of which: Interest payments	1.7	1.4	1.3	1.2	0.9	0.8
Capital expenditure 2/	2.6	1.9	2.3	2.1	1.8	2.1
Increase in provisions (net)	1.8	1.5	1.9	1.6	1.5	1.3
Underlying balance 2/ 3/	0.4	0.9	0.8	0.1	0.3	0.0
Memorandum items:						
Net operating surplus						
(In $A millions)	11.5	13.0	12.1	11.4	11.5	12.6
(In percent of GDP)	2.8	3.0	2.6	2.3	2.2	2.3

Source: Australian Bureau of Statistics, *Government Financial Estimates, Australia,* 1997/98.

1/ ABS projection.
2/ Excludes net advances.
3/ +/- surplus/deficit.

Table 16. Australia: Selected Interest Rates, 1992/93-1997/98

(In percent per annum; at or near end of month)

		Unofficial Cash Rate 1/	Commonwealth Government Securities			NSW 4/ Ten-Year	Banks 5/				Bank-Accepted Commercial Bills 9/	Cash Management Trust 10/
			Treasury Notes 2/ 13-Week	Bonds 3/			Three-Month Fixed Deposits	Invest-ment Accounts 6/	Business Lending Rate 7/	Housing Loans 8/		
				Three-Year	Ten-Year							
1992/93	Jun.	5.27	5.08	6.22	7.37	7.69	5.10	3.38	9.50	9.50	5.25	4.34
1993/94	Jun.	4.77	5.40	8.61	9.63	10.02	4.45	3.13	9.00	8.75	5.47	4.05
1994/95	Jun.	7.51	7.50	8.27	9.21	9.47	6.10	3.63	10.70	10.50	7.57	6.84
1995/96	Jun.	7.51	7.39	8.33	8.88	9.16	5.95	3.60	10.80	9.75	7.59	6.55
1996/97	Sep.	7.01	6.76	7.01	7.79	7.93	5.75	3.00	10.25	9.25	6.91	6.08
	Dec.	6.21	5.87	6.58	7.37	7.62	5.10	2.00	9.55	8.25	5.99	5.42
	Mar.	6.04	5.93	7.12	8.00	8.27	4.95	2.00	9.30	7.55	6.08	5.08
	Jun.	5.57	5.23	5.93	7.05	7.23	4.45	1.43	9.00	7.20	5.28	4.92
1997/98	Sep.	4.98	4.65	5.23	6.13	6.32	3.90	1.10	8.45	6.70	4.72	3.94
	Dec.	5.03	4.98	5.49	6.05	6.36	3.90	1.10	8.45	6.70	5.07	4.02
	Mar.	5.00	...	5.12	5.87	6.09	3.85	1.10	8.45	6.70	4.97	3.99
	Jun.	5.07	5.00	5.25	5.58	5.87	3.85	1.10	8.05	6.70	5.33	...
1998	Jan.	5.00	4.96	5.32	5.79	6.23	3.90	1.10	8.45	6.70	4.99	3.98
	Feb.	4.98	4.93	5.33	5.89	6.32	3.85	1.10	8.45	6.70	4.98	4.00
	Mar.	5.00	...	5.12	5.87	6.09	3.85	1.10	8.45	6.70	4.97	3.99
	Apr.	4.98	4.85	5.22	5.66	6.19	3.80	1.10	8.20	6.70	4.93	3.98
	May	5.00	...	4.87	5.63	5.64	3.80	1.10	8.05	6.70	4.97	4.10
	Jun.	5.07	5.00	5.25	5.58	5.87	3.85	1.10	8.05	6.70	5.33	...

Source: Reserve Bank of Australia, *Bulletin*.

1/ Daily 11 a.m. call rate. Average of daily figures for the month.
2/ Weighted average yield of notes alloted at the last tender of the month.
3/ Estimated closing yields on last business day of the month.
4/ New South Wales Treasury Corporation assessed secondary market yields.
5/ Predominant or representative rates offered by banks.
6/ Rate on account with balance of $A 10,000 or over.
7/ Indicator variable rate for large businesses.
8/ Standard variable rate loans of large banks on new housing loans to individuals. Prior to April 1986, rates were subject to a maximum; from March 1982, this was 13.5 percent per annum. The maximum on loans existing or approved before April 3, 1986 was retained.
9/ Ninety-day yield; average of daily market yields for the week ended the last Wednesday of the month.
10/ Weighted average net yield to unit holders for month shown.

Table 17. Australia: Credit Aggregates, 1996/97-1997/98 1/

	June 1996/97 ($A billions)	Sep.	Dec.	Mar.	Jun.	Sep.	Dec.	Mar.	Jun.
			1996/97				1997/98		
				(Percent change over previous year)					
Lending to private sector by: 2/									
Banks	332.9	11.0	11.7	10.7	11.1	10.7	10.9	12.7	...
Nonbank financial intermediaries	112.5	15.5	9.7	6.7	6.5	7.9	10.8	8.3	...
All financial intermediaries	445.3	12.2	11.2	9.7	9.9	10.0	10.9	11.6	11.1
Lending to government sector by: 3/									
Banks	29.2	-9.7	-6.7	-2.3	-0.4	-4.6	-16.6	-14.1	...
Nonbank financial intermediaries	5.0	-40.0	-39.8	-43.4	-47.0	31.6	13.7	-5.4	...
All financial intermediaries	34.2	-16.3	-13.5	-12.3	-11.7	1.0	-12.2	-12.8	...
Total lending	479.5	9.3	8.9	7.7	8.0	9.3	9.2	9.8	...

Source: Reserve Bank of Australia, *Bulletin*.

1/ The data shown for banks are averages of weekly (Wednesday) figures. Figures for NBFIs are averages of end-month figures (current and previous month). There are breaks in the data series for NBFIs and all financial intermediaries owing to changes from time to time in the number of reporting institutions.
2/ Loans, advances, and bills held.
3/ Holdings of Commonwealth government, local and semigovernment, and other public authority securities.

Table 18. Australia: Money Supply, 1996/97-1997/98 1/

	June 1996/97 ($A millions)	Sep.	Dec.	Mar.	Jun.	Sep.	Dec.	Mar.	Jun.
		1996/97				1997/98			
		(Percent change over previous year)							
Monetary base 2/	34.1	30.2	32.4	31.8	39.0	-1.7	-9.3	-8.9	...
M1 3/	96.9	12.7	13.8	12.1	14.3	16.4	13.3	10.8	...
Other bank deposits	224.1	6.0	7.7	8.5	9.0	7.0	3.4	3.6	...
M3 4/	321.0	7.9	9.5	9.6	10.5	9.8	6.4	5.7	5.5
Borrowings from private sector by NBFIs 5/	73.1	12.9	7.9	5.7	8.0	10.2	12.8	10.0	...
Broad money 6/	383.1	9.0	9.2	8.7	9.7	9.3	7.4	6.3	6.0

Source: Reserve Bank of Australia, *Bulletin*.

1/ Figures for currency and bank deposits are average of weekly (Wednesday) data. Figures for borrowings by NBFIs are averages of end-month figures (current and previous month).
2/ The monetary base is the stock of reserve money, consisting of currency outside the Reserve Bank, banks' deposits with the Reserve Bank, and Reserve Bank liabilities to the nonbank private sector.
3/ Currency and current deposits with banks.
4/ M1 plus other bank deposits.
5/ Borrowings (other than from banks and related corporations) by permanent building societies, credit cooperatives, authorized money market dealers, pastoral finance companies, cash management trusts, finance companies, general financiers, and money market corporations.
6/ M3 plus borrowings from the private sector by NBFIs less the latter's holdings of currency and bank deposits.

Table 19. Australia: Balance of Payments Summary, 1992/93-1997/98 1/

| | 1992/93 | 1993/94 | 1994/95 | 1995/96 | 1996/97 | Sep. Qtr. | Dec. Qtr. | Mar. Qtr. |
						1997/98		
	(In billions of Australian dollars)							
Current account balance	-15.4	-16.5	-28.7	-22.2	-17.3	-4.5	-5.7	-7.5
Trade balance	0.6	-0.4	-8.1	-1.8	1.6	0.3	-0.2	-2.2
Exports, f.o.b.	60.6	64.4	67.3	75.9	80.8	22.2	22.5	21.4
Imports, f.o.b.	-60.0	-64.9	-75.4	-77.7	-79.2	-21.8	-22.7	-23.6
Services	-2.8	-1.8	-1.7	-0.3	0.3	0.2	-0.3	-0.3
Income	-12.9	-13.9	-18.3	-20.0	-19.4	-5.0	-5.2	-5.0
Of which:								
Net interest	-5.0	-5.6	-7.7	-7.7	-8.7	-2.0	-2.2	-2.0
Net transfers	-0.3	-0.3	-0.5	0.0	0.1	0.0	0.0	0.0
Capital and financial account	14.8	14.6	28.6	21.9	18.8	5.2	6.4	5.8
Capital account	0.6	0.3	0.6	1.1	1.3	0.3	0.3	0.3
Capital transfers	0.6	0.3	0.5	1.0	1.3	0.3	0.3	0.3
Financial account	14.2	14.3	28.0	20.8	17.5	4.9	6.1	5.5
Direct investment	2.3	1.0	4.1	5.1	5.4	2.0	0.9	-0.5
Portfolio investment	6.7	18.4	18.4	25.7	13.4	7.6	7.0	4.7
Equity securities	4.0	10.0	5.5	3.8	-1.7	1.8	6.3	...
Debt securities	2.8	8.4	12.9	21.9	15.1	5.8	0.7	...
Other investment	1.2	-4.1	3.6	-9.1	3.9	-3.3	-0.4	-1.9
Change in reserve assets 2/	3.9	-1.0	2.0	-0.8	-5.2	-1.5	-1.3	3.2
Net errors and omissions	0.7	1.8	0.1	0.3	-1.5	-0.7	-0.7	1.7
	(In percent of GDP)							
Current account balance	-3.8	-3.8	-6.2	-4.5	-3.3	-3.3	-4.2	-5.4
Trade balance	0.1	-0.1	-1.8	-0.4	0.3	0.3	-0.1	-1.6
Net services	-0.7	-0.4	-0.4	-0.1	0.1	0.2	-0.3	-0.2
Net income	-3.2	-3.2	-4.0	-4.1	-3.7	-3.8	-3.8	-3.6
Net transfers	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0
Memorandum items (end of period):								
Net external liabilities	55.0	56.1	57.2	58.5	60.1	61.1	59.5	59.9
Net external equity liabilities	12.0	17.2	16.7	18.9	18.9	19.0	17.7	18.3
Net external debt	43.1	38.9	40.5	39.6	41.2	42.1	41.8	41.6
Level of reserves								
(In $A billion)	20.8	20.7	20.2	19.1	22.8	24.1	27.0	23.0
(In months of imports)	4.2	3.8	3.2	2.9	3.5	3.3	3.6	2.9

Sources: Australian Bureau of Statistics, *Balance of Payments and International Investment Position.*

1/ Current account data are seasonally adjusted.
2/ Transaction-based data, excluding the effects of price and exchange rate changes; a minus sign indicates an increase in reserves.

Table 20. Australia: Current Account Summary, 1992/93-1997/98 1/

(In billions of Australian dollars)

	1992/93	1993/94	1994/95	1995/96	1996/97	Sept. Qtr.	Dec. Qtr.	Mar. Qtr.
						1997/98		
Current account balance	-15.4	-16.5	-28.7	-22.2	-17.3	-4.5	-5.7	-7.5
Trade balance	0.6	-0.4	-8.1	-1.8	1.6	0.3	-0.2	-2.2
Exports, f.o.b.	60.6	64.4	67.3	75.9	80.8	22.2	22.5	21.4
Imports, f.o.b.	-60.0	-64.9	-75.4	-77.7	-79.2	-21.8	-22.7	-23.6
Services, net	-2.8	-1.8	-1.7	-0.3	0.3	0.2	-0.3	-0.3
Credits	16.2	18.5	20.4	22.8	24.4	6.6	6.1	6.1
Transportation services	5.3	6.0	6.0	6.5	6.6	1.7	1.7	1.6
Travel	7.0	8.3	10.0	11.2	12.0	3.3	2.8	2.9
Other services	3.9	4.2	4.5	5.1	5.8	1.7	1.6	1.6
Debits	-19.0	-20.3	-22.1	-23.2	-24.1	-6.4	-6.4	-6.4
Transportation services	-6.4	-6.9	-8.3	-8.5	-8.4	-2.2	-2.2	-2.2
Travel	-5.4	-5.6	-6.3	-7.0	-7.8	-2.1	-2.2	-2.0
Other services	-7.2	-7.7	-7.6	-7.7	-7.9	-2.1	-2.0	-2.2
Balance on goods and services	-2.2	-2.3	-9.8	-2.2	2.0	0.6	-0.5	-2.5
Income, net 2/	-12.9	-13.9	-18.3	-20.0	-19.4	-5.0	-5.2	-5.0
Credits	6.1	5.8	7.0	7.2	8.3	2.3	2.3	2.5
Compensation of employees	0.5	0.5	0.6	0.6	0.7	0.2	0.2	0.2
Investment income	5.6	5.3	6.4	6.6	7.6	2.1	2.1	2.4
Direct investment abroad	2.5	2.7	3.6	4.1	4.7	1.3	1.4	1.4
Portfolio investment assets	2.6	1.9	2.0	1.6	2.1	0.6	0.6	0.7
Other investment assets	0.5	0.6	0.7	0.9	0.9	0.2	0.2	0.2
Debits	-18.9	-19.7	-25.4	-27.1	-27.8	-7.1	-7.7	-7.4
Compensation of employees	-0.3	-0.3	-0.4	-0.5	-0.5	-0.1	-0.2	-0.2
Investment income	-18.6	-19.4	-25.0	-26.6	-27.2	-7.0	-7.6	-7.2
Direct investment in Australia	-6.6	-7.7	-10.8	-11.5	-12.0	-3.0	-3.2	-3.1
Portfolio investment liabilities	-9.2	-9.3	-11.8	-12.8	-13.8	-3.5	-3.9	-3.6
Other investment liabilities	-2.8	-2.4	-2.3	-2.3	-1.5	-0.5	-0.5	-0.5
Unrequited transfers, net	-0.3	-0.3	-0.5	0.0	0.1	0.0	0.0	0.0
Credits	3.1	3.1	3.0	3.2	3.4	0.9	0.9	0.9
Debits	-3.4	-3.4	-3.6	-3.2	-3.2	-0.9	-0.8	-0.9
Memorandum item:								
Average exchange rate (US$/$A)	0.703	0.693	0.743	0.759	0.783	0.736	0.693	0.666

Sources: Australian Bureau of Statistics, *Balance of Payments and International Investment Position;* and IMF, *International Financial Statistics* .

1/ Data are seasonally adjusted.
2/ Components are not seasonally adjusted and may not add up to the total.

Table 21. Australia: Merchandise Exports and Imports, 1992/93-1997/98 1/

(Percent change from previous year)

	1992/93	1993/94	1994/95	1995/96	1996/97	Sep. Qtr. 1997/98	Dec. Qtr. 1997/98	Mar. Qtr. 1997/98
Total exports								
Value	9.4	6.3	4.4	12.9	6.4	16.7	16.7	8.0
Volume	5.2	9.2	2.5	10.7	11.5	15.2	10.2	3.9
Price 2/	4.0	-2.6	1.8	2.0	-4.6	1.4	5.9	4.0
Rural exports								
Value	7.3	7.1	1.9	11.6	8.0	15.8	17.3	-3.1
Volume·	2.2	7.3	-7.1	6.0	15.3	16.2	7.2	-10.1
Price 2/	4.9	-0.1	10.1	5.0	-6.3	-0.4	9.5	7.7
Metals, minerals, and fuels								
Value	6.0	-0.3	1.9	13.7	5.1	19.6	20.7	16.5
Volume	2.6	5.4	1.9	8.0	9.3	15.4	11.4	11.4
Price 2/	3.3	-5.3	-0.1	5.3	-3.9	3.6	8.4	4.5
Manufactured goods								
Value	19.4	18.7	10.8	13.2	7.2	13.8	11.0	6.1
Volume	15.1	19.3	13.5	19.7	12.0	14.1	11.3	5.3
Price 2/	3.7	-0.2	-2.6	-5.3	-4.5	-0.3	-0.3	0.7
Total imports								
Value	16.4	8.1	16.2	3.1	1.8	14.9	14.8	19.9
Volume	8.9	8.4	20.1	7.0	13.3	20.3	15.5	17.7
Price 2/	6.8	-0.1	-3.4	-3.5	-10.1	-4.5	-0.6	1.9
Consumption goods								
Value	16.2	8.2	12.7	2.0	7.0	16.1	19.1	32.7
Volume	6.7	4.8	14.3	2.4	11.1	14.9	13.6	22.2
Price 2/	9.0	3.3	-1.4	-0.4	-3.7	1.1	4.8	8.5
Capital goods								
Value	14.7	8.6	24.9	3.6	-2.0	9.7	16.8	11.1
Volume	7.0	10.8	35.7	17.3	21.0	24.2	25.1	17.9
Price 2/	7.2	-1.8	-8.1	-11.4	-19.0	-11.7	-6.6	-5.8
Intermediate and other goods								
Value	18.0	8.5	14.6	3.5	-0.2	8.7	9.0	13.5
Volume	11.8	10.1	16.3	3.9	8.6	11.8	7.9	11.7
Price 2/	5.5	-1.4	-1.6	-0.2	-8.1	-2.8	1.1	1.6
Memorandum item:								
Terms of trade 3/	-2.6	-2.4	5.3	5.8	6.1	6.1	6.6	2.0

Source: Australian Bureau of Statistics, *Balance of Payments and International Investment Position*.

1/ Seasonally adjusted.
2/ Implicit price deflators.
3/ Merchandise trade only.

Table 22. Australia: Exports by Commodity Group, 1992/93-1996/97

	1996/97 In billions of A$	1996/97 In percent of total	1992/93	1993/94	1994/95	1995/96	1996/97
			(Percent change from previous year)				
Total exports, f.o.b.	80.8	100.0	9.4	6.3	4.4	12.9	6.4
Nonmerchandise 1/	7.6	9.3	0.0	17.9	-8.9	17.9	15.3
Merchandise	73.2	90.7	10.3	5.2	5.8	12.4	5.6
Total rural exports	21.0	26.0	7.3	7.1	1.9	11.6	8.0
Meat	3.0	3.7	8.7	8.0	-9.5	-9.8	-10.0
Cereals	5.9	7.3	23.2	9.2	-16.3	78.2	24.8
Sugar and honey	1.6	2.0	59.4	23.0	26.5	-9.1	1.3
Wool and sheepskins	3.8	4.6	-12.3	-0.2	24.8	-11.9	1.8
Other rural exports	6.7	8.3	6.3	6.6	0.6	18.4	10.4
Total nonrural exports	52.3	64.7	11.6	4.5	7.4	12.8	4.6
Metals, minerals, and fuels	35.5	43.9	6.0	-0.3	1.9	13.7	5.1
Metal ores and minerals	9.4	11.6	0.1	-3.5	4.1	14.1	3.4
Mineral fuels	13.2	16.3	11.5	-8.0	1.2	11.9	9.6
Coal, coke, and briquettes	8.0	9.9	9.8	-4.8	-4.4	13.1	2.0
Other	5.2	6.4	14.9	-14.3	13.4	9.7	23.7
Metals	12.9	16.0	4.9	11.5	1.0	15.1	2.1
Gold	6.9	8.5	-1.1	20.6	-11.0	19.7	17.3
Other	6.1	7.5	10.9	3.5	13.2	11.4	-11.0
Manufactured goods	22.0	27.2	17.0	18.4	9.4	15.4	7.6
Machinery	7.0	8.7	25.1	22.0	14.2	17.9	-1.9
Transportation equipment	3.6	4.5	22.5	3.0	-1.7	22.1	45.6
Other manufactures	9.1	11.3	14.3	15.6	13.4	10.9	3.9
Other nonrural	2.3	2.8	-0.9	43.5	-6.8	19.1	10.8

Source: Australian Bureau of Statistics, *Balance of Payments and International Investment Position*.

1/ Primarily nonmonetary gold exports.

Table 23. Australia: Direction of Trade, 1994/95-1996/97 1/

	Exports						Imports					
	1996/97		1994/95	1995/96	1996/97	1997/98	1996/97		1994/95	1995/96	1996/97	1997/98
	In billions of A$	In percent of total	(Percent change from previous year)				In billions of A$	In percent of total	(Percent change from previous year)			
Selected countries												
Japan	15.4	19.5	2.3	0.9	-6.4	14.3	10.2	13.0	9.2	-15.3	-5.3	23.6
United States	5.5	7.0	-8.5	-0.5	19.6	40.4	17.6	22.3	14.5	9.4	0.6	12.4
New Zealand	6.2	7.9	19.6	17.0	10.8	-9.0	3.7	4.7	11.0	1.1	2.6	1.1
United Kingdom	2.4	3.0	-21.5	24.3	-16.7	28.9	5.2	6.6	20.0	10.1	6.1	7.9
Singapore	3.4	4.3	14.0	-2.5	-4.1	8.4	2.6	3.3	25.2	16.4	0.3	0.8
Korea	7.1	9.0	11.5	26.1	7.8	-10.3	2.6	3.2	7.9	13.0	11.2	47.4
Taiwan Province of China	3.6	4.6	12.5	11.2	4.9	15.4	2.5	3.2	8.8	0.5	-2.4	11.4
China	3.6	4.5	14.4	27.5	-5.2	8.0	4.2	5.3	17.0	9.9	4.8	26.2
Selected country groups												
European Union	8.2	10.4	-1.4	12.9	-3.4	25.2	19.7	24.9	25.0	6.4	1.4	11.0
ASEAN 2/	12.3	15.5	15.5	12.3	4.6	-6.2	8.3	10.5	21.0	14.8	12.6	26.4
Total	78.9	100.0	3.9	13.4	3.9	11.1	79.0	100.0	15.7	4.3	1.6	14.8

Source: Australian Bureau of Statistics.

1/ Trade statistics basis.
2/ Association of Southeast Asian Nations.

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Table 24. Australia: Gross and Net External Interest Payments, 1992/93-1997/98

	1992/93	1993/94	1994/95	1995/96	1996/97	Sep. Qtr. 1997/98	Dec. Qtr. 1997/98
			(In billions of Australian dollars)				
Gross interest payments	-12.1	-11.5	-13.4	-13.9	-14.4	-3.6	-3.8
Public sector	-4.4	-4.5	-5.7	-5.7	-5.4	-1.3	-1.2
General government	-3.4	-3.7	-5.1	-5.1	-5.0	-1.1	-1.1
Public enterprises	-0.9	-0.8	-0.6	-0.6	-0.5	-0.1	-0.1
Private sector	-7.8	-6.9	-7.7	-8.2	-9.0	-2.4	-2.6
Gross interest receipts	2.6	2.2	2.3	2.3	2.5	0.7	0.7
Public sector	1.7	1.1	1.2	0.9	1.0	0.3	0.3
Official reserve assets	1.5	0.8	1.0	0.6	0.8	0.3	0.2
Other	0.3	0.3	0.3	0.3	0.2	0.0	0.0
Private sector	0.9	1.0	1.1	1.4	1.5	0.4	0.4
Net interest payments	-9.5	-9.3	-11.1	-11.7	-11.9	-2.9	-3.2
			(In percent of GDP)				
Gross interest payments	-3.2	-2.9	-3.2	-3.2	-3.2	-3.1	-3.3
Gross interest receipts	0.7	0.5	0.6	0.5	0.6	0.6	0.6
Net interest payments	-2.5	-2.3	-2.6	-2.7	-2.7	-2.5	-2.7
			(In percent of exports of goods and services)				
Gross interest payments	-15.8	-13.8	-15.3	-14.1	-13.7	-12.6	-13.3
Gross interest receipts	3.4	2.6	2.7	2.3	2.4	2.4	2.3
Net interest payments	-12.3	-11.2	-12.6	-11.8	-11.3	-10.2	-11.0

Source: Australian Bureau of Statistics, *Balance of Payments and International Investment Position* .

Table 25. Australia: Capital and Financial Account Summary, 1992/93-1997/98

(In billions of Australian dollars)

	1992/93	1993/94	1994/95	1995/96	1996/97	Sep. Qtr. 1997/98	Dec. Qtr. 1997/98	Mar. Qtr.
Capital and financial account	14.8	14.6	28.6	21.9	18.8	5.2	6.4	5.8
Capital account	0.6	0.3	0.6	1.1	1.3	0.3	0.3	0.3
Financial account	14.2	14.3	28.0	20.8	17.5	4.9	6.1	5.5
Direct investment	2.3	1.0	4.1	5.1	5.4	2.0	0.9	-0.5
Direct investment abroad	-6.3	-3.9	-3.4	-7.9	-5.9	-4.3	-0.9	-1.8
Equity capital	-4.7	-1.4	-0.1	-4.2	-2.5	-4.0	-0.1	...
Reinvested earnings	-2.0	-2.0	-3.3	-2.2	-3.9	-1.0	-0.9	...
Other capital	0.4	-0.5	0.0	-1.5	0.5	0.6	0.0	...
Direct investment in Australia	8.6	4.9	7.5	13.0	11.3	6.3	1.8	1.4
Equity capital	5.2	1.7	1.5	6.5	5.9	3.1	1.1	...
Reinvested earnings	2.4	3.6	5.9	6.0	5.5	1.9	1.6	...
Other capital	1.1	-0.4	0.1	0.5	-0.2	1.3	-0.9	...
Portfolio investment	6.7	18.4	18.4	25.7	13.4	7.6	7.0	4.7
Assets	-3.5	-2.5	4.2	-1.8	-3.5	-0.4	2.5	...
Equity securities	0.0	-4.6	0.6	-3.0	-4.3	0.0	1.9	...
Debt securities	-3.5	2.2	3.7	1.2	0.7	-0.4	0.7	...
Liabilities	10.2	20.9	14.2	27.5	16.9	8.0	4.5	...
Equity securities	4.0	14.6	4.9	6.7	2.6	1.8	4.5	...
Debt securities	6.2	6.3	9.2	20.8	14.3	6.2	0.0	...
Other investment	1.2	-4.1	3.6	-9.1	3.9	-3.3	-0.4	-1.9
Assets	-1.1	-5.3	1.1	-9.5	-3.6	-1.3	-5.2	...
Liabilities	2.2	1.3	2.5	0.4	7.5	-2.0	4.8	...
Change in reserve assets 1/	3.9	-1.0	2.0	-0.8	-5.2	-1.5	-1.3	3.2

Source: Australian Bureau of Statistics, *Balance of Payments and International Investment Position*.

1/ Transaction-based data, excluding the effects of price and exchange rate changes; a minus sign indicates an increase in reserves.

Table 26. Australia: External Assets and Liabilities, 1992/93-1997/98

	1992/93	1993/94	1994/95	1995/96	1996/97	Sep. Qtr.	Dec. Qtr.	Mar. Qtr.
						1997/98		

(In billions of Australian dollars, end of period)

	1992/93	1993/94	1994/95	1995/96	1996/97	Sep. Qtr.	Dec. Qtr.	Mar. Qtr.
Net external liabilities	225	242	263	288	312	320	316	323
Australian investment abroad	-132	-150	-160	-171	-199	-210	-224	...
Foreign investment in Australia	357	392	423	459	510	530	540	...
Direct investment	66	71	69	79	83	84	78	...
Direct investment abroad	-48	-49	-54	-58	-68	-73	-77	...
Direct investment in Australia	114	119	123	137	151	157	155	...
Portfolio investment	140	156	180	205	226	239	244	...
Assets	-40	-53	-56	-58	-69	-72	-73	...
Equity securities	-28	-33	-35	-38	-48	-50	-50	...
Debt securities	-12	-20	-21	-19	-21	-22	-23	...
Liabilities	180	209	236	262	296	311	317	...
Equity securities	35	58	64	74	86	90	90	...
Debt securities	145	151	172	189	209	220	227	...
Other investment	39	36	34	23	25	21	21	...
Assets	-24	-28	-29	-37	-39	-40	-47	...
Liabilities	63	64	63	60	63	62	68	...
Reserve assets	-21	-21	-20	-19	-23	-24	-27	-23

(In percent of GDP)

	1992/93	1993/94	1994/95	1995/96	1996/97	Sep. Qtr.	Dec. Qtr.	Mar. Qtr.
Net external liabilities	55.0	56.1	57.2	58.5	60.1	61.1	59.5	59.9
Australian investment abroad	-32.3	-34.7	-34.7	-34.8	-38.3	-39.9	-42.2	...
Foreign investment in Australia	87.4	90.9	91.8	93.3	98.5	101.0	101.7	...
Direct investment	16.2	16.4	15.0	16.1	16.1	16.1	14.7	...
Portfolio investment	34.3	36.2	39.1	41.6	43.7	45.5	45.9	...
Other Investment	9.6	8.4	7.4	4.7	4.8	4.1	3.9	...
Reserve assets	-5.1	-4.8	-4.4	-3.9	-4.4	-4.6	-5.1	-4.3
Memorandum items:								
Net equity	12.0	17.2	16.7	18.9	18.9	19.0	17.7	18.3
Net debt	43.1	38.9	40.5	39.6	41.2	42.1	41.8	41.6

Source: Australian Bureau of Statistics, *Balance of Payments and International Investment Position*.

Table 27. Australia: Gross Official Reserve Assets, 1992/93-1997/98

(In billions of Australian dollars; end of period)

	1992/93	1993/94	1994/95	1995/96	1996/97	Sep. Qtr.	Dec. Qtr.	Mar. Qtr.	June Qtr.
						1997/98			
Total	20.8	20.7	20.2	19.1	22.8	24.1	27.0	23.0	25.4
Foreign exchange	15.4	15.6	15.0	14.6	20.4	22.2	24.7	20.5	22.7
SDRs	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Reserve position in IMF	0.9	0.7	0.8	0.6	0.6	0.7	1.1	1.3	1.4
Gold 1/	4.4	4.2	4.3	3.8	1.8	1.2	1.1	1.2	1.2
Change from end of preceding year/quarter	-1.4	-0.2	-0.5	-1.1	5.6	1.9	2.8	-4.0	...
Due to:									...
Balance of payments transactions 2/	-3.9	1.0	-2.0	0.8	5.2	1.5	1.3	-3.2	...
Valuation and other changes	2.5	-1.2	1.5	-1.9	0.3	0.5	1.5	-0.7	...
Memorandum item:									
Total, in U.S. dollars 3/	14.0	15.1	14.3	15.0	17.0	17.3	17.6	15.3	15.6

Source: Reserve Bank of Australia, *Bulletin* .

1/ Gold is valued at the average London gold price for the month, converted to Australian dollars at the market rate of exchange applying on the last day of the month.
2/ Includes sales and purchases of, and earnings on, foreign exchange by the Reserve Bank and certain transactions with official institutions overseas.
3/ Converted at end-period exchange rates.

Table 28. Australia: Period Average Exchange Rates, 1992/93-1997/98

| | US$/A$ | | Yen/A$ | | Effective Exchange Rates (1990=100) | | | |
| | | | | | Nominal | | Real 1/ | |
	Level	Percent Change 2/	Level	Percent Change 2/	Level	Percent Change 2/	Level	Percent Change 2/
1992/93	0.703	-8.6	84.22	-16.7	95.4	-6.1	85.5	-11.0
1993/94	0.693	-1.5	73.50	-12.7	99.9	4.7	84.5	-1.2
1994/95	0.743	7.2	70.36	-4.3	103.3	3.5	85.1	0.7
1995/96	0.759	2.2	77.72	10.5	106.5	3.1	89.2	4.8
1996/97	0.783	3.1	90.49	16.4	114.7	7.7	95.3	6.8
1997/98	0.681	-13.0	86.01	-5.0	107.2	-6.6	87.3	-8.4
1996/97								
Sep. qtr.	0.788	-0.4	85.89	0.8	112.4	-0.6	94.0	-0.8
Dec. qtr.	0.795	0.9	89.70	4.4	114.2	1.6	95.1	1.2
Mar. qtr.	0.778	-2.1	94.35	5.2	116.3	1.8	96.5	1.5
Jun. qtr.	0.769	-1.2	92.02	-2.5	115.9	-0.4	95.4	-1.1
1997/98								
Sep. qtr.	0.736	-4.3	86.76	-5.7	112.6	-2.9	91.8	-3.8
Dec. qtr.	0.693	-5.8	86.70	-0.1	107.8	-4.2	87.7	-4.5
Mar. qtr.	0.666	-3.9	85.25	-1.7	107.0	-0.7	87.1	-0.8
Jun. qtr.	0.629	-5.5	85.32	0.1	101.3	-5.3	82.4	-5.4
1997								
Jun.	0.753	-2.8	86.0	-6.7	112.7	-3.3	92.5	-3.7
Jul.	0.743	-1.4	85.5	-0.6	112.3	-0.4	91.7	-0.8
Aug.	0.741	-0.2	87.4	2.2	114.2	1.7	93.1	1.5
Sep.	0.724	-2.4	87.4	0.0	111.3	-2.6	90.7	-2.6
Oct.	0.721	-0.3	87.3	-0.1	110.5	-0.7	89.9	-0.8
Nov.	0.695	-3.6	87.1	-0.2	107.4	-2.8	87.5	-2.7
Dec.	0.662	-4.8	85.7	-1.7	105.5	-1.8	85.8	-1.9
1998								
Jan.	0.654	-1.2	84.71	-1.1	106.0	0.5	86.3	0.5
Feb.	0.673	2.9	84.84	0.2	108.0	1.9	87.9	1.9
Mar.	0.670	-0.5	86.21	1.6	107.1	-0.9	87.1	-0.9
Apr.	0.653	-2.5	85.98	-0.3	104.6	-2.3	85.0	-2.3
May	0.631	-3.3	85.22	-0.9	101.3	-3.1	82.4	-3.1
Jun.	0.603	-4.5	84.78	-0.5	98.1	-3.1	79.7	-3.2
Jul.	0.620	2.8	87.25	2.9	...	...	...	...

Sources: IMF, *International Financial Statistics*; and Information Notice System.

1/ Based on relative consumer prices.
2/ From the preceding period.