The net income deficit over the past two decades

This article analyses the factors behind the fall in the net income deficit. The decline in the net income deficit is a function both of a significant slowing in the rate of growth of Australia's net foreign liabilities and a reduction in the average yield on net foreign liabilities. As a result, Australia's capacity to finance its external liabilities is the strongest it has been for some time.

Summary

Australia's current account deficit (CAD) was 3.2 per cent of GDP in the December quarter 2000. This followed the recent peak of 6.1 per cent of GDP in the September quarter 1999, reflecting the effects of the Asian financial and economic crisis on the balance of trade. However, as a percentage of GDP, the September quarter 1999 outcome was below previous peaks recorded during the 1980s and early 1990s.

A key factor constraining the current account deficit to a lower peak during the Asian crisis, and contributing to the subsequent sharp decline, has been the decline in the net income deficit since the mid-1990s. In turn, this reflects:

- A change in the currency composition of net foreign liabilities, so that an across-the-board depreciation in the exchange rate now reduces net foreign liabilities and the net income deficit.

- Lower 'world' interest rates, reflecting, amongst other things, lower global inflationary pressures.

- A reduction in the interest rate premium foreign investors require to invest in Australia.

The lower net income deficit has some significant implications:

- Australia's ability to finance its external obligations is now the strongest it has been in some time.

- The income earned by Australian residents (gross national income) has grown at a faster rate over the course of the 1990s than gross domestic product (the income produced in Australia).

Introduction

Australia's external current account has been in deficit for all but two years since the mid-1950s. However, there was a significant deterioration in the current account deficit in the early 1980s.[1]

From an average of 1¾ per cent of GDP in the 1970s, Australia's current account deficit increased sharply in the early 1980s, to average around 4½ per cent of GDP in the 1980s as a whole. In turn, there was a significant increase in the net income deficit — the overall cost of financing net foreign liabilities.

The growth in net foreign liabilities, in particular net foreign debt, in the 1980s and early 1990s, and the associated increase in the net income and current account deficits were the source of considerable public policy debate.[2] Some commentators were concerned that the increase in the current account deficit was leading to a rapid build up in net foreign liabilities, which in turn was leading to rapid increases in the cost of servicing these net foreign liabilities, and that these were reinforcing each other over time.

As it happened, over the course of the 1990s the current account deficit remained at an average of around 4½ per cent of GDP, with cyclical peaks declining over the course of the decade. A key feature of the current account deficit since the mid-1990s has been the significant decline in the net income deficit as a share of GDP.

The net income deficit was 2.9 per cent of GDP in the December quarter 2000, up slightly from the September quarter 2000, but otherwise the lowest level since September 1993, and well below the level of around 4 per cent of GDP recorded in the mid-1990s (Chart 1).

This article analyses the factors behind the fall in the net income deficit.

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1   See *Budget Strategy and Outlook 2000-01*, Budget Paper No. 1, p 1-25 and *Budget Statements 1996-97*, Budget Paper No. 1, pp 2-30 to 2-39.
2   For example, AMIC (1987), BCA (1990), CEDA (1990), Pitchford (1990) Makin (1990) and EPAC (1991).

**Chart 1: Recent movements in the net income deficit**
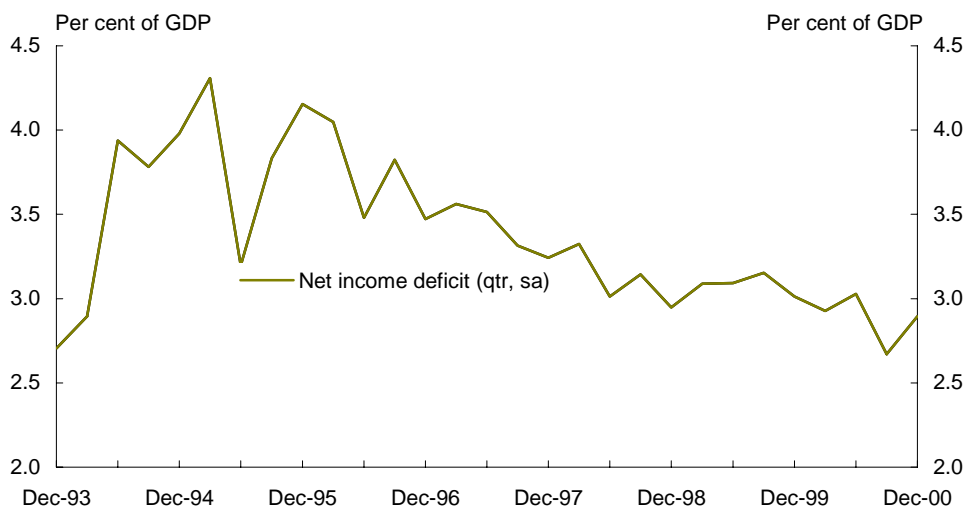
Source: ABS Cat No. 5302.0, 5206.0.

What drives the net income deficit?

The net income deficit is largely comprised of income payments and receipts on capital, as well as cross-border labour income (compensation of employees). Given the relatively small level of net cross-border labour income payments, there are two key drivers of the net income deficit: the level of net foreign liabilities being financed and the yield on those liabilities. Expressions for accounting identities and other equations are outlined in a Technical Appendix.

The net income deficit and net foreign liabilities have both increased as a percentage of GDP over the past two decades (Chart 2). This relationship is not one-for-one because of the variations in the yield on net foreign liabilities (Chart 3). These two drivers of the net income deficit: the level of, and the yield on, net foreign liabilities are examined in turn.

Chart 2: Relationship of the net income deficit and net foreign liabilities

Per cent of GDP   Per cent of GDP
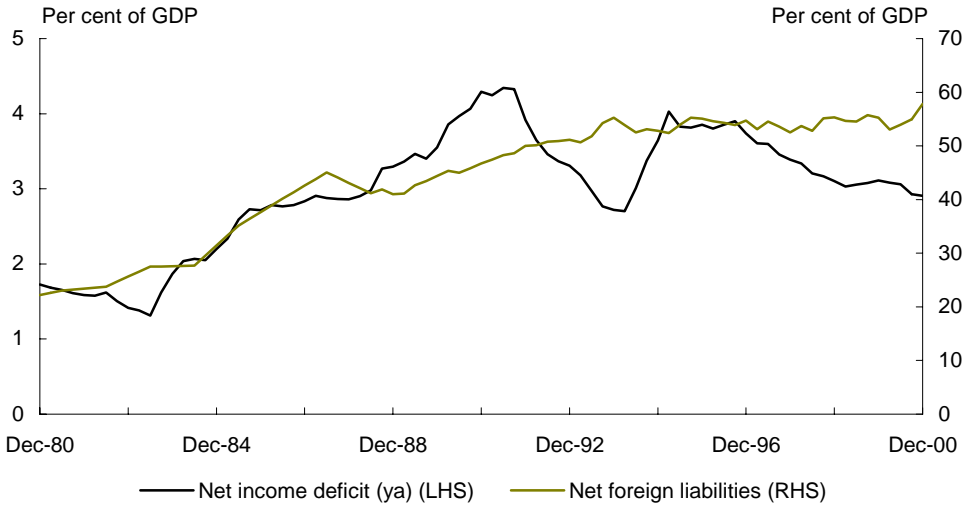
Source: ABS Cat No. 5302.0, 5206.0.

Chart 3: Relationship of net income deficit and net foreign liabilities yield

Per cent of GDP   Per cent
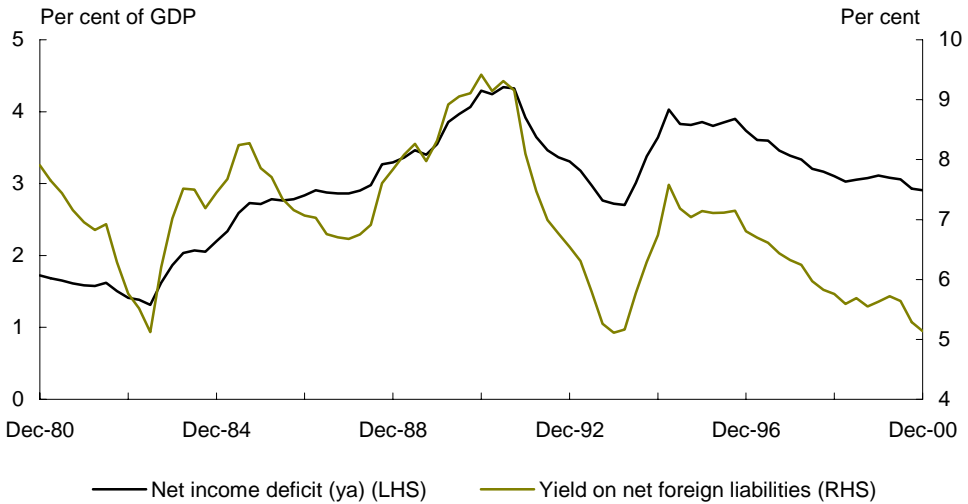
Source: ABS Cat No. 5302.0, 5206.0.

Net foreign liabilities

Changes in the Australian dollar level of net foreign liabilities broadly reflect: net 'new' capital investment in the period; valuation effects associated with exchange rate movements and asset price changes; and other adjustments.

In the context of a growing economy, it can be misleading to use a simple Australian dollar measure when analysing the growth of net foreign liabilities over time. As a result, it is more useful to express net foreign liabilities as a share of gross domestic product (ie, income). However, care should be taken in the interpretation of the absolute level of such a measure.

The contribution of the different factors to the growth in net foreign liabilities as a share of GDP over the last two decades is provided in Table 1.

Table 1: Contributions to growth in net foreign liabilities as a share of GDP

	June 1980 to June 1985	June 1985 to June 1990	June 1990 To June 1995	June 1995 To Dec 2000
NFL/GDP (start)	21	35	45	54
New transactions	15	21	18	20
Net income deficit	7	13	16	16
Balance of trade	9	8	3	6
Other[3]	-1	0	-1	-2
Valuation & other effects	8	3	-1	-1
Exchange rate	n/a	0[4]	-1	1
Price changes	n/a	0	1	-2
Other adjustments	n/a	1½	-1	-1
GDP	-9	-15	-8	-15
NFL/GDP (end)	35	45	54	58

Source: ABS Cat No. 5302.0, 5206.0.

Net foreign liabilities increased sharply from 21 per cent of GDP ($27 billion) in the June quarter 1980 to 35 per cent of GDP ($79 billion) in the June quarter 1985. While around two-thirds of the increase reflected transactions financing

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3 Current and capital transfers, net errors and omissions, net capital gains on the sale of non-financial assets.

4 Disaggregated data for exchange rate, asset price and other adjustments is from September 1988 to June 1990.

the current account deficit, the remaining one-third reflected the impact of exchange rate changes (depreciation), asset price changes and other adjustments.[5]

Net foreign liabilities continued to increase in the second half of the 1980s, albeit at a slower rate. Between June 1985 and June 1990, net foreign liabilities rose from 35 per cent of GDP ($79 billion) to 45 per cent of GDP ($173 billion). Transactions required to finance the current account deficit were responsible for the vast bulk of this increase (over 85 per cent).

In the first half of the 1990s, net foreign liabilities continued to increase, so that by the mid-1990s (June quarter 1995), net foreign liabilities had grown to 54 per cent of GDP ($256 billion). Since then, net foreign liabilities have been relatively stable as a share of GDP, increasing to 58 per cent of GDP ($379 billion). Over the 1990s transactions financing the current account deficit were responsible for all of the increase in net foreign liabilities as a share of GDP (Chart 4).[6]

Chart 4: Contribution to growth of net foreign liabilities
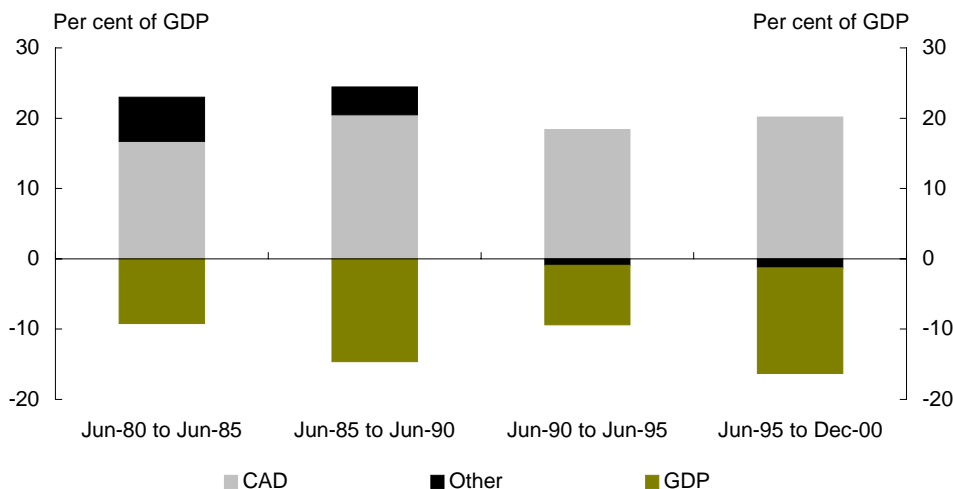
Source: ABS Cat No. 5302.0, 5206.0.

The following sections analyse in detail the factors behind variations in net foreign liabilities.

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5   Disaggregated data on the 'valuation & other effects' category is only available from the 1988-89 financial year.

6   Note that GDP growth reduces this ratio and shows up as a negative contribution in Chart 4.

Net new capital transactions — 'financing the current account'

It is clear that net new capital transactions have been a key determinant of the increase in net foreign liabilities over the past two decades. This can be thought of as 'financing the current account deficit'.

As outlined in Table 1, the net income deficit has been the key determinant of the increase in net foreign liabilities over the past decade. This increase in net foreign liabilities has in turn fed back into subsequent movements in the net income deficit. The trade deficit contributed less to the growth in net foreign liabilities in the 1990s than in it did in the 1980s. Net current and capital transfers have acted to reduce net foreign liabilities moderately over the past two decades.

Impact of exchange rate movements

Variations in exchange rates can have a significant impact on the Australian dollar value of assets and liabilities denominated in a foreign currency. Where foreign investment in Australia is denominated in a foreign currency, the Australian dollar value of the foreign investors' assets will rise as the Australian dollar depreciates against that currency and vice versa. Similarly, where an Australian investment abroad is denominated in a foreign currency the Australian dollar value rises as the Australian dollar depreciates against that currency.

An indication of the sensitivity of net foreign liabilities to exchange rate variations can be obtained by estimating the proportion of net foreign liabilities denominated in foreign currency.

The methodology for estimating the proportion of net foreign liabilities denominated in foreign currency is outlined in the Technical Appendix.

Estimates of Australia's net foreign currency denominated asset position are presented in Chart 5. These estimates update those outlined in the Winter 2000 *Economic Roundup*[7] for the effect of the ABS' revisions to historical data on Australian investment abroad, and incorporate a more detailed revised estimation methodology than previous estimates.

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7   Treasury (2000). Of course, this does not alter the fact that Australia remains in a net liability position overall.

Chart 5: Net foreign currency denominated assets
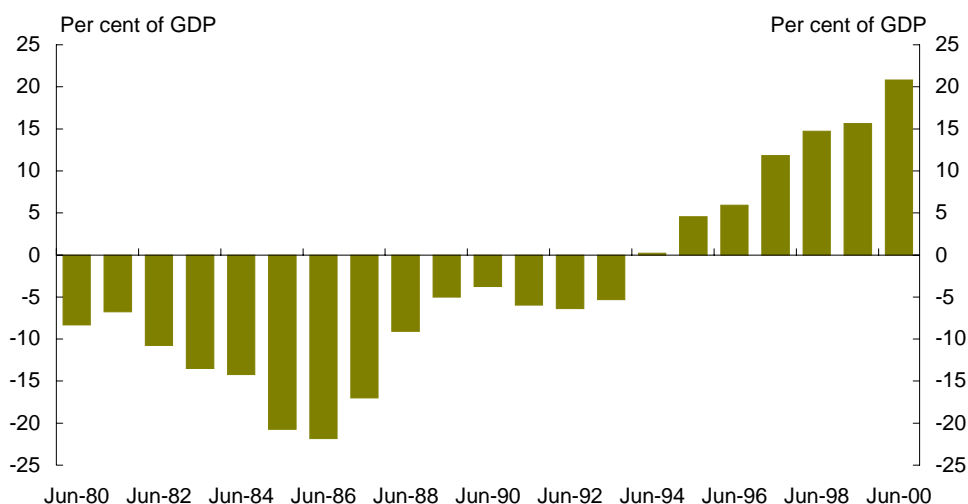
Source: ABS Cat No. 5302.0, 5363.0, 5206.0, 5305.0, 5306.0, Treasury estimates.

Australia has moved to a net positive position in relation to foreign currency denominated assets. As a result, an across-the-board depreciation in exchange rate results in a reduction in net foreign liabilities. This is a significant change to the situation in the mid-1980s, where significant currency depreciation resulted in higher net foreign liabilities and net income deficits.[8]

The weighting of currencies in which Australia's foreign currency assets and liabilities are denominated differs significantly from their trade weights. In particular, the United States dollar and Great British pound have a significantly greater weighting for investment than for trade, while the reverse is true for the Japanese Yen.

Nevertheless, over the past two decades, the exchange rate weighted by Australia's foreign currency denominated assets and liabilities has generally moved in line with the trade weighted index (Chart 6).

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8   See also, for example, Gittins, 1998, 'Valuation Effect Won't Stand Examination', *The Sydney Morning Herald*, p.58.

Chart 6: 'Investment' and 'trade' weighted exchange rates

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Legend: Trade weighted — Foreign currency investment weighted
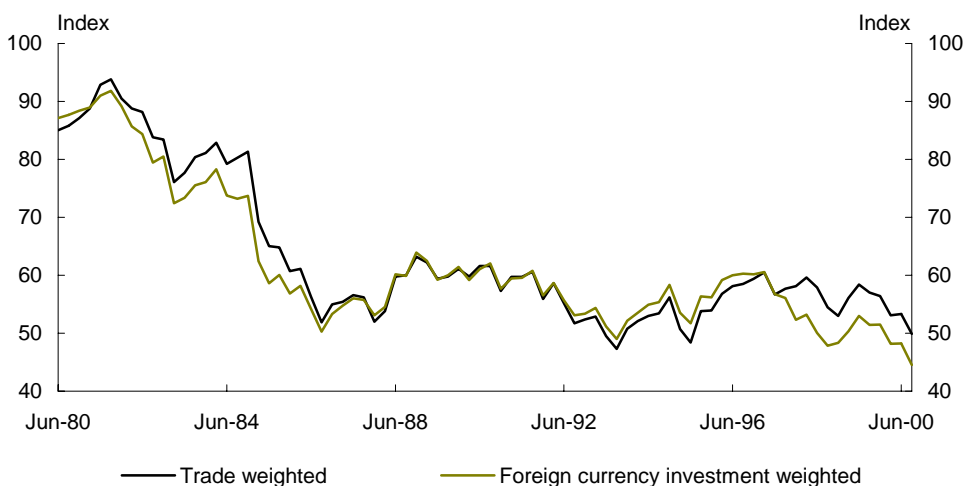
Source: Reserve Bank of Australia, Treasury estimates.

Impact of asset price changes

The level of net foreign liabilities can also be affected by changes in asset prices. On the one hand, net foreign liabilities rise when the price of foreign investors' assets rises. The flipside is that when the price of Australian investors overseas assets rises, net foreign liabilities fall.

Data estimating the impact of asset price changes on the level of net foreign liabilities, Australian investment abroad and foreign investment in Australia are available from the September (quarter) 1988 to September 2000. Over the period from September 1988 to September 2000 the net effect of asset price changes has been a decrease in net foreign liabilities by around $10 billion, or more than 1 per cent of GDP.[9]

Although the net impact is relatively small, asset price changes have increased both Australian investment abroad and foreign investment in Australia significantly over the past decade. Australian investment abroad increased $108 billion or 16½ per cent of GDP due to asset price changes between September 1988 and September 2000, while asset price changes increased

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9   This is the sum of the contribution to the growth in net foreign liabilities as a share of GDP each quarter. With the inclusion of the December quarter 2000, this small net decrease changes to a small net increase of around $6 billion or 1.0 per cent of GDP.

foreign investment in Australia by around $98 billion or 15 per cent of GDP over the same period.

However, some care is needed in interpreting this outcome. In particular, it can be difficult to compare asset price movements between categories and over time. In examining these changes one could look at either the level or the **rate** of asset price changes in disaggregated asset classifications.

In level terms, from September 1988 to September 2000 asset price changes increased Australian direct equity investment abroad by significantly more than foreign direct equity investment in Australia ($67 billion compared to $24 billion — see Table 3). This difference is even more pronounced when expressed as an average rate of growth due to asset price changes. Under this measure, asset prices contributed more than 4 per cent per annum on average over the period to the growth of Australian direct equity investment abroad, and only 1.8 per cent per annum to the growth in foreign direct equity investment in Australia.

For portfolio equity investment the reverse is the case in level terms, with asset prices driving foreign portfolio equity investment $65 billion higher from September 1988 to September 2000, increasing Australian portfolio equity investment abroad by $30 billion. However, this largely reflects the higher level of foreign portfolio equity investment in Australia. When expressed as an average rate of growth, there was little between the two measures, with asset prices adding a little over 7½ per cent per annum to the growth of both inward and outward portfolio equity investment.

However, that the higher average rate of asset price growth for portfolio equity compared to direct equity investment, at least in part, reflects measurement issues.[10]

Financial derivatives exhibited a very high return for both Australian and foreign investors, possibly reflecting their high-risk exposure relative to capital

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10 There are differences in what is defined as an asset price fluctuation between the different investment classifications. For example, for direct equity, retained earnings are included in the current income account, with the resulting change in the price of the asset being classified as a 'new transaction' rather than an asset price change. On the other hand, for portfolio equity investments, only dividends are included as income on the current account, so any retained earnings are classified as an asset price change. As a result, it is not surprising that portfolio equity investments have a higher average asset price growth. For more information, see ABS (1998) Balance of Payments and International Investment Position: Sources, Concepts and Methods.

value. On the other hand, debt securities and other investments have low average capital gains, reflecting the nature of these securities. This outcome is not surprising, as although in the short run the value of debt securities can vary significantly, over the life of the instrument these fluctuations cancel themselves out.

Other adjustments

'Other adjustments' comprise all other variations in the level of net foreign liabilities, such as bad debts and classification changes.[11] Separate data on this component — only available after 1988 — suggest that it has not had a significant impact on the level of net foreign liabilities. Indeed, based on the analysis above, it is likely that much of the increase in 'valuation and other effects' prior to 1988 was attributable to exchange rate variations.

Net foreign liabilities – summary

Overall, the pace of growth of net foreign liabilities as a share of GDP has slowed over the course of the 1990s, with little net growth in the second half of the 1990s. This reflects the current account deficit stabilising as a share of GDP (in turn reflecting lower net income deficit outcomes), a reversal of the valuation impact of a depreciation in the exchange rate effect, and a higher rate of asset price appreciation on Australian investment abroad than on foreign investment in Australia.

Yield on net foreign liabilities

The second driver of the net income deficit is the average yield on net foreign liabilities. The average yield on net foreign liabilities is affected not only by the yield required by foreign investors in Australia, but also by the level of Australian investment abroad and the relative yield on that investment.

In summary, the yield on Australia's net foreign liabilities can be expressed as a function of:

- 'World' interest rates.

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11 ABS (1998).

- A 'country premium' (or discount) reflecting relative inflationary expectations and relative sovereign risk.

- An investment premium (or discount) reflecting the relative risk of the investment opportunities in Australia.

To analyse these factors a broad conceptual framework is needed for what drives the expected return on investments.

The Capital Asset Pricing Model (CAPM) expresses the expected return on an investment in terms of a 'risk-free' interest rate, the riskiness of an investment and the market risk premium.[12] Although more commonly employed in the context of equity securities, this construction is equally applicable to both debt and equity securities.

In the context of international investment, the impact of expected nominal movements in the exchange rate on the value of an investment also need to be taken into account in the expected return. However, consistent with international standards, the effect of exchange rate variations on the capital value of investments is not classified as income in the balance of payments, and is therefore not included in the measured yield on investment.

That is, the expected yield on **all** Australian investment abroad will reflect the yield on 'risk-free' debt in the countries (and currencies) invested in,[13] in turn reflecting the 'real' interest rate and inflationary expectations;[14] and the riskiness of investments undertaken abroad and the market premium. Similarly, the expected yield on foreign investment in Australia will reflect the yield on Australian risk-free debt, the relative riskiness of investments undertaken in Australia and the market premium.

This yields an expression for the difference between the yield on Australian investment abroad and foreign investment in Australia. This expression can be disaggregated further by assuming that the yield on 'risk-free' debt depends on both inflationary expectations and the real rate of interest.

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12 W.F. Sharpe, 1964, 'Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk,' Journal of Finance 19: pp 425-442.

13 McKibbin (1999) noted that 'within each economy all financial assets (bonds, money, equity etc) are being arbitraged and therefore removing [a] wedge between bond rates across countries will also affect the relative returns of a range of domestic and foreign assets'. See also McKibbin (1998).

14 Fisher, I., 1930, The Theory of Interest: As Determined by Impatience to Spend Income and Opportunity to Invest it., N.Y., Kelley & Millman, 1954 Xxxii, 566 P.; Diagrs., Tabs.; 23cm. Bibliography.

'World' interest rates

As a net borrower of funds, changes in the level of 'world' interest rates will have a significant influence on Australia's net income deficit.

For the purposes of this analysis, the 'world' interest rate is assumed to be equal to the risk-free interest rate weighted by Australian investment abroad (both debt and equity).[15]

Consistent with the approach for exchange rate variations, the currency and time to maturity[16] of Australian investment abroad is determined by reference to ABS data as far as possible, with similar patterns assumed to prevail in the preceding period. The official cash interest rate and the prevailing yields on 3 and 10 year Government bonds were assumed to be equivalent to 'risk-free' interest rates (with equity investments assumed to have a maturity of at least 10 years).

The fall over time in the resultant 'world' interest rate helps to explain part of the peaks in the net income deficit over 4 per cent of GDP in the early and mid-1990s, and the intervening and subsequent declines below 3 per cent of GDP (Chart 7). However over the course of the past year or so, the net income deficit decreased at a time when world interest rates rose. This suggests that fluctuations in world interest rates alone are not able to explain the significant decrease in the net income deficit over the recent years.

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15 As above, equity investments are assumed to be denominated in the currency of the country in which the investment is made, while the denominated of debt instruments is measured directly.

16 Table 37, ABS Cat. No. 5302.0.

Chart 7: Relationship between the NID and 'world' interest rates

Per cent of GDP   Per cent

— Net income deficit (sa) (LHS)   — 'World' interest rates (RHS)
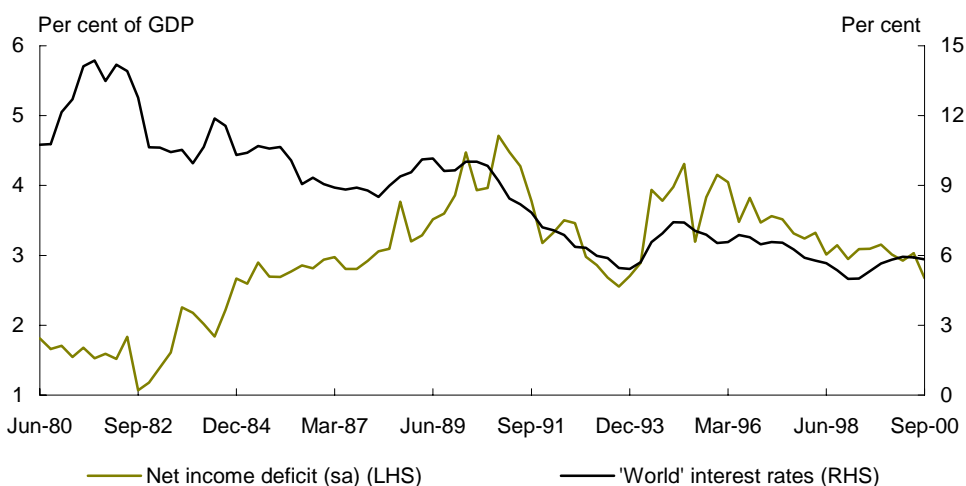
Source: RBA Bulletin, ABS Cat No. 5302.0, 5363, Datastream, Treasury estimates.
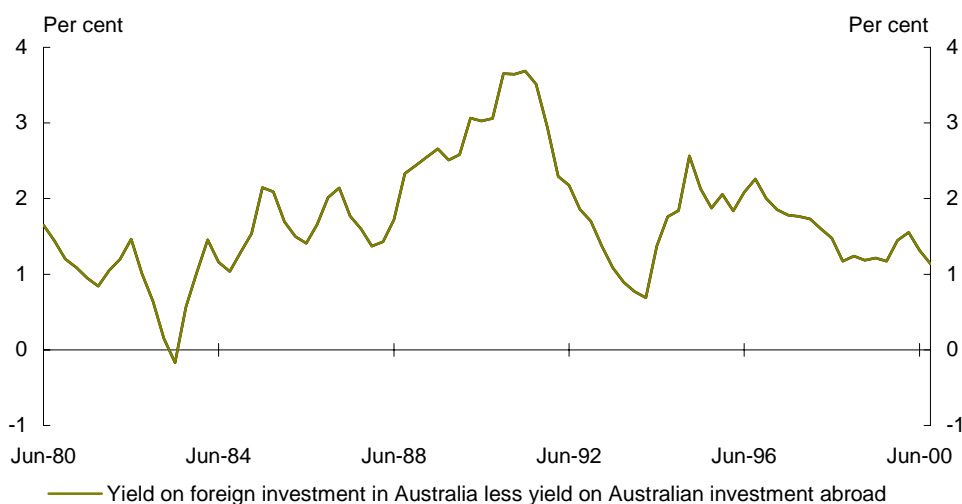
Premium on foreign investment in Australia

The past two decades have seen significant fluctuations in the premium on foreign investment in Australia (the extent to which the average yield[17] on foreign investment in Australia has exceeded the average yield on Australian investment abroad)[18]. In the first half of the 1980s, the average premium was around ¾ of a per cent. The premium increased to around 1½ per cent in the second half of the 1980s and 2 per cent in the first half of the 1990s, peaking at around 3½ per cent in the early 1990s. Subsequently, the premium on foreign investment has declined to average around 1½ per cent in the second half of the 1990s, and around ¾ of a per cent in the September quarter 2000 (Chart 8).

If sustained, this lower premium would mean that, for a given level of 'world' interest rates, Australia's net income deficit on net foreign liabilities would be significantly lower than previously.

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17 Measured as the income received over the financial year divided by the level of investment at the start of the financial year.

18 Note that this is not intended to imply that a foreign investor receives a higher rate of return than an Australian investor for any given investment.

Chart 8: Premium paid on foreign investment in Australia

Per cent   Per cent

Yield on foreign investment in Australia less yield on Australian investment abroad

Source: ABS Cat No. 5302.0.

The question then is whether this premium reduction can be explained by a lower country and/or investment risk premium.
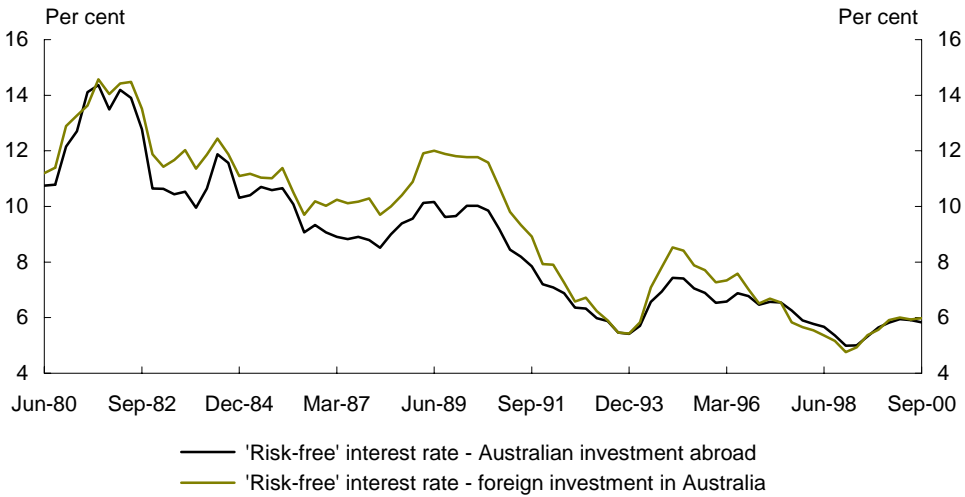
Country premium

As defined above, the 'country premium' (or discount) on foreign investment in Australia is the difference between the 'risk-free' interest rate weighted by the currency composition of foreign investment in Australia and the equivalent measure for Australian investment abroad (ie, the proxy for 'world' interest rates outlined above).

The same methodology is used to construct a measure of the 'risk-free' interest rate for foreign investment in Australia. The currency and time to maturity[19] of foreign investment in Australia is determined by reference to ABS data as far as possible. The official cash interest rate and the prevailing yields on 3 and 10 year Government bonds were assumed to be equivalent to 'risk-free' interest rates (with equity investments assumed to have a maturity of at least 10 years).

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19 Table 37, ABS Cat. No. 5302.0; IIP, foreign investment in Australia.

Chart 9: Comparison of 'risk–free' interest rates

Per cent   Per cent

Legend:
— 'Risk-free' interest rate - Australian investment abroad
— 'Risk-free' interest rate - foreign investment in Australia

Source: ABS Cat No. 5302.0, 5305.0, 5306.0, 5363.0, Datastream, Treasury estimates.

The 'country premium' is currently around zero, and has been around this level since December quarter 1996, down from a premium of around 100 basis points in the mid-1990s and around 200 basis points in the late 1980s and early 1990s (Chart 9). Further, over the past two decades the country premium has explained much of the variation in the average difference between the yield on foreign investment in Australia and Australian investment abroad (Chart 10). Importantly, the premium on foreign investment in Australia is currently in line with its longer-term relationship with the 'country premium'.

Chart 10: Premium paid on FIA and 'country premium'

Per cent   Per cent

Legend:
— 'Country premium' (LHS)   — Premium on foreign investment in Australia (FIA) (RHS)
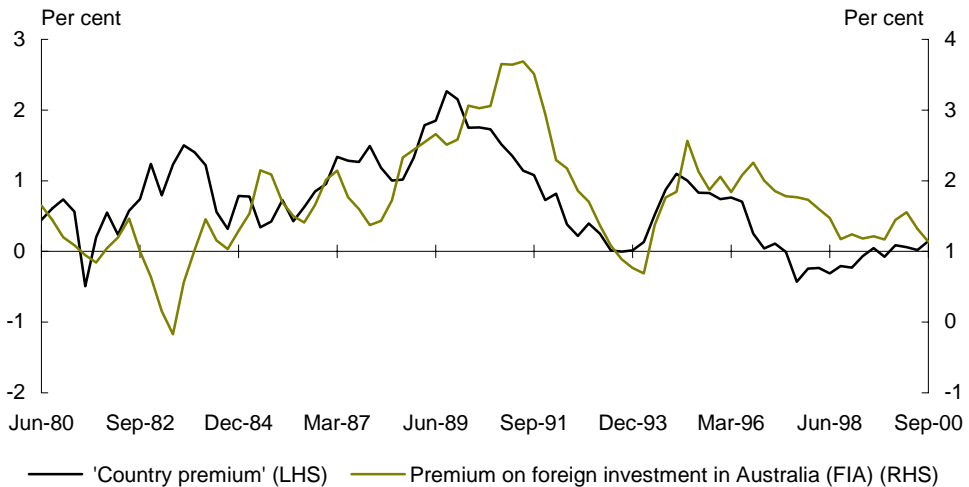
Source: ABS Cat No. 5302.0, 5305.0, 5306.0, 5363.0, Datastream, Treasury estimates.

As noted above, the 'country premium' can be conceptually separated into inflationary expectations and sovereign (or 'default') risk. That is, a reduction in the 'country premium' may reflect a relative reduction in either or both of inflationary expectations or sovereign risk. However, it is difficult to separate the two measures with precision.[20]

The rating assigned to Australia's long term sovereign debt by leading ratings agencies can be a useful qualitative indicator of the degree of the 'sovereign' risk premium. Douglas and Bartley (1997) noted the downgrading in the late 1980s of Australian Commonwealth Government debt by both Standard and Poor's and Moody's was not inconsistent with the argument that this may have been associated with a small country risk premia of around 0.25 per cent (in real terms) in the early 1990s.

More recently, Standard and Poor's upgraded their rating of Commonwealth Government debt in 1999, citing fiscal consolidation and a transparent medium term fiscal policy framework; the medium term framework for monetary policy and resultant low inflation environment in Australia; and continued structural reform in the labour and product markets, as factors supporting the upgrade. Indeed, Gruen and Stevens (2000) noted that by the end of the 1990s, 'the real yield on $A-denominated bonds was roughly the same as those on German and US bonds'. This suggests that the default risk on Australian 'risk-free' debt has declined over the course of the 1990s.

Investment risk premium

Changes in the investment risk premium, in particular, changes in investors' *ex ante* risk preferences, are difficult to observe in practice. In the current context, discussion is limited to analysis of the *ex post* yield on direct and portfolio equity securities.
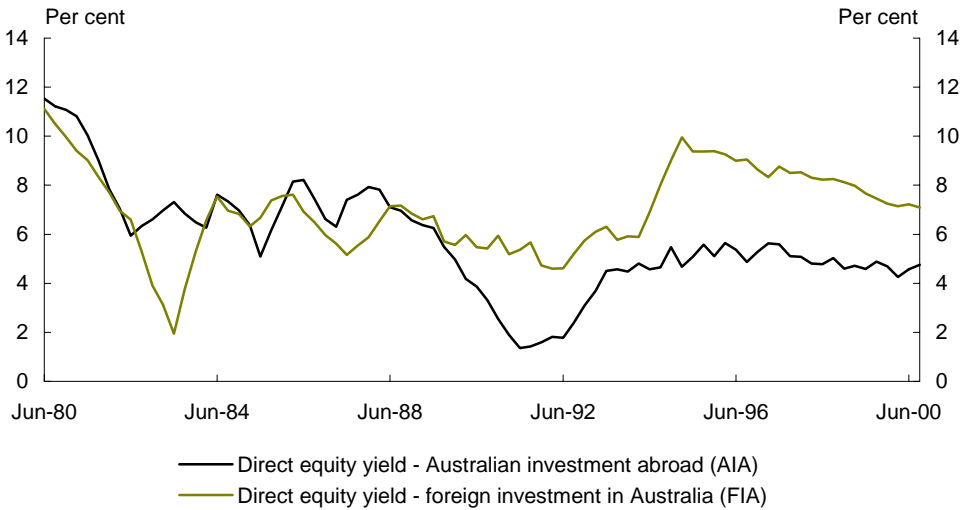
Direct equity

Direct equity investments are those where the investor has an equity interest in 10 per cent or more of the ordinary capital or voting stock of the enterprise.[21]

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20 For further discussion of this issue see Treasury, 1996, Documentation of the Treasury Macroeconomic (TRYM) Model of the Australian Economy, pp 6.5-6.7.

21 ABS (1998).

In the first half of the 1980s, direct equity foreign investment in Australia yielded a lower return than Australian direct equity investment abroad. While returns were similar in the second half of the 1980s, in the early 1990s a wedge opened up between the returns, with foreign investment in Australia resulting in a higher yield than Australian investment abroad. Nevertheless, this premium has declined in recent years, from around 4 per cent in the mid-1990s to around 2 per cent in the September quarter 2000 (Chart 11).

Chart 11: Comparison of yields on direct equity investment

Source: ABS Cat No. 5302.0, Treasury estimates.

The changes in the premium on foreign direct equity investment over Australian equity investment abroad in the 1990s is partly, but not entirely, explained by changes in the 'country' risk premium (Chart 12).

Chart 12: Comparison of direct equity premium and 'country premium'
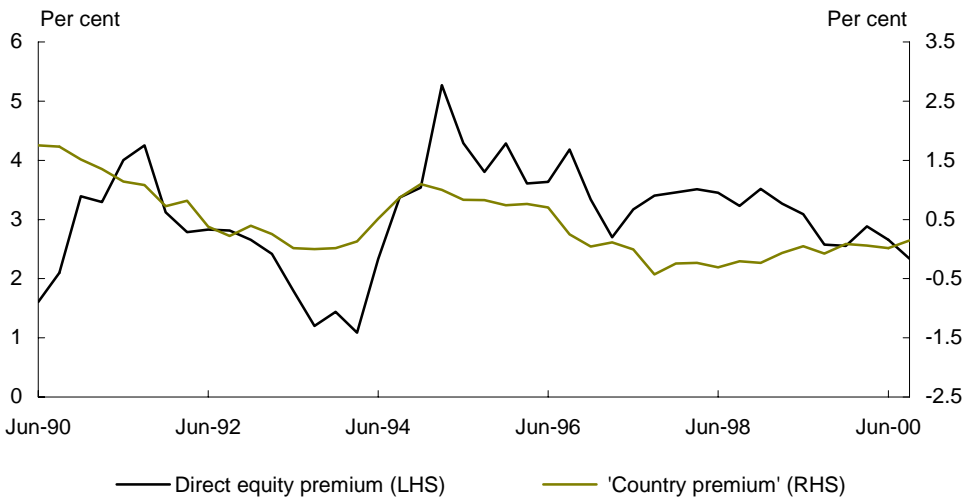
Source: ABS Cat No. 5302.0, 5306.0, 5363.0, Datastream, Treasury estimates.

The difference between these two premia is the *ex post* investment risk premium. On the face of it, it appears that the investment risk premium increased over the course of the 1990s, remaining relatively stable at 2 per cent in the second half of the 1990s. However, it should be remembered that the expected return on direct equity investment includes the effect of expected asset price and exchange rate variations, which – consistent with international standards — are not included in income by the ABS. These factors can be added to items that are measured as income to derive a 'total' *ex post* yield on direct equity investments. These results — while volatile — suggest that, on average over the 1990s, the total yield on Australian direct equity investment abroad exceeded that on foreign direct equity investment in Australia.

Portfolio equity

Portfolio equity investment is defined as equity investment other than direct investment or reserve assets. That is, equity investments are classified as portfolio in nature if they comprise less than 10 per cent of the issued equity capital of the entity.[22]

Portfolio foreign equity investment in Australia has consistently yielded more than Australian portfolio equity investment abroad (Chart 13). However, both yields are significantly below that on direct equity investment. This is likely to

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22 ABS (1998).

reflect the fact that the ABS — consistent with international standards — only record the dividend component as income. By comparison, retained earnings and undistributed branch profits are also included in income for direct equity investments. Thus, the higher yield of foreign portfolio equity investment in Australia suggests that the Australian companies pay a higher proportion of their earnings to shareholders as dividends.[23]

Chart 13: Comparison of yields on portfolio equity investment
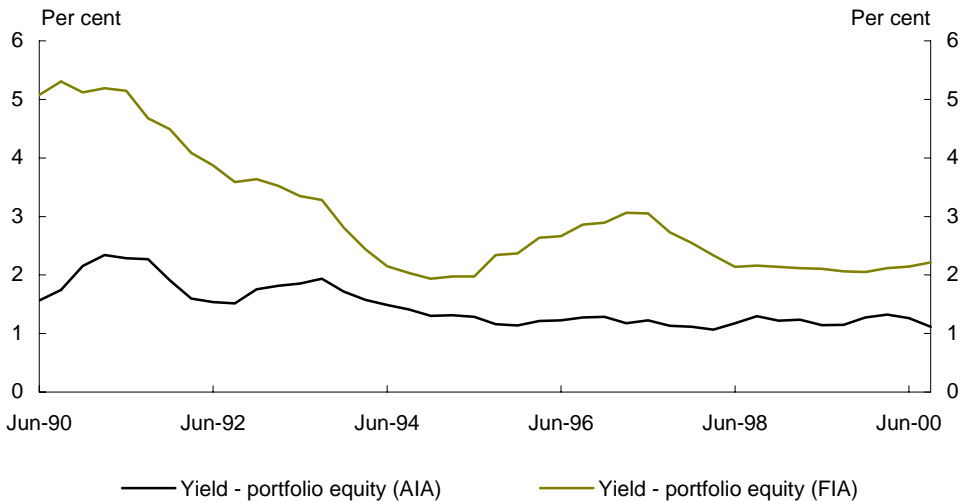
Source: ABS Cat No. 5302.0, Treasury estimates.

As with direct equity investments one way of adjusting for these factors is to include the effect of expected asset price and exchange rate variations to derive a total *ex post* yield on portfolio equity investments. On this basis, the average yield on portfolio equity investments has been about the same over the decade of the 1990s for Australian investment abroad and foreign investment in Australia.

Summary — yield on net foreign liabilities

It appears that a reduction in the premium between Australian interest rates and those in other developed countries since the mid-1990s has been an

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23 In turn, this is likely to reflect Australia's full imputation system for the taxation of dividends.

important factor in the recent decline in the net income deficit as a share of GDP.

Australia's net foreign liabilities stood at 58 per cent of GDP in the December quarter 2000. Therefore, a 1 percentage point reduction in the yield on net foreign liabilities – whether as a result of lower 'world' investment yields or a reduction in the premium on investment in Australia — translates directly to around 0.6 per cent of GDP reduction in the net income deficit and, other things being equal, the current account deficit.

In addition, the impact of any premium on foreign investment in Australia increases with the level of Australian investment abroad.[24] As Australian investment abroad was around 62 per cent of GDP in the September quarter 2000, a 1 percentage point reduction in the difference in the yield on foreign investment in Australia relative to Australian investment abroad translates to around 0.6 per cent of GDP reduction in the net income deficit and the current account deficit.

Conclusion

The decline of the net income deficit is both a function of a significant slowing in the rate of growth of Australia's net foreign liabilities and a reduction in the average yield on net foreign liabilities. In turn, this reflects changes in the currency composition of net foreign liabilities; lower 'world' interest rates; and a reduction in the interest rate premium foreign investors require to invest in Australia.

As a result, Australia's capacity to finance its external liabilities is the strongest it has been for some time.

The debt servicing ratio — the level of exports required to pay the interest on net foreign debt — was 9.6 per cent in the December quarter 2000, less than half that recorded in the September quarter 1990. The net liabilities servicing ratio — the level of exports required to pay the cost of servicing foreign liabilities (both debt and equity) — was 13.1 per cent in the December quarter 2000, its lowest level since December 1983.

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24 See equation 7 of the Technical Appendix.

In addition, when the net income deficit declines as a share of GDP, it follows that Australia's gross national income (ie, the income earned by Australian residents) is increasing by more than GDP.

Over most of the 1980s, the net income deficit increased faster than GDP, indicated by the negative values of the line in Chart 14. Indeed, over the course of the 1980s the net income deficit increased from under 2 per cent of GDP in 1979-80 to around 4 per cent of GDP in 1989-90, an average increase of around 0.2 per cent of GDP per annum.

Chart 14: The net income deficit and gross national income
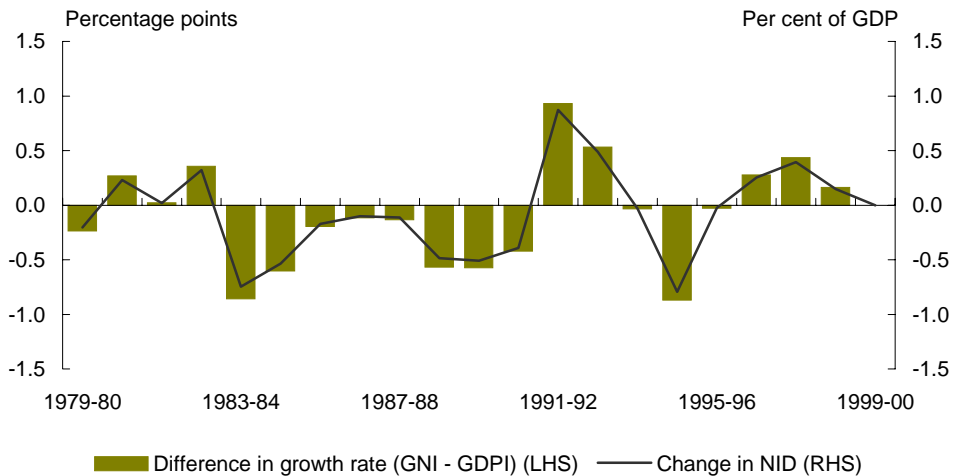
Source: ABS Cat No. 5302.0, 5206.0.

As a consequence, the income of Australian residents (ie, gross national income) was growing at a slower pace than total income produced in Australia (ie, gross domestic product), shown by the negative values of the bars in Chart 14.

This situation was reversed in the 1990s. Over most of that decade, the net income deficit grew at a slower pace than GDP (and even declined in absolute terms on four different occasions). Over the course of the 1990s the net income deficit decreased from around 4 per cent of GDP in 1989-90 to around 3 per cent of GDP in 1999-2000, an average decrease of around 0.1 per cent of GDP per annum. Consequently, income growth of Australian residents outpaced total income growth in Australia over most of the 1990s.

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Technical appendix

This appendix contains the equations referred to in the main text of the article.

Equation 1

There are two key drivers of the net income deficit: the level of net foreign liabilities being financed and the rate of return on those liabilities.

$$NID_t \equiv \text{NFL}_{(t\text{-}1)} \times \text{Yield}_{\text{NFL}} \tag{1}$$

where:

NID$_t$ = Net Income Deficit in period t

Yield$_{\text{NFL}}$ = Yield on net foreign liabilities

NFL$_{(t\text{-}1)}$ = Net Foreign Liabilities at the end of the previous period.

Equation 2

Changes in the level (in nominal terms) of net foreign liabilities reflect: net 'new' capital transactions in the period; valuation effects associated with exchange rate movements and asset price changes; and other adjustments.

$$NFL_t - NFL_{t-1} = \text{NNKT}_t + \Delta\text{AP}_t \times NFL_{t-1} + \Delta\text{XR}_t \times NFL_{t-1} + \text{Other}_t \qquad \textbf{or} \tag{2}$$

$$NFL_t = \text{NNKT}_t + \Delta\text{AP}_t \times NFL_{t-1} + \Delta\text{XR}_t \times NFL_{t-1} + \text{Other}_t + NFL_{t-1}$$

where:

NNKT$_t$ = Net 'new' capital transactions in the period t.

ΔAP$_t$ = Change in the price of assets and liabilities comprising net foreign liabilities in the period t.

ΔXR$_t$ = Change in the exchange rate(s) in which net foreign liabilities are denominated in the period t.

Other$_t$ = Other adjustments in the period t.[25]

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25 ABS, 1998, Balance of Payments and International Investment Position: Sources, Concepts and Methods, Cat. No. 5331.0, page 23.

Equation 3

Equation 2 can be restructured to obtain an expression for the contribution of different factors to the change in net foreign liabilities as a share of GDP.

$$\frac{NFL_t}{GDP_t} - \frac{NFL_{t-1}}{GDP_{t-1}} = \left(\frac{\text{NKT}_t + \Delta \text{AP}_t \times NFL_{t-1} + \Delta \text{XR}_t \times NFL_{t-1} + \text{Other}_t}{GDP_t} \right)$$

$$- \left(\left(1 + \frac{GDP_{t-1}}{GDP_t} \right) \times \frac{NFL_{t-1}}{GDP_{t-1}} \right) \tag{3}$$

Equation 4

Where an Australian investment abroad is denominated in a foreign currency the Australian dollar value rises as the Australian dollar depreciates against that currency.

$$\Delta XR_t \times NFL_{t-1} \equiv \sum_i^n \Delta XR_{t_i} \times FIA(FC_i)_{t-1} - \sum_j^n \Delta XR_{t\,j} \times AIA(FC_j)_{t-1} \tag{4}$$

where:

FIA(FC)   Foreign investment in Australia denominated in foreign currency.

AIA(FC)   Australian investment abroad denominated in foreign currency.

Equation 5

An indication of the sensitivity of net foreign liabilities to exchange rate variations can be obtained by estimating the proportion of net foreign liabilities denominated in foreign currency.

$$FCNFL_t \equiv FIA(FCDebt)_t - \left(AIA(Equ)_t + AIA(FCDebt)_t \right) \tag{5}$$

where:

FCNFL   Foreign currency denominated net foreign liabilities

FIA(FCDebt)   Foreign investment in foreign currency denominated debt

AIA(FCDebt)   Australian investment in foreign currency denominated debt, including foreign currency denominated official reserve assets

AIA(Equ)   Australian equity investments abroad

Investments in equity assets are assumed to be denominated in the currency where the investment is made. That is, foreign equity investments in Australia are assumed to be denominated in Australian dollars. Similarly, Australian equity investments abroad are assumed to be denominated in foreign currency.

Each quarter the ABS publishes data on the currency denomination of foreign debt assets and liabilities.[26] Prior to September 1996, these data were only provided for foreign debt liabilities.[27] Further, some foreign debt data has been revised subsequent to the most recent publication of currency disaggregation. However, an estimate for the level of foreign currency denominated debt liabilities is obtained by applying the most recent disaggregated currency data to the most recent data on foreign debt assets and liabilities.

The ABS and the Reserve Bank of Australia publish data on the foreign currency denominated component of official reserve assets.[28] Around two-thirds of other foreign debt assets are assumed to have been denominated in foreign currency.[29]

Equation 6

The level of net foreign liabilities can also be affected by changes in asset prices. On the one hand, net foreign liabilities rise when the price of foreign investors' assets rises. The flipside is that when the price of Australian investors overseas assets rises, net foreign liabilities falls.

$$\Delta AP_t \times NFL_{t-1} \equiv \sum_{i}^{n} \Delta AP_{t_i} \times FIA_{t-1} - \sum_{j}^{n} \Delta AP_{t_j} \times AIA_{t-1} \qquad (6)$$

where:

FIA_{t-1} =   Foreign investment in Australia at the end of the previous period.

AIA_{t-1} =   Australian investment abroad at the end of the previous period.

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26 ABS, various, Balance of Payments and International Investment Position, 5302.0, Table 37.

27 ABS, various, Foreign Investment in Australia, Cat. No. 5305.0; International Investment Position, Cat. No. 5306.0.

28 ABS, Cat. No. 5302.0 and RBA, Bulletin.

29 This is around the average proportion in the years where data is available.

Equation 7

The average yield on net foreign liabilities is affected not only by the yield required by foreign investors in Australia, but also by the level of Australian investment abroad and the relative yield on that investment.

Equation 1 can be re-expressed as:

$$NID_t \equiv \left(FIA_{t\text{-}1} \times Yield_{FIA_t} \right) - \left(AIA_{t\text{-}1} \times Yield_{AIA_t} \right)$$

which can be expressed as:

$$NID_t \equiv \left(FIA_{t\text{-}1} - AIA_{t\text{-}1} \right) \times Yield_{FIA_t} - AIA_{t\text{-}1} \left(Yield_{FIA_t} - Yield_{AIA_t} \right) \qquad \textbf{or:} \qquad (7)$$

$$NID_t \equiv NFL_{t\text{-}1} \times Yield_{FIA_t} + AIA_{t\text{-}1} \left(Yield_{FIA_t} - Yield_{AIA_t} \right)$$

Equation 8

The Capital Asset Pricing Model (CAPM) expresses the expected return on an investment could in terms of a 'risk-free' interest rate, the riskiness of an investment and the market risk premium.[30]

$$R_{Investment} \equiv R_{risk\text{-}free} + \beta_{investment} \left(R_{market} - R_{risk\text{-}free} \right) \qquad (8)$$

where:

$R_{investment}$ Expected return on investment

$R_{risk\text{-}free}$ 'Risk-free' rate of return

$B_{investment}$ The riskiness' of the investment relative to the market (where 1 is the 'market', and 0 is 'risk-free')

R_{market} Average expected return on all investments in the relevant market

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30 W.F. Sharpe, 1964, 'Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk,' Journal of Finance 19: pp 425-442.

Equation 9

The interest rate reflects a real interest rate (in turn reflecting the demand and supply of capital) and the expected rate of inflation.[31]

$$((1+r_n) \equiv (1+r_r) \times (1+r_i))$$ (9)

where:

r_n Nominal rate of interest

r_r Real rate of interest

r_i Expected rate of inflation

Equation 10

The expected yield on **all** Australian investment abroad will reflect the yield on 'risk-free' debt in the countries (and currencies) invested in, in turn reflecting the 'real' interest rate and inflationary expectations; and the riskiness of investments undertaken and the market premium, as well as expected exchange rate variations.

$$Yield_{AIA\,t} \equiv R_{\text{r-f}\,(AIA)\,t} + \beta_{(AIA)_t} \left(R_{m(\text{'world'})_t} - R_{r-f(\text{'world'})_t} \right) + \Delta E_{\,AIA\,t}$$ (10)

where:

$Yield_{AIAt}$	=	Expected yield on Australian investment abroad.
$R_{\text{r-f}(AIA)}$	=	Weighted 'risk-free' rate of interest in the countries and currencies that comprise Australian investment abroad.
$R_{\text{r-f}(\text{'world'})}$	=	Weighted 'risk-free' rate of interest all countries and currencies that comprise world investment.
$R_{m(\text{'world'})}$	=	Expected rate of return on the weighted average of world investments.
$B_{(AIA)}$	=	Relative riskiness of Australian investments abroad compared with the weighted average of world investments.
ΔE	=	Expected changes in the exchange rate.

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31 Fisher, I., 1930, The Theory of Interest: As Determined by Impatience to Spend Income and Opportunity to Invest It, New York., Kelley & Millman, 1954.

Equation 11

The expected yield on foreign investment in Australia will reflect the yield on Australian risk-free debt, the relative riskiness of investments undertaken in Australia and expected exchange rate variations.

$$Yield_{FIA\,t} \equiv R_{r\text{-}f\,(\text{'Aust'})_t} + \beta_{(FIA)_t}\left(R_{m\,(\text{'world'})_t} - R_{r-f\,(\text{'world'})_t}\right) + \Delta E_{FIA\,t} \quad (11)$$

where:

$Yield_{FIAt}$	=	Expected yield on foreign investment in Australia.
$R_{r\text{-}f(FIA)}$	=	Weighted 'risk-free' rate of interest in the currency composition of foreign investment in Australia.
$R_{market(world)}$	=	Expected rate of return on the weighted average of world investments.
$\beta_{(AIA)}$	=	Relative riskiness of foreign investment in Australian compared with the weighted average of world investments.
ΔE_{AIA}	=	Expected changes in the exchange rate.

Equation 12

Subtracting equation 10 from equation 11 yields an expression for the difference between the yield on Australian investment abroad and foreign investment in Australia.

$$\left(Yield_{FIA\,t} - Yield_{AIA\,t}\right) \equiv \left(R_{r\text{-}f\,(\text{'Aust'})_t} - R_{r\text{-}f\,(AIA)_t}\right)$$

$$+ \left(\beta_{(FIA)_t} - \beta_{(AIA)_t}\right)\left(R_{m\,(\text{'world'})_t} - R_{r-f\,(\text{'world'})_t}\right) + \Delta E_{FIA_t} - \Delta E_{AIA_t} \quad (12)$$

Equation 13

Equation 12 can be disaggregated further by assuming that the yield on 'risk-free' debt depends on both Australian inflationary expectations and the real rate of interest.

$$\left(Yield_{FIA_t} - Yield_{AIA_t} \right) \equiv$$

$$\left(R_{(real)\ r\text{-}f\ ('Aust')_t} - R_{(real)\ r\text{-}f\ (AIA)_t} \right) + \left(R_{(i.exp.)\ r\text{-}f\ ('Aust')_t} - R_{(i.exp.)\ r\text{-}f\ (AIA)_t} \right)$$

$$+ \left(\beta_{(FIA)_t} - \beta_{(AIA)_t} \right)\left(R_{m('world')_t} - R_{r-f('world')_t} \right) + \Delta E_{FIA_t} - \Delta E_{AIA_t}$$

(13)