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# Current Account Deficits: The Australian Debate

*Rochelle Belkar,*
*Lynne Cockerell and*
*Christopher Kent*

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Authors: belkarr, cockerelll or kentc at domain rba.gov.au

Economic Publications: ecpubs@rba.gov.au

## Abstract

This paper documents the clear change of view, which has taken place in Australia over the past three decades or so, concerning the relevance of the current account deficit for policy. Historical experience under a fixed exchange rate regime suggested that large persistent deficits were unsustainable and could leave the economy vulnerable to sudden reversals in sentiment. These concerns persisted after the floating of the Australian dollar and financial deregulation, and it was thought that all arms of policy should help to rein in the then much larger current account deficits. However, these policies were shown to be ineffective and, by the early 1990s, the argument that current account deficits represent the optimal outcomes of decisions made by 'consenting adults' gained wide support. This paper presents some empirical evidence consistent with optimal smoothing in the face of temporary shocks; the persistence of the deficit is attributed to a modest degree of impatience relative to the rest of the world. Although it is now widely accepted that policy should not seek to influence the current account balance, the issue of external vulnerability remains of interest. Here, country-specific considerations are important, and it is argued that the factors that have made Australia relatively resilient to external shocks are also those that helped to attract foreign capital in the first place.



Keywords: current account, external vulnerability, exchange rate regimes
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# CURRENT ACCOUNT DEFICITS: THE AUSTRALIAN DEBATE

**Rochelle Belkar, Lynne Cockerell and Christopher Kent**

## 1. Introduction

Large and persistent current account deficits are frequently raised as a cause for concern for a number of reasons. Perhaps the key concern is that countries in this situation could be on a path to insolvency, building up excessive net foreign debt, raising the prospects of default and/or a sharp reversal in capital flows, which might force an abrupt and costly adjustment.[1] Also, large deficits and rising indebtedness could leave countries more vulnerable to adverse external shocks (including a change in sentiment of foreign creditors). Some argue that policy-makers should take steps to ensure that countries move towards a sustainable position in which the current account deficit is not so large that it will lead to an excessive build-up in foreign indebtedness.

At the other extreme is the argument that, so long as markets are efficient, current account deficits reflect the optimal decisions of borrowers and lenders. Therefore, policy intervention to reduce deficits is not only unwarranted but could reduce welfare. Moreover, policies that attempt to rein in deficits may be ineffective, while policies to improve market efficiency and enhance welfare could lead to higher current account deficits.

Because Australia has a long history of sizeable current account deficits, it makes for an interesting case study of these issues. This paper documents the clear change in the general view in Australia over the past three decades concerning the current account balance as a policy objective, highlighting issues related to solvency, sustainability, optimality and vulnerability. This period is also interesting because it spans the transition from a fixed exchange rate regime with stringent capital controls and a heavily regulated financial system, to a flexible exchange rate regime with an open capital account and liberalised financial markets.

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[1] Milesi-Ferretti and Razin (1996) provide a thorough discussion of solvency – when the intertemporal budget constraint is satisfied – and sustainability – whereby the current account deficit is small enough so that net foreign liabilities do not rise as a share of GDP. Optimality by definition will satisfy solvency, but it will not necessarily satisfy sustainability.

Figure 1 shows Australia's current account balance and some related macroeconomic developments since the 1960s. A shift to larger sustained current account deficits was noticeable around the early 1980s, with the average increasing from about 2½ per cent to 4½ per cent of GDP. Most of this rise can be accounted for by a drop in the saving rate rather than a rise in investment. This change was sustained in the face of a sizeable turnaround in the fiscal position (as a share of GDP, public sector debt reached a little over 30 per cent in the early 1990s and has declined to around zero currently) and a large depreciation of the real exchange rate (of around 30 per cent between the mid 1970s and mid 1980s). Net foreign debt rose rapidly from around 6 per cent of GDP at the beginning of the 1980s to over 30 per cent by the mid 1980s (partly reflecting the effect of the depreciation on foreign-currency-denominated debt); since then it has risen to about 52 per cent. The profile of total net foreign liabilities is not quite as steep, with net foreign equity liabilities flat for much of the period and lower since the late 1990s.[2]

From the early 1970s to December 1983, with the fixed (and later managed) exchange rate regime, current account deficits in Australia were a cause of policy concern to the extent that they were not matched by capital inflows and hence needed to be funded out of foreign exchange reserves. But the more general and growing concern was the problem of managing a partially fixed exchange rate while pursuing monetary policy goals with an increasingly open capital account. By late 1983 these pressures contributed to the complete opening of the capital account and floating of the exchange rate (Debelle and Plumb 2006).

The view that policy *should* and *could* do something to address large current account deficits and the build-up of external liabilities persisted after the move to the flexible exchange rate. Indeed, with the rapid build-up of external liabilities in the mid 1980s, concerns about excessive and persistent deficits became prominent, in part reflecting the fact that policy-makers could no longer rely on capital

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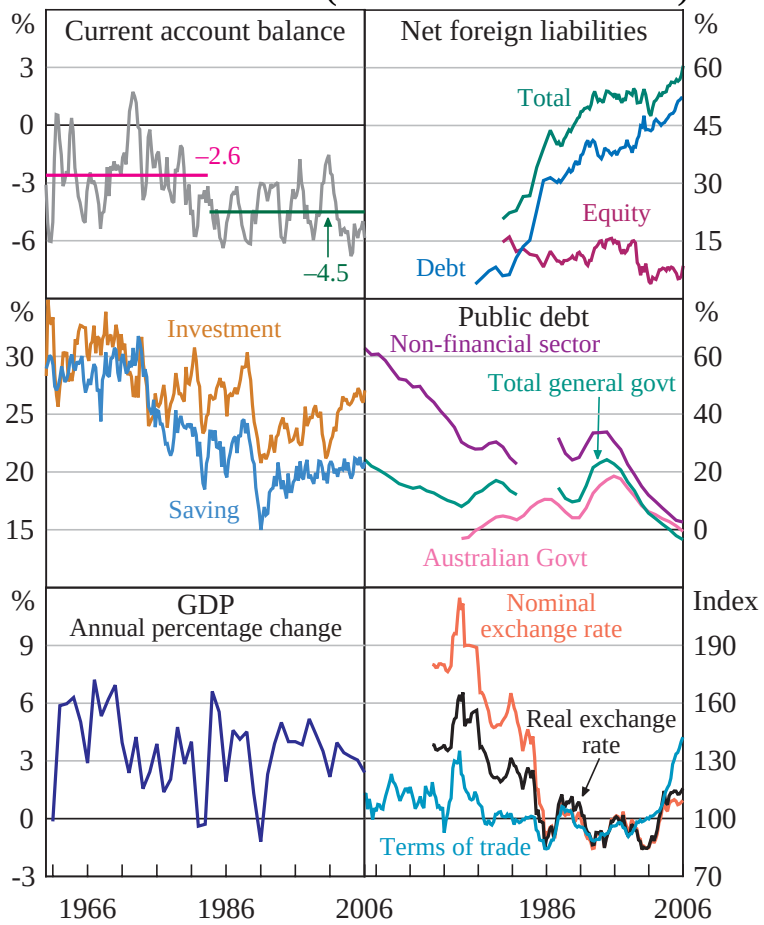
[2] Gruen (2005) provides a detailed discussion of the evolution of the current account deficit in Australia and a comparison with other selected economies. Data compiled by Lane and Milesi-Ferretti (2006) show that since the late 1980s, Australia is one of five long-standing OECD countries with an annual average current account deficit of greater than 4 per cent (relative to GDP), along with Greece, Iceland, New Zealand and Portugal. These and other OECD countries experienced peak deficits on an annual basis of around 9 per cent or higher, compared with a peak of 6.2 per cent for Australia in 2004. These countries also have higher net foreign liabilities (relative to GDP) than Australia.

controls to rein in the current account. The key strategy to address this was through fiscal consolidation, as well as a number of other structural policies aimed at improving international competitiveness. While such policies had the stated objective of lowering the current account deficit, it is worth recognising that such pronouncements may have also played a useful rhetorical role in support of fiscal and market reforms. Of course, the usefulness of these warnings would have waned with the realisation that, despite determined attempts, there was no reduction in the trend current account deficit.

**Figure 1: The Current Account Balance, Debt and Other Indicators**

Per cent of GDP (unless otherwise noted)




Notes: Current account averages are shown for 1960 to 1983 and for 1984 to June 2006. The terms of trade and exchange rate are indices with a post-float average of 100 (the latter are on a trade-weighted basis). Annual GDP is in calendar years.

Source: See Appendix B

Monetary policy, it was hoped, could also play a role through its influence as a short-term demand management device. Under the 'checklist' approach to

monetary policy in place from the mid 1980s, the balance of payments was listed explicitly as an important factor to guide policy decisions, and there were frequent references to the need to rein in sizeable current account deficits.

By the end of the 1980s, several Australian academics were arguing that policy should not attempt to influence what they perceived to be the outcome of optimal decisions by private agents. Within the RBA, there was a debate regarding the value of having the current account deficit as an explicit objective, as evidenced in various published statements. Even so, large current account deficits in the late 1980s were seen to be a symptom of excess domestic demand pressures and, at least in that sense, they were something to which monetary policy could usefully respond. The 'consenting adults' view was gradually taken up by policy-makers in public statements from the late 1980s onwards.[3]

It is now widely argued that the current account balance need not, and cannot, be an objective for macroeconomic policies. Nor is it seen by itself as a reliable indicator of vulnerabilities. Australia's experience is particularly relevant in this regard, given its experience with large fluctuations in the exchange rate and sizeable foreign debt, much of it intermediated through the banking system. The floating exchange rate has been an important means of adjusting to external shocks, and provides a mechanism by which Australia's external position is subject to continual reassessment by the markets. The fact that Australia has managed to sustain investors' confidence is evident in the maintenance of the current account deficit at an average of around 4½ per cent of GDP over two decades combined with a real exchange rate showing no discernable trend over the same period.

The remainder of the paper is structured as follows. Section 2 provides a brief history of Australia's current account and incidence of capital reversals going back as far as the 1850s. Section 3 steps through the various stages of the debate about the role for policy in stemming large current account deficits in Australia. Section 4 briefly discusses some empirical evidence relevant to the optimality and sustainability of the current account in Australia. In Section 5, the issue of external

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[3] This view, also known as the 'Pitchford thesis' in Australia, is known as the 'Lawson doctrine' in the UK, where these views had an earlier origin with Congdon (1982), while in Australia they can be traced back to Corden (1977).

vulnerabilities is discussed in the context of a range of structural features of the Australian economy. Section 6 concludes.

## 2. The History of Australia's Current Account

### 2.1 A (Brief) Long History of Current Account Deficits

Sizeable current account deficits have been recorded in Australia in almost every decade for at least 150 years (Figure 2). One of the chief concerns associated with large and persistent current account deficits is that they might increase the prospects of a sharp reversal in capital flows requiring costly adjustments to domestic economic activity.[4] This section briefly documents the fact that sharp reversals in capital flows have not been a regular, and certainly not a recent, feature of the Australian experience and, most importantly, there have been no instances of default on Australian public debt.

Nevertheless, there have been two episodes of rapid and unsustained rises in net foreign liabilities, the unwinding of which were both associated with depressions in the 1890s and 1930s.[5] These episodes are illustrated quite starkly in Figure 3, which shows the cumulated current account deficit (as a share of GDP). This measure can provide a reasonable approximation to net foreign liabilities to the extent that valuation effects are small and real GDP growth tends to reduce any past discrepancies over time. Indeed, this appears to be the case given that after 120 years, the cumulative measure matches the first available direct estimate of net foreign liabilities very closely.

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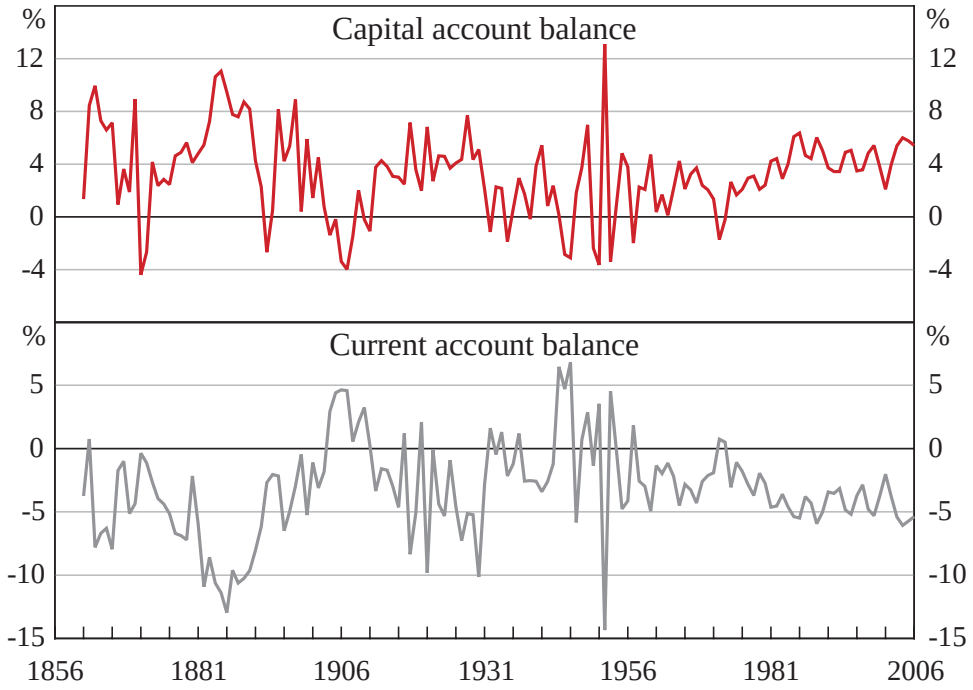
4 For evidence on this issue see Edwards (2004) and Bordo and Eichengreen (1999).

5 The 1871 reversal appears to have reflected a decline in confidence by overseas investors associated with the collapse of prices of gold mining shares. However, confidence was restored fairly quickly, with these mining companies paying hefty dividends in the few years immediately following (Blainey 1963). During the few years either side of 1910, Australians had difficulty raising funds offshore. Foreign investors had lost confidence in Australia's economic prospects as Australia experienced a drought and a decline in its terms of trade at a time when the distress of the 1890s was still a fresh memory. The reversal in net capital inflows in 1951 was not due to a withdrawal of capital but reflected a sizeable temporary increase in export earnings associated with a spike in prices received for exports of wool (and to a lesser extent metals) at the onset of the Korean War.

**Figure 2: Australia's Capital and Current Account Balances**

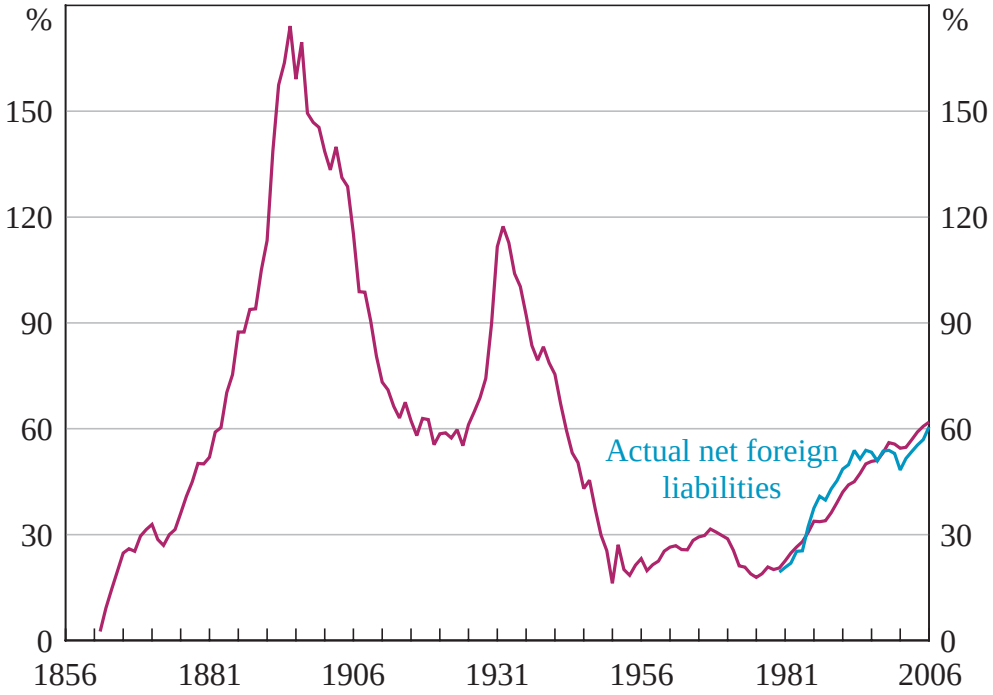
Per cent of GDP, annual data




Sources: ABS; Foster (1996); Vamplew (1987)

**Figure 3: Cumulative Current Account Deficits**

Per cent of GDP, annual data




Sources: ABS; Foster (1996); Vamplew (1987); authors' calculations

Large inflows of capital in the 1870s and 1880s pushed up net foreign liabilities to very high levels (over 150 per cent of GDP). These inflows helped to fuel substantial growth in lending by financial institutions, much of it finding its way into the property market (Fisher and Kent 1999). The collapse of property prices in the early 1890s coincided with more than half of the trading banks of note issue suspending payments (with around 60 per cent of these eventually closing their doors permanently) and a large number of non-bank financial institutions failing. Deposits in many of these trading banks were effectively frozen for years, with the government enforcing reconstruction of these institutions. Most deposits were repaid between 1893 and 1901, but in some cases deposits did not get repaid until as late as 1918. Not surprisingly, overseas investors took flight during the 1890s, and their full confidence was not restored until the 1910s. The aggregate data imply that large capital inflows were restored by the second half of the 1890s, but this appears to reflect large direct flows to fund mining ventures and related investments associated with the 1890s gold rush in Western Australia (Merrett 1997).

The availability of foreign capital in the 1890s was also affected by turmoil in global financial markets. The large London discount house, Barings, suffered a liquidity crisis in the 1890s, in part owing to its financial exposures in South America. This generated concern about all offshore exposures, and it became difficult for Australians to raise funds in London at this time. London remained the main source of offshore funds even into the 1920s. Australia was virtually cut off from long-term borrowings in London from the late 1920s onwards, as money flowed into the New York stock exchange instead (Royal Commission on Monetary and Banking Systems in Australia 1937, paragraph 114).

Fisher and Kent (1999) argue that for Australia the 1930s depression was somewhat different from the depression of the 1890s. In contrast to the 1890s, the banking sector was relatively healthy in the run-up to the 1930s depression, having taken a more conservative approach to lending in the boom years of the 1920s. Certainly, net foreign liabilities (relative to GDP) peaked at a much lower level than in the 1890s (according to the indirect estimate presented in Figure 3). Only three financial institutions had cause to stop payments in the 1930s depression and none of these were trading banks. After the 1929 stock market crash, foreign capital dried up, but there was not the same capital flight that was seen in the 1890s

episode. Even so, despite initial resistance by the trading banks – which kept interest rates high in early 1930 – concerns about economic weakness, combined with a reduction in foreign exchange reserves underpinned a devaluation of the exchange rate in late 1930. Thereafter, the current account returned to rough balance, reflecting a combination of factors including the decline in activity, the exchange rate devaluation and an increase in trade protection.

A key development of the 1930s episode was the lengths to which the Australian Government went to avoid default, especially on debt held by foreigners (Caballero, Cowan and Kearns 2004). From April to June 1931, the government of the largest state, New South Wales, did not fully meet interest due on foreign debt. However, the Australian Government and the Commonwealth Bank made good on these payments to protect the ratings of Australian governments (with compensating reductions in revenue payments made to NSW by the Commonwealth). More generally, the Australian and state governments cut expenditure, raised taxes and cut bank interest rates and interest paid to domestic holders of debt in order to ensure adequate funds for the payment of foreign debts. In this way, Australia maintained an unblemished record with regards to foreign holders of debt.

Foreign capital inflows were largely curtailed during the period of World War II and were tightly controlled thereafter by a comprehensive system of controls introduced as emergency measures during the war.

Debelle and Plumb (2006) document a number of episodes of capital flight in the 1970s and early 1980s. These tended to be short-lived events based on speculation of devaluations in the context of the fixed and, later, crawling peg exchange rate regimes.[6] However, the overarching pressure over this period was the tendency for sizeable capital inflows (with an increasingly open capital account), which made it difficult to achieve the goal of internal balance. Eventually this tension led to the floating of the Australian dollar in December 1983 and a complete liberalisation of the capital account.

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6 There were heavy outflows in the week leading up to the Federal election in March 1983. After the election, the exchange rate was devalued by 10 per cent, contributing to the perception that speculators could precipitate significant exchange rate adjustments. Speculative inflows also occurred in anticipation of revaluations, particularly towards the end of 1983.

## 2.2 After the Float

A significant feature of the years following the floating of the exchange rate was a sustained widening in the current account deficit and the consequent rapid accumulation of foreign debt, which more than doubled between 1984 and 1989. As early as 1984, the then Secretary to the Treasury, John Stone, gave a speech expressing concern that a default elsewhere in the world would harm Australia as international financial markets took 'flight to quality' (Stone 1984, p 8). In 1984, Argentina had come close to default a number of times, and he suggested there were lessons to be drawn from the 1890s experience, when poor returns from offshore investments in South America, particularly Argentina, spilled over into foreign investor concern about investing in Australia.[7]

The rise in the current account deficit from 1985 to 1986 partly reflected a fall in the terms of trade and the associated depreciation of the exchange rate (of around 50 per cent in nominal effective terms over this period).[8] Combined with the rise in foreign debt this led the Treasurer at the time, Paul Keating, to warn of the risk of Australia becoming a 'banana republic' and underpinned further reform efforts. On the financial side, the banking sector underwent further deregulation, a process which had started in the late 1970s. This largely removed controls on lending to businesses and households, and freed up access to international capital markets. Also, industrial reforms were implemented as arguments mounted for Australian industry to become more internationally competitive. A key aspect of this was the Prices and Incomes Accord (an agreement between the government and trade unions), which had the dual aims of containing domestic inflation and improving international competitiveness (Chapman and Gruen 1990). A further reduction in tariffs on imports and other barriers to trade (following an across-the-board cut in tariffs of 25 per cent in 1973) was another important change.

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[7] Other pieces written in the 1980s were less alarmist (Jonson and Stevens 1983; Johnston 1987). While similarities were acknowledged between the 1980s and the 1930s, differences were also noted. In terms of overseas borrowings, foreign debt as a per cent of GDP was higher in the 1930s than the 1980s, as was the burden of servicing this debt as a share of export receipts. While capital inflow dried up in the 1930s, in contrast, the 1980s was a period of significant capital inflow.

[8] Indeed, the depreciation, by raising the Australian-dollar values of debt denominated in foreign currency, also saw a widening of the net income deficit, which accounted for roughly three-quarters of the widening seen in the current account deficit at this time.

The large depreciation that followed the float of the exchange rate went some way to improving the competitiveness of domestic firms and insulating them from the reduction in trade barriers. However, the depreciation did not generate inflation to the extent that might have been expected under the old fixed exchange rate regime (in part due to the impact of the Prices and Incomes Accord) and proved to be stimulatory in the face of the declining terms of trade (Debelle and Plumb 2006).

Australia also provides evidence of the potential for changes in the supply of capital to influence the current account. The removal of capital controls with the floating of the exchange rate allowed foreigners desiring to invest in Australia to bring in capital, and to some extent the economy and the current account adjusted to absorb this inflow of capital. An episode during the late 1990s also illustrates this general point. During the height of the global technology boom, it appears that Australia was viewed as being an 'old economy', contributing to a sizeable depreciation of the exchange rate (not matched by a change in the terms of trade) (Macfarlane 2000). The trade balance moved from a deficit of about 2½ per cent of GDP in 1999 to a surplus of ½ per cent by 2001, with a commensurate turnaround in the current account deficit.[9]

The question of resiliency in the face of large external shocks and exchange rate volatility is taken up again in Section 5 of the paper. In the next section we focus on the evolution of the debate about the need for monetary and fiscal policies to respond to large current account deficits.

## 3. The Australian Policy Debate

The policy debate in Australia needs to be understood as occurring against a backdrop of changing views about the macroeconomic framework, particularly in an open economy context. There were three broad aspects to this. First, there was the realisation that demand management should be directed towards the control of inflation over the medium term, and that this was the best way to support employment, which would be determined in the longer run according to a vertical Phillips curve. Second, in a world of internationally mobile capital and flexible

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9 Dvornak, Kohler and Menzies (2003) provide estimates regarding the relationship between the current account deficit and the exchange rate in Australia.

exchange rates, there was no longer a 'balance of payments problem' *per se*, but concerns about vulnerability to external shocks, and the related question of long-run solvency remained. And third, in a world of flexible exchange rates, Mundell-Fleming models (and later more sophisticated variants) highlighted that monetary policy should be directed at inflation control, though fiscal policy was relevant to questions of international solvency.[10]

### 3.1 An Evolving Policy Framework: The Late 1980s

Up until the mid 1980s, during the period when the exchange rate was fixed, current account deficits had been a cause of concern for policy-makers to the extent that large deficits made it difficult to achieve the goals of internal and external balance. These deficits needed to be financed out of net capital flows and foreign currency reserves, while large swings in net capital inflow could hamper policy-makers' efforts to contain growth in domestic liquidity. With the float of the Australian dollar, these particular difficulties were largely removed, not the least because policy-makers now regained control over the setting of domestic interest rates. By the mid 1980s, large current account deficits were becoming the norm and the Australian-dollar value of foreign debt was building up at a rapid pace. At this stage there was less concern regarding the implications of the deficit for the implementation of policy, and instead the current account deficit for a time became an objective of policy in its own right.

At the heart of this concern was the widespread sense that the pace of foreign borrowing was unsustainable. It was feared that it could ultimately impose a constraint on economic growth, and in the meantime, the domestic economy would become more susceptible to the vagaries of international investors while debtors would face higher borrowing costs. This gained further credibility when the credit rating agencies downgraded Australian Commonwealth debt (Gruen and Stevens 2000). It was at this time in 1986 that the Australian Treasurer, Paul Keating, made his famous 'banana republic' remark. The reaction in the markets to this comment was probably greater than the reaction to the downgrades themselves.

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[10] Discussions of these and related issues include Grenville (1997), Gruen and Stevens (2000), Horne (2001), Gruen and Sayegh (2005) and Macfarlane (1999, 2006a).

Of course the current account deficit was clearly not the only 'problem' facing the Australian economy. Inflation, which had risen at the time of the first oil price shock, persisted at a relatively high rate into the 1980s. Improving Australia's international competitiveness through tariff reduction and the dismantling of other protectionist measures was also deemed necessary. Notwithstanding efforts to reduce tariffs in the 1970s, Australia's legacy of protectionist policies were being blamed in part for the emergence of the 'balance of payments problem'.

During the 1980s, the fiscal authorities largely took a lead role in the setting of policies relevant to the current account. In line with the 'twin deficits' argument, a key strategy was fiscal consolidation aimed at reducing the call on foreign funds by the public sector.[11] Restrictive fiscal policy was also expected to ultimately allow an easing in domestic interest rates. Reforms to improve international competitiveness were also introduced, such as the phased reduction in trade barriers and the continuation of the Prices and Incomes Accord; the latter being used to restrain wages growth. As already mentioned, it is plausible that the prominence given to the current account throughout this period may have in part reflected its usefulness as an argument to pursue other worthwhile reforms (Edwards 1996). Of course, the value of such a strategy would have eventually weakened as it became increasingly apparent that policy was ineffective at reducing the trend in the current account deficit.

As the more flexible tool, monetary policy was to be directed to general demand management, such as containing cost and price pressures and ensuring stability in financial markets, until other policies had time to take effect. It was also hoped that restrictive monetary policy would reduce the demand for imports, thereby assisting a rise in the trade balance (Commonwealth of Australia 1988, pp 43, 53). The rest of this section outlines monetary policy's role in the response to the current account deficit.

The role carved out for monetary policy in the second half of the 1980s was highly ambitious. The belief that monetary policy should be guided by a single quantity was called into question towards the end of the monetary targeting period of 1976–1985, particularly after financial deregulation when the already tenuous relationship between monetary aggregates and inflation broke down

[11] See Gruen and Sayegh (2005) for a discussion of Australian fiscal policy since the 1980s.

(Johnston 1987, p 6). In its place, the RBA instituted a 'checklist' approach, which included 'all major economic and financial factors – present and prospective' (Johnston 1987, p 6). Among other things, the balance of payments was listed as an explicit factor and was given a high weight in monetary policy settings (see RBA annual reports in the second half of the 1980s).

With the floating exchange rate, policy needed to be mindful of the effects that the exchange rate could have on inflation and Australia's international competitiveness and the potential feedback from interest rate settings to exchange rates (Grenville 1997; Macfarlane 1991). These factors, along with more general concerns about stability in financial (and exchange rate) markets, variously influenced policy. Nonetheless, the RBA believed it could operate policy as a 'potent demand management tool' (RBA 1989, p 7), with inflation and current account deficits being symptoms of excess demand.

However, over this period, there was a sense of dissatisfaction by the authorities with what monetary policy could achieve. While it was thought that higher interest rates could reduce import demand and therefore the current account deficit in the long run, the short-term effects were less clear and could even operate in the opposite direction if higher interest rates produced an exchange rate appreciation. It was always believed that the other arms of government policy – fiscal restraint and micro reforms – were the more effective tools to bring about a lasting reduction in the deficit, and the RBA came to question whether monetary policy was able to contribute to the adjustment process at all.

Towards the end of the 1980s, persistent high inflation increasingly became the main focus of the RBA, though the current account deficit still rated a mention in policy discussions.[12] This shift in focus also reflected evolving views within the RBA about the appropriate policy framework. Against the background of dissatisfaction with the checklist approach, the emerging view was that the single instrument of monetary policy could only be effectively directed to a single objective, namely inflation (Macfarlane and Stevens 1989, p 8; Phillips 1989). It was believed that '[m]onetary policy can best contribute to a sustainable external

[12] This sentiment was also reflected in comments by the Treasurer, Paul Keating, in his 1988/89 Budget Speech: '… while the balance of payments deficit is Australia's number one economic problem, inflation remains Australia's number one economic disease' (Keating 1988, p 4).

position in the same way that it can best contribute to overall growth, namely by providing an environment of low inflation' (RBA 1991, p 4). By early 1993, the RBA had adopted a flexible inflation-targeting framework, and shifted the policy time horizon from relatively short-term demand management to a medium-term objective of containing inflation (Stevens 1999).

By the end of the 1980s, it was apparent that, despite the concerted joint efforts of policy-makers, no permanent reduction in the current account deficit had been achieved. The current account deficit was back to 6 per cent, roughly around the level that sparked concern in the first place. This was despite an impressive turnaround in the Australian Government's annual budget position of around 5 percentage points of GDP between 1983/84 and 1988/89 (reflecting both fiscal restraint and strong growth) and significant microeconomic reform. The fact that these policies had had no (persistent) effect on the current account lent weight to the emerging view of academia.

## 3.2 The Challenge from Academia

During the second half of the 1980s, Australian academics began to debate whether the current account deficit was an appropriate target of macroeconomic policies and whether the view that the deficit was unsustainable was correct. This debate was led by John Pitchford; however, the 'Pitchford thesis', or 'consenting adults' view as it is commonly known in Australia, can be traced back to Max Corden who had expressed very similar views in his 1977 book (Corden 1977).

The Pitchford (1989b, 1989c, 1990) thesis rests on the understanding that the current account balance is the net result of investment and saving decisions that have been made by agents within the economy. If these decisions are made optimally, then any resulting current account deficit (or surplus) cannot be considered a cause for concern. After all, a deficit merely represents households deciding to consume now rather than later and firms deciding to take advantage of profitable investment opportunities in Australia. These decisions are optimal – therefore welfare maximising – and households and firms have made these decisions with every expectation that they will have the capacity to repay. The foreign investors lending the money are obviously of the same mind. The deficit, therefore, is the result of decisions between 'consenting adults'. At the time these

arguments were being put, the Australian Government was running a budget surplus and the public sector borrowing requirement was low, and therefore the current account deficit could be largely considered the outcome of private decisions.

The Pitchford thesis fundamentally countered established thinking on the current account deficit – that is, the notion that large current account deficits are always unsustainable or can ultimately impose a constraint on growth. Rather than imposing a constraint on growth, a current account deficit is a means by which advantage can be taken of profitable investment opportunities, thereby raising potential growth. Capital flows into Australia are presumably the result of foreign investors seeking high returns, benefiting both the borrowers and lenders in the process.

The key message from Pitchford and others was that there was no role for macroeconomic policies to respond to current account deficits and that current policies aimed at reducing the current account deficit might be severely misplaced. If there was a role for government at all in addressing the current account deficit, it would be to remove distortions and externalities adversely affecting decisions of private agents. Even then, the first-best solution would be to use micro-based policies to remove the identified problems at their source.[13]

The rationale behind existing policy strategies was also challenged. The 'twin deficits' argument – on which the fiscal consolidation strategy was seemingly based – was convincingly refuted as it assumes that private behaviour will not change in response to changes in government behaviour (for example Argy 1990). This does not imply that fiscal consolidation is inappropriate, just that it would not necessarily reduce the current account. The argument that microeconomic reforms would necessarily lead to a reduction in the current account deficit was also disputed. Such reforms might make markets operate more efficiently, but does that mean agents would invest more or less? Save more or less? This ambiguity led to the view that microeconomic reform, while worthwhile for its own sake, should not be pursued in order to influence the current account. Otherwise, you might not

[13] While the Government undertook a lot of micro reforms during the 1980s, Pitchford (1989b, p 2) claimed that the relevant microeconomic policies were largely in a class that were not at that time being considered.

undertake reforms if they are likely to lead to an increase in the current account deficit but are otherwise beneficial (Pitchford 1989a, p 11).

### 3.3 The Response

While many were to side with Pitchford in his thinking, other academics and policy-makers did not, particularly with regards to the 'hands-off' approach. Some questioned the new framework and viewed it as untested, instead suggesting that policy should be based on the more established way of thinking (see, for example, Nguyen 1990). Most arguments, however, did not question the framework but rather emphasised practical considerations (see, for example, Corden 1991).

First, it was argued that private agents are not always able to make optimal decisions. Distortions and externalities exist, which interfere with incentives and provide a rationale for policy intervention. Moore (1989) argued that there were plenty of examples in history of excessive borrowing by nations that had ended in a debt crisis. Second, an agent's decision that leads to an increase in external debt may impose costs on other borrowers in the form of higher interest rates through the imposition of a risk premium applying to the country as a whole. Third, there were risks to the economy if there was an adverse swing in sentiment of foreign investors, possibly resulting in a sharp and possibly severe adjustment process. In this case, it was preferable that some adjustment was undertaken pre-emptively through appropriate restrictive policy settings (Argy 1990).[14]

While many of these counter arguments have valid elements, in many cases they are not concerned with the current account deficit *per se*, but see it as a symptom of another underlying problem. The appropriate policy response, then, is to address the underlying problem, be that overspending or the distortions and externalities themselves.[15]

The intellectual weight of the Pitchford thesis started to be acknowledged by policy-makers by the late 1980s. In September 1989 and again in June 1990, the

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[14] Argy (1990, p 79), the then Director of the Economic Planning Advisory Council, suggested that this view was shared 'by many of us in Canberra'.

[15] Responses to other arguments can be found in the many papers that constituted this debate (see, for example, Corden 1991 and Pitchford 1989c).

then Deputy Governor of the RBA, John Phillips, gave credence to the Pitchford argument stating that the balance of payments was a reflection of the 'community's attitudes to savings, consumption, investment and debt' (Phillips 1989, 1990), and as a result, the current account deficit was not an appropriate target of monetary policy. Instead, the appropriate role for monetary policy was controlling inflation and the RBA's stated concern that the current account deficit was unsustainable started to wane. A few years later, the Government also expressed the view that monetary policy should not be used to target the current account (see, for example, Commonwealth of Australia 1991, p 2.33).

In the early 1990s, the Australian Government acknowledged the broader implications of the Pitchford thesis, but had reservations about how well it would apply in practice, in line with many of the arguments outlined above (see, in particular, Commonwealth of Australia 1991, p 2.36).[16] While strategies such as micro reform and fiscal consolidation were important in their own right (and for broader goals such as raising national saving), they were continually framed as strategies to address the current account deficit 'problem'.[17]

Likewise, the RBA did not at this time entirely accept the view that the current account deficit should not be a concern at all. It was deemed to be '… a medium-term problem …', where deficits of around 5–6 per cent probably were not sustainable (Fraser 1994, 1996). Since 1996, the current account deficit has no longer featured as part of the monetary policy debate. In 2004, Glenn Stevens, the then Deputy Governor, restated the RBA's view as thus: '… whether the current account deficit should be a target of any policy is not obvious – it would need to be argued. But whatever one's view on that question, *the current account is not, and should not, be an objective of monetary policy*' (Stevens 2004, italicised as per the original).

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[16] Certainly, broader community feeling was that the deficit should be regarded as a concern, and this led to the Government initiating a formal enquiry in October 1991 into the causes and consequences of Australia's current account deficit and overseas debt (the Langmore 1991 report).

[17] Many of these issues were also raised in the government-commissioned Fitzgerald (1993) report, which outlined a strategy for improving national saving, in part to help reduce Australia's current account deficit.

The dissenting voices to the Pitchford view – in both academia and policy institutions – from within Australia have now largely disappeared. If concerns are raised, they generally herald from international organisations, such as the Organisation for Economic Co-operation and Development (OECD) or the International Monetary Fund (IMF), in their assessments of the external vulnerabilities facing Australia.

### 3.4 External Recommendations

The IMF and the OECD have made regular assessments of the Australian economy since at least the early 1980s. Reports from the IMF have, however, only been publicly available from the mid 1990s. The OECD in the 1980s concurred with Australian authorities that Australia's current account deficit and external debt position were unsustainable, that such concerns needed to be the overriding priority of policy (OECD 1987), and recommended reducing public sector debt and improving Australia's international competitiveness (see, for example, OECD 1984, pp 50–51; also see various issues of OECD *Economic Surveys* for Australia for the 1980s and 1990s). With regards to the latter recommendation, the OECD pointed in particular to a need for real wage moderation and reduced trade protection. With regards to fiscal policy, the OECD acknowledged that the Australian Government had made substantial progress in reducing its deficit, but pressed for greater efforts to be made in this regard by state and local governments.

OECD concern regarding Australia's current account deficit moderated in the 1990s. In OECD (1994), the current account deficit is described as sustainable in view of current government policies, but throughout the 1990s the OECD raised concerns about the potential for high external debt to affect credit ratings and increase external risks; the latest OECD report, however, presents a more sanguine view (OECD 2006). The IMF reports from 1995 onwards describe Australia's net external debt position as sustainable and the external risks as manageable, but recommend that Australia's external debt position requires continued careful monitoring. Also, these IMF reports often attribute weight to either the narrowing or widening that had been recently observed in the current account deficit, without always an appreciation that most of these movements are part of a standard cyclical pattern around a longer-term average.

Since the time of the Asian crisis, IMF staff have stressed the potential risk from a shift in market sentiment, particularly since around one-half of Australia's foreign debt has a relatively short-term maturity. The IMF has a standard set of external vulnerability indicators that they use for a variety of countries in assessing external risks. Over time, the IMF has acknowledged the argument that the 'one-size-fits-all' approach fails to recognise some special factors relevant to the Australian situation, including, for example, the fact that the external debt is denominated in Australian dollars or hedged, that private balance sheets are in a strong position, and that the Australian economy has proven to be relatively resilient to large adverse domestic and external shocks, including through the operation of the flexible exchange rate regime.

## 4. Optimality and Sustainability: An Empirical Assessment

The intertemporal approach to the current account forms the foundation of Pitchford's (1989b, 1989c, 1990) view of the current account. Using the methodology developed by Campbell (1987) and Campbell and Shiller (1987), several studies test whether Australian current account data support the intertemporal model, with mixed results. Milbourne and Otto (1992), using quarterly data, reject the intertemporal model while, in contrast, Cashin and McDermott (1998) and Otto (2003), using annual data, and McDermott (1999), using quarterly data, find supportive evidence, but only after 1975, 1980 and 1991 respectively. Bergin and Sheffrin (2000) extend the intertemporal model to account for external shocks by allowing the interest rate and exchange rate to vary. They find that this improves the fit of the model by better capturing volatility, thereby providing support for the intertemporal model.

Following these studies, this section of the paper examines optimality through the lens of the intertemporal approach to the current balance, but with two innovations. First, account is taken of the effect of the capital market opening and financial market deregulation with the advantage of a longer sample of data postdating these changes. Prior to this, net foreign debt may have been less than optimal (due to consumption and/or investment being too low), and credit constraints may have prevented optimal consumption smoothing in the face of shocks to income. The second innovation is to account for the fact that shocks to the Australian net cash

flow (output minus investment and government expenditure) may be correlated with shocks in the rest of the world and, as a result, have a limited effect on the current account (Glick and Rogoff 1995). That is, global shocks should lead to changes in the world interest rate rather than current account balances.

The full details of the model and estimation approach, along with detailed results, are reported in Appendix A. In summary, there is tentative evidence in support of the intertemporal model. In particular, the current account balance appears to adjust in a way that is consistent with consumption smoothing in the face of temporary shocks to output, government expenditure and investment. This is true, however, only in the period after financial liberalisation in the early 1980s, in line with the removal of capital controls and the easing of credit constraints. There is also evidence of consumption tilting, whereby Australian residents appear more impatient than the world as a whole. This has contributed to a persistent current account deficit in the order of 4½ per cent of GDP since the mid 1980s.

It is worth considering what might justify a persistent degree of impatience and the resulting long history of current account deficits. In the case of Australia, the desire to build up the capital stock (both private and public) while still maintaining a relatively high level of consumption would seem a natural consequence of a relatively undeveloped, 'new' country with considerable natural wealth. This is particularly true of one which benefits from a relatively steady flow of immigrants and institutional features conducive to sustaining a relatively prosperous and stable lifestyle.

While the estimates presented in Appendix A suggest that the extent of this impatience appears relatively modest, it is not possible to test the solvency condition – that is, whether or not the intertemporal budget constraint has been satisfied. Indeed, as Milesi-Ferretti and Razin (1996) note, in practice it is difficult to determine whether a country running persistently large current account deficits is solvent at any given time. The more feasible test is to examine the sustainability of the situation – that is, to determine the level of trade surplus (and hence also the current account balance) required to stabilise the level of net foreign liabilities (relative to GDP) given plausible assumptions about output growth and the costs of servicing net foreign liabilities. A number of studies have undertaken this type of exercise for Australia. For example, Gruen and Sayegh (2005) find that an average

goods and services trade surplus around ½ to ¾ per cent of GDP can sustain foreign liabilities at a ratio of 60 per cent (which compares to the actual deficit on the trade account of 1½ per cent of GDP, on average, since 1980). Alternatively, if the trend current account balance (of about 4½ per cent of GDP since 1984) were to be sustained, net foreign liabilities would eventually stabilise around 86 per cent of GDP (assuming average growth of nominal GDP of 5½ per cent per annum).

The limitations of such calculations, however, is that they do not consider what sort of changes would be needed to bring about the turnaround in the trade balance (and the associated reduction in the current account), nor exactly when these changes need to occur. Again, this reflects the difference between solvency and sustainability, with the latter being an assessment of what constitutes a stable equilibrium, while the former allows for the possibility that there may be even higher, and potentially sustainable, levels of foreign indebtedness that are welfare enhancing.

## 5. Current Account Deficits and External Vulnerability

Instead of focusing on questions of sustainability, it may make more sense to consider the potential costs of large current account deficits and the associated build-up of foreign liabilities in terms of the vulnerability of an economy to external shocks. In essence, such an approach can be thought of as falling somewhere in between those that argue that markets are always efficient and, therefore, that all current account deficits are optimal, and those that caution that countries with large foreign debts should (gradually) reduce their dependence on foreign funds so as to avoid potentially costly adjustments in the future.

In the wake of the Mexican and Asian financial crises of the 1990s, a number of studies sought to develop models that might provide an early warning of external crises which, by definition, imply a costly adjustment (either in the form of a deep recession associated with higher borrowing costs and/or a cessation or reversal of capital flows).[18] By examining time-series data across a wide range of countries, this literature attempts to find indicators that can reliably point to an increasing likelihood of an external crisis. These studies contributed to a perceived

[18] For example, see Kaminsky and Reinhart (1999).

association between large net external debt positions and external risks. Australia is a clear outlier in this context, with relatively large net external debt and persistent current account deficits, but no crises.

One problem with such an approach is that it is generally restricted to a limited set of potential indicators, and tends to encourage a 'one-size-fits-all' approach to assessing vulnerability, encouraging analysts to treat large current account deficits and external debt as sufficient statistics for vulnerability. However, the value of recognising the role of institutional differences between countries is increasingly being acknowledged (see, for example, Daseking 2002). In this regard, Australia has a number of features that tend to make it relatively resilient in the face of considerable external shocks. Indeed, these features underpin the stability which encourages sizeable capital inflows in the first place. This suggests that a high debt level may not signal vulnerability but rather that it reflects resilience which permits high debt to be sustained.

One feature, in particular, assists Australia to be resilient in the face of large external shocks, in spite of relatively high foreign indebtedness. Namely, foreigners are willing to participate in markets that allow Australian residents to hedge their foreign exchange exposures at reasonable cost; one (but by no means the only) aspect of this is that foreigners are willing to hold Australian debt denominated in Australian dollars. This allows balance sheets and trading activities of domestic corporations and households (which are net foreign debtors) to be resilient in the face of large, sharp nominal exchange rate fluctuations. Of course such markets can only be expected to evolve fully under a flexible exchange rate regime, in which frequent and often large fluctuations in the nominal exchange rate are the norm. The flexible exchange rate regime also has the advantage of providing a timely and automatic mechanism to adjust to external shocks. That is, it can act as a buffer, allowing shocks to dissipate rapidly across the domestic economy with a more modest impact on inflation than was the case under the fixed exchange rate regime.[19]

[19] The RBA believes occasional intervention in foreign exchange markets to be desirable. The Asian crisis is one such example where intervention was used to limit downward pressure on the exchange rate, but only after the exchange rate had moved a long way, consistent with the view that depreciation was a desirable and necessary part of adjustment (Stevens 2006).

The development of this resilience of the Australian economy to external shocks has been well documented in a number of studies (Caballero *et al* 2004, Becker and Fabbro 2006, Debelle and Plumb 2006, Macfarlane 2006b and McCauley 2006). These studies emphasise the value of maintaining investor confidence in the face of sizeable external shocks via: a robust financial system, with deep, liquid and stable financial markets and strong financial institutions; credible and stabilising macroeconomic policies; and low net foreign currency exposure.[20] Arguably, an element of luck and perseverance has also helped in the early stages of floating, allowing these markets and policies to develop. This section of the paper summarises this literature by briefly tracing through these key features. In doing so, it becomes clear that while many of these features have come about through a conscious effort of policy-makers seeking to generate resilience, others have arisen more as a by-product of other pursuits or the result of learning-by-doing.

## 5.1 The Record on Inflation

A record of, and a commitment to, low and stable inflation is necessary to keep down the cost of issuing debt – it reassures holders of debt denominated in domestic currency that the value of this will not be eroded to the benefit of issuers. In Australia, the adoption of inflation targeting by the RBA in 1993 has achieved the goal of keeping year-ended inflation on average between 2 and 3 per cent over the cycle. Caballero *et al* (2004) argue that, notwithstanding higher inflation in the 1970s and 1980s, over the past 100 years policy in Australia has established a reputation of being willing and able to maintain modest and stable inflation.

## 5.2 The Government Debt Market

A key factor behind the confidence of foreigners in the market for Australian government debt is the fact that foreign holders have never suffered from any defaults on the debt (see discussion in Section 2.1).

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[20] Caballero *et al* (2004) argue that this confidence reflects what they term ‘currency trust’ and ‘country trust’. Closely related to currency trust is what McCauley (2006) describes as the internationalisation of the Australian dollar.

A number of changes around the early 1980s have been identified as having strengthened the market for government debt in Australia, apparently contributing to the take-up by foreigners of Australian-dollar-denominated debt for the first time. McCray (2000) highlights the role of financial deregulation in reducing the extent to which domestic financial institutions acted as a 'captive market', thereby contributing to a rise in yields. He also points to a range of important operational changes that were made as the market moved from a highly regulated environment, with tap issuance (whereby authorities set the price) and a 'buy and hold' mentality, to one of open price discovery (through auctions) and an active secondary market (see also McCauley 2006).

As a result, more than one-half of Australian Government debt – almost all of which is issued domestically in Australian dollars – is held offshore.[21] Foreign investors also hold debt issued by Australian state and local governments and corporations. Indeed, more than 70 per cent of corporate debt is held by offshore investors, with the corporate bond market around eight times larger than the Australian Government bond market. Foreign investor interest in Australian corporate bonds has been facilitated by a liquid cross-currency interest rate swaps market, which has allowed foreign investors to accept currency risk whilst insulating themselves from the credit risk associated with lending to Australian firms (McCauley 2006).

## 5.3 Financial Markets

Caballero *et al* (2004) emphasise the importance of deep and efficient financial markets in helping to ensure that domestic residents are able to hedge foreign exposures at a reasonable cost. International comparisons suggest that these markets are relatively deep for Australia. For example, Australia's share of world output is relatively small at around 1½ per cent (making it the 15$^{th}$ largest economy), but (against the US dollar) turnover in the Australian dollar spot and derivatives markets is the 4$^{th}$ largest in the world (BIS 2005). The average daily turnover of the Australian dollar swaps market is A$45 billion (US$34 billion).

[21] As at June 2006, the Australian Government had A$65 billion of bonds on issue of which A$33 billion, or 52 per cent, was held by offshore investors.

This market is deep enough that the net derivatives position of the banking sector could be turned over more than three times a month (Becker and Fabbro 2006).[22]

Of course this was not the case during the era of capital controls and regulated financial institutions. Debelle and Plumb (2006) discuss the early stages of development of these markets as these controls were eased. One important facet of this was the lesson learnt by Australian borrowers early on in the post-float period about the dangers of unhedged foreign-currency borrowing (see also Becker and Fabbro 2006). In the mid 1980s, some borrowers took out (unhedged) Swiss franc loans to avoid paying much higher domestic interest rates. These borrowers made substantial losses when the Australian dollar depreciated by more than 50 per cent against the Swiss franc between January 1985 and August 1986. While the scale of the borrowing was relatively small – so that the losses did not disrupt the economy or the banking system overall – they generated enough publicity to provide a salutary lesson to both businesses and households.

Nowadays, the bulk of Australia's non-government foreign debt is raised by the banking sector. These institutions are not only able to raise funds at a relatively low cost (given that they tend to be highly rated), but they are also in a good position to hedge exchange rate risks arising from these borrowings. It is advantageous, therefore, for these financial institutions to act as intermediaries for business and household sectors given that they can provide Australian borrowers with relatively low cost and fully hedged access to foreign funds.

As in the United States, Australian residents have a net long position in foreign currency (before accounting for hedging activities); that is, gross foreign currency-denominated assets exceed gross foreign currency-denominated liabilities (Becker and Fabbro 2006). Of Australia's net external debt, around 40 per cent is denominated in Australian dollars. According to a recent survey by the ABS (2005), most of the remaining net exposure is hedged, with just over one-tenth of net external debt being in 'unhedged' foreign currency (Becker and Fabbro 2006), which is not to say that it may not be covered by some natural hedge. Much of the hedging activity appears to have non-residents as

[22] The average daily turnover of Australian dollar swaps between domestic and overseas banks is around A$25 billion (US$19 billion), or 2.8 per cent of GDP over the year to March 2005.

counterparties, thereby insulating domestic residents as a whole against unfavourable exchange rate fluctuations.

While currency risk does not appear to present much of an issue for Australia, attention has instead focused on refinancing risk, particularly of short-dated debt (see, for example, IMF 2006). Much of Australia's offshore debt is issued by financial institutions, with foreign liabilities accounting for about 27 per cent of Australian banks' total liabilities, compared to around 15 per cent a decade ago. While debt securities comprise the majority of banks' foreign liabilities, more than two-thirds of these have been issued with a term to maturity of greater than one year, with an average maturity of around four years; Australian corporations borrowing offshore tend to issue longer-dated debt. It is beyond the scope of this paper to make more than three brief remarks on refinancing risk. First, thus far, rolling over debt has not been an issue for Australia, even during periods of adverse shocks, such as the Asian crisis. Second, Australian banks have tended to issue offshore debt in a range of different markets and in a range of different currency denominations, providing some diversification against shocks that may adversely affect any one market (RBA 2006). Third, in response to an adverse shock it is likely that much of the adjustment would occur through a depreciation of the exchange rate.

### 5.4 Institutional Framework

Stable government with credible and sustainable monetary and fiscal policies is necessary for a country to maintain the confidence of both foreign and domestic investors. Other critical institutional features include a sound financial system based on efficient regulation and supervision, effective legal and accounting frameworks, and transparent and open markets both for factors of production and outputs. In the extreme, these reduce the likelihood of some type of expropriation of wealth and/or income (to the advantage of particular domestic residents), either by direct or indirect means. More generally, however, they also allow countries to better withstand adverse external shocks that might otherwise harm foreign

investors' interests.[23] Certainly, Australia appears to rank highly on a range of indicators in this regard. For example, in 2006 Australia ranked 9th (out of 161 countries) in the *Economic Freedom of the World Index*, which attempts to systematically compare countries across the types of institutional features mentioned above.

One episode that points to the resilience of the Australian economy is the period of the Asian economic crisis of 1997 and 1998, in which there was a sizeable decline in demand from many of Australia's major trading partners in the region. The nominal exchange rate depreciated in effective terms by about 20 per cent from mid 1997 to early 2001, but again the inflationary impact of this was relatively modest. Indeed, unlike a number of countries with substantial commodity exports to the region, the RBA did not tighten policy in response to the depreciation. Instead, the depreciation was viewed as a necessary part of the adjustment to an adverse shock of this type. A widening in the current account deficit – of more than 4 percentage points of GDP over the two years to mid 1999 – was also an important mechanism dampening the impact of the shock on the domestic economy. Caballero *et al* (2004) note that the stimulatory impact of the depreciation (including by facilitating a diversion of exports to the US and Europe) was in contrast to less-developed economies for which the depreciation adversely affected balance sheets of corporations with sizeable exposures to unhedged foreign-currency-denominated debts.

## 6. Conclusion

Australia has a long history of large and persistent current account deficits. In the mid 1980s, however, following the floating of the Australian dollar and the opening of the capital account, the deficit rose considerably and has been sustained around an average of about 4½ per cent of GDP since, with no discernable trend in the real exchange rate. This shift in the 1980s contributed to a rapid rise in net foreign debt, and the current account deficit became a key object of policy-makers

[23] Kent, Smith and Holloway (2005) present evidence that structural reforms leading to stricter monetary policy regimes, greater labour market flexibility and increased product market competition have played a role in reducing the volatility of output across a range of developed economies.

in its own right. The chief concern was that such deficits raised the prospects of default and/or a sharp reversal in capital flows. That is, it was feared that the deficits were not sustainable – implying potentially disruptive adjustments in the future – and that they left the country more vulnerable to adverse external shocks (including a change in sentiment of foreign creditors). Hence, it was argued that all arms of policy, in both macroeconomic and microeconomic spheres, should and could attempt to reduce the current account deficit.

This view was challenged by those that argued that the current account merely reflected the optimal decisions of private agents and, as a result, concerns about sustainability were misplaced and there was certainly no role for macroeconomic policy to intervene. This did not mean that efforts at fiscal and other reforms were unwarranted, but that they should not be directed at influencing the current account balance, and indeed may not have had the desired effect in any case. Many elements of this view came to be accepted by policy-makers. In part, this may have been influenced by the realisation that despite widespread reforms (including a substantial fiscal consolidation leading ultimately to no net public debt), the current account deficit remained stable in trend terms.

This 'consenting adults' view of current account deficits has become widely accepted in Australia among academics and policy-makers. This paper presented empirical evidence providing some support to the idea that, following capital market opening in 1983, cycles in the current account deficit in Australia have been consistent with optimal consumption-smoothing behaviour. Sustainability calculations imply that, if the recent trend level of the current account deficit continues, foreign liabilities will eventually stabilise at around 86 per cent of GDP, compared with around 60 per cent in 2006. This says nothing about the more important question of solvency; however, in a flexible exchange rate regime, this is subject to the ongoing assessment provided by open and transparent capital markets.

It is generally acknowledged that large deficits and foreign indebtedness *can* imply some degree of vulnerability for a small open economy subject to large external shocks (including swings in investor sentiment). Australia is an interesting case study in this regard, as it is recognised as having a number of institutional features that help to lessen its vulnerability to external shocks. Stable government, credible

and sustainable monetary and fiscal policies, a sound financial system based on efficient regulation and supervision, effective legal and accounting frameworks, and transparent and open markets both for factors of production and outputs are critical features to maintain the confidence of (both foreign and domestic) investors. Of particular note is the fact that foreigners are willing to participate in markets that allow Australian residents to hedge their foreign exchange exposures at reasonable cost. This allows balance sheets and trading activities of domestic corporations and households (which are net foreign debtors) to be resilient in the face of large nominal exchange rate fluctuations. Since floating, Australia has certainly demonstrated considerable resilience in the face of a number of large adverse external shocks.

Indeed, the features that underpin this resilience may have encouraged sizeable capital inflows in the first place. In other words, in Australia’s case, a high debt level may be less of a signal of vulnerability and more a reflection of resilience which attracts foreign capital and keeps it in place.

## Appendix A: Testing the Intertemporal Model

The model describes a representative agent in a small open economy who chooses a path of consumption and investment to maximise lifetime utility (Equation (A1)) subject to a budget constraint (Equation (A2)) (and a production function).

$$U_t = \sum_{s=t}^{\infty} \beta^{s-t} \frac{C_s^{1-1/\sigma} - 1}{1 - 1/\sigma} \tag{A1}$$

$$CA_t \equiv B_{t+1} - B_t = rB_t + Y_t - C_t - G_t - I_t \tag{A2}$$

where $C_t$ is consumption at time *t*, $\beta$ is the agent's discount rate, and $1/\sigma$ is the agent's intertemporal elasticity of substitution.[24] The return on an asset is equal to the fixed world interest rate, *r*. The stock of assets held from time $t-1$ is $B_t$, $Y_t$ is output, $G_t$ is exogenous government spending and $I_t$ is investment.[25] The budget constraint, Equation (A2), defines the current account balance (or change in net foreign liabilities) as being equal to the net cash flow ($Z_t = Y_t - G_t - I_t$) less private consumption and foreign interest payments.

The optimal consumption profile is then given by the Euler equation:

$$C_{t+1} = C_t \beta^{\sigma} (1+r)^{\sigma} \tag{A3}$$

Optimal consumption can be shown to be proportional to wealth:

$$C_t^* = \left( \frac{r+\upsilon}{1+r} \right) W_t \quad \textit{where} \quad \upsilon \equiv 1 - \beta^{\sigma} (1+r)^{\sigma} \tag{A4}$$

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[24] We use an iso-elastic utility function and assume no uncertainty, rather than the more often used quadratic utility function, which implies a strict upper bound on the level of consumption and does not rule out negative consumption levels. In any case, the empirical approach is very similar.

[25] Labour is supplied inelastically, output is produced according to the production function, $Y = AF(K)$, and the optimal capital stock (assuming no depreciation) is such that $r = AF'(K)$. Total factor productivity $A$ is exogenous.

where wealth $W_t$ is defined as the sum of current period value of assets and the net present value of current and future net cash flow:

$$W_t \equiv (1+r)B_t + \sum_{s=t}^{\infty}\left(\frac{1}{1+r}\right)^{s-t}(Z_s) \tag{A5}$$

If $\upsilon = 0$, it is optimal for agents to consume the annuity value of wealth, leaving consumption constant over time. Otherwise, the consumption path will tilt upwards if $\upsilon < 0$ and downwards if $\upsilon > 0$.

Finally, the optimal current account is obtained by substituting Equations (A4) and (A5) into the budget constraint:

$$CA_t^* = (Z_t - \tilde{Z}_t) - \frac{\upsilon}{r+\upsilon}W_t \tag{A6}$$

where $\tilde{Z}_t$ is the permanent (or annuity) level of the net cash flow. The bracketed term in Equation (A6) implies that output below its permanent level leads to a current account deficit, and investment or government spending above their permanent levels lead to a current account deficit. Thus, the net foreign assets adjust in order to smooth consumption in the face of temporary disturbances to the net cash flow.[26] The second right-hand-side term captures consumption tilting that occurs when the rate of time preference (equal to $(1-\beta)/\beta$) is different from the world interest rate (that is, when $\upsilon \neq 0$). Thus, a country that is more impatient than the rest of the world will be running current account deficits in proportion to their level of wealth.

Since consumption is proportional to wealth, Equation (A6) effectively decomposes the optimal current account into its consumption-smoothing and consumption-tilting components:

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[26] This term also captures the potential for income growth (that is, through productivity growth) to influence the level of the current account balance. For a more detailed discussion of this possibility see Engel (2005).

$$CA_t^S = Z_t - \tilde{Z}_t = -\sum_{s=t+1}^{\infty} \left( \frac{1}{1+r} \right)^{s-t} \Delta Z_s \qquad \text{(A7)}$$

$$CA_t^T \equiv -\frac{\upsilon}{r+\upsilon} W_t = \lambda C_t \quad \textit{where} \quad \lambda \equiv -\frac{\upsilon(1+r)}{(r+\upsilon)^2} \qquad \text{(A8)}$$

Equation (A7) shows that the consumption-smoothing component of the current account will be in deficit when the net present value of future changes in the net cash flow is positive. Furthermore, the consumption-smoothing hypothesis embodied in Equation (A7) implies that the current account is a sufficient predictor of future changes in net cash flows.

## A.1 Estimation

The estimation of this model proceeds by decomposing the current account into these two components. First, the trend behaviour of the current account is removed by estimating the extent of any consumption tilting ($\lambda \neq 0$). Specifically, if $CA_t^S$ and $C_t$ are I(1) and cointegrated, the residuals will be stationary. In this case, the residuals will provide an estimate of the current account-smoothing component ($CA_t^S$), which can be tested for evidence of consumption smoothing.

To test the consumption-smoothing hypothesis explicit in Equation (A7), the net present value of future changes in the net cash flow is derived by estimating a vector auto regression (VAR) (which provides the basis for estimating future changes in net cash flow):[27]

$$\begin{bmatrix} \Delta Z_t \\ CA_t^S \end{bmatrix} = \begin{bmatrix} \psi_{11} & \psi_{12} \\ \psi_{21} & \psi_{22} \end{bmatrix} \begin{bmatrix} \Delta Z_{t-1} \\ CA_{t-1}^S \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{bmatrix} \qquad \text{(A9)}$$

A weak test of the consumption-smoothing hypothesis is to determine if the current account Granger causes changes in the net cash flow as implied by Equation (A7). The VAR provides a convenient way of performing this test.

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[27] The estimation procedure is justified by asserting that both $CA_t^S$ and $\Delta Z_t$ are subject to measurement error. This model is easily generalised to incorporate higher order VARs.

An estimate of future expected changes in the net cash flow can then be constructed from the VAR estimate as follows:

$$E_t \Delta Z_s = \begin{bmatrix} 1 & 0 \end{bmatrix} \begin{bmatrix} \psi_{11} & \psi_{12} \\ \psi_{21} & \psi_{22} \end{bmatrix}^{s-t} \begin{bmatrix} \Delta Z_t \\ CA_t^S \end{bmatrix} \tag{A10}$$

Let $\Psi$ be the matrix $\left[\psi_{ij}\right]$ and $\mathbf{I}$ be a two-by-two identity matrix. The optimal consumption-smoothing current account can be estimated by substituting Equation (A10) into Equation (A7).[28] The result is:

$$\hat{CA}_t^S = -\begin{bmatrix} 1 & 0 \end{bmatrix} \left( \frac{1}{1+r} \Psi \right) \left( \mathbf{I} - \frac{1}{1+r} \Psi \right)^{-1} \begin{bmatrix} \Delta Z_t \\ CA_t^S \end{bmatrix} \equiv \begin{bmatrix} \Phi_{\Delta Z} & \Phi_{CA} \end{bmatrix} \begin{bmatrix} \Delta Z_t \\ CA_t^S \end{bmatrix} \tag{A11}$$

From Equation (A11), a stronger test of the intertemporal model is the joint test of $\Phi_{\Delta Z} = 0$ and $\Phi_{CA} = 1$.[29]

## A.2 Empirical Results

The data used are annual from 1949 to 2005 (see Appendix B for sources and details). To be consistent with the theoretical model, all series are converted into per capita terms, and nominal series (including the current account) are converted into real terms by using the GDP deflator.[30]

There is an obvious downward trend in the level of the current account over the second half of the sample period, which suggests the existence of consumption

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[28] Both $CA_t^S$ and $\Delta Z_t$ need to be stationary in order that Equation (A11) is well defined.

[29] Obstfeld and Rogoff (1996) use a stochastic framework but with quadratic utility, which implies certainty equivalence and, therefore, yields the same test of the intertemporal model.

[30] There are two problems with the current account data. First, the current account should preferably incorporate changes in net foreign assets due to capital gains and losses. Second, the net income deficit is based on nominal rather than real interest flows. This overstates Australia's real current account deficit which has been running a net income deficit over this entire period. This bias will be increasing over time since net foreign debt has steadily been increasing, although it will be offset somewhat by the fall in world inflation rates since the mid 1980s.

tilting. The series were checked for the presence of a unit root using the Augmented Dickey-Fuller (ADF) test. The results (not reported) confirm that the current account, consumption and net cash flow are all non-stationary variables but the change in net cash flow is stationary.

An estimate of the consumption-tilting coefficient $\lambda$ is obtained in Equation (A7) using DOLS:

$$CA_t = \lambda C_t + \delta(D_t C_t) + \sum_{i=-1}^{1} \gamma_i \Delta C_{t-i} + u_t \qquad \text{(A12)}$$

where $D_t$ is a dummy variable that is one from 1984 onwards and zero otherwise. The expectation is that $\lambda$ will be negative given the obvious negative trend in the current account (that is, Australia's rate of time preference appears to be above the world interest rate). The inclusion of the second term allows for a break in the trend at 1984, consistent with the capital market opening and financial deregulation. Before this, it is likely that consumers were not able to borrow as much as they desired. In this case, the degree of consumption tilting will have increased after 1983; that is, $\delta$ will be negative.

The results of the estimation are summarised in Table A1. Reported *t*-statistics have been adjusted so that the standard *t*-tables are applicable.[31,32] Clearly, the current account balance and consumption are cointegrated and the estimate of $\lambda$ is less than zero. Furthermore, $\delta$ is significantly less than zero, which confirms that the degree of consumption tilting increased after financial liberalisation in 1983. This is evidence in support of the existence of binding credit constraints in the period prior to 1983 (so long as the reasonable assumption of unchanged consumer preferences is maintained).

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[31] The OLS *t*-statistics are multiplied by the factor $(s^2/\eta^2)$; $s^2 = (T-5)^{-1}\sum_{t=1}^{T}\hat{u}_t^2$ and $\eta = \hat{\sigma}/(1-\hat{\phi}_1-\hat{\phi}_2)$, where $\hat{\sigma}$ is a consistent estimate of the standard deviation of residuals from an AR(2) regression of $\hat{u}$ with AR coefficients $\phi_1$ and $\phi_2$.

[32] Consistent with theory, no constant term was included in the regression. Further, a constant was insignificant when included and had a negligible effect on the slope coefficient estimates.

**Table A1: Cointegration Tests – OLS Regression of Equation (A12)**

| | $\lambda$ | $\delta$ | ADF for residuals |
|---|---|---|---|
| Coefficient | –0.035 | –0.029 | –5.61* |
| *t*-statistic | –4.65 | –5.16 | |

Notes: Critical values for the ADF statistic are from Fuller (1976). * indicates rejection of the null hypothesis of no cointegration at the 5 per cent significance level.

The actual current account is separated into its stationary and non-stationary components in Figure A1.[33] Using estimates of the sum of $\lambda$ and $\delta$, it is possible to obtain a rough estimate of the Australian rate of time preference, $(1-\beta)/\beta$. Deaton (1992) provides a summary of estimates of the intertemporal elasticity of substitution $(1/\sigma)$ that range from 0.35 to 0.75. Using an interest rate of 4 per cent implies that the rate of time preference is between 0.04004 and 0.04008.[34] That is, the consumption-tilting behaviour implies rates of time preference only marginally above the world interest rate.

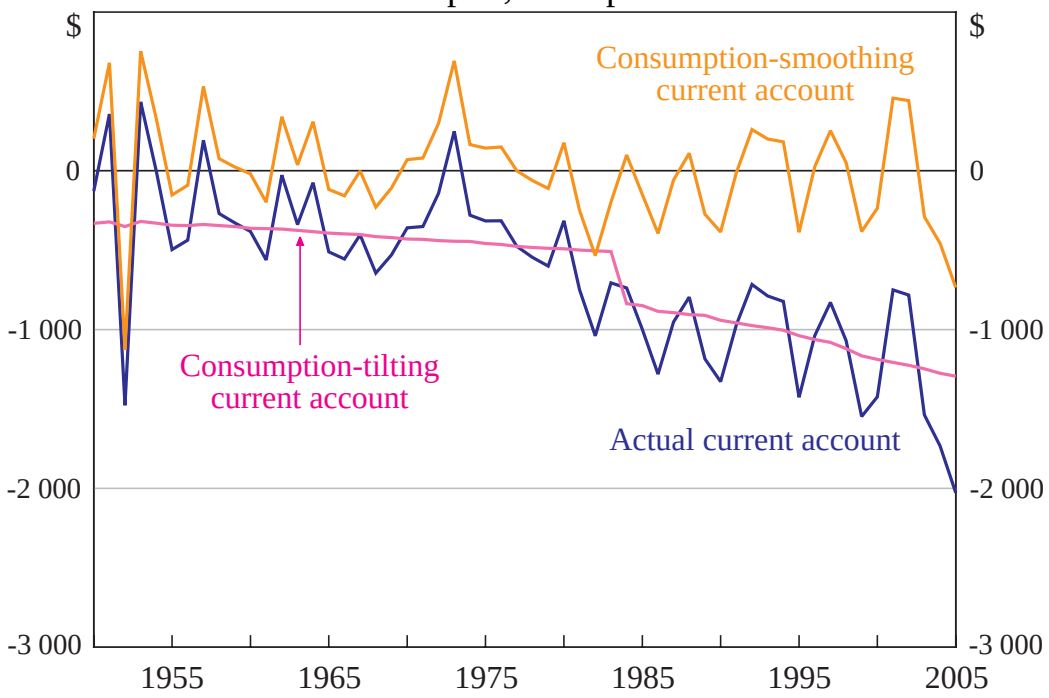
Before estimating the VAR shown in Equation (A9), it is necessary to control for common world shocks. Theory predicts that these will have a much smaller effect on the current account than on investment (interest rates adjust to ensure that world savings equal world investment). Glick and Rogoff (1995) show that this is true for the G7 countries.

[33] The stationary component of the current account is obtained as the estimated residuals $CA_t - \hat{\lambda}C_t - \hat{\delta}D_tC_t = \mu + \varepsilon_t$. The left-hand-side of this expression has a non-zero mean because of the inclusion of leads and lags of consumption changes in the right-hand-side of Equation (A12). The non-stationary consumption-tilting component of the current account is simply $\hat{\lambda}C_t + \hat{\delta}D_tC_t - \hat{\mu}$.

[34] For an interest rate of 2 per cent the estimate is between 0.02001 and 0.02002. For an interest rate of 6 per cent the estimate is between 0.06008 and 0.06017.

**Figure A1: Current Account Tilting and Smoothing Components**

Per capita, 1990 prices




Sources: ABS; authors' calculations

The idiosyncratic changes in the Australian net cash flow, $\Delta Z_t^I$, are constructed as the estimated residuals from the following regression:

$$\Delta Z_t = \alpha + \delta \Delta Z_t^W + \varepsilon_t \qquad \text{(A13)}$$

where $\Delta Z_t$ and $\Delta Z_t^W$ are changes in the Australian and the world net cash flows, respectively. Obstfeld and Rogoff (1995) show that under certain conditions, $\Delta Z_t$ can be replaced by $\Delta Z_t^I$ in Equation (A7).[35] A VAR(1), VAR(2) and VAR(3) were estimated, with the results presented in Table A2. The Granger causality test results and transformed coefficient vector $\Phi$ are shown in Tables A3 and A4 respectively. For the VAR(1) and VAR(2), the current account Granger causes the change in the net cash flow, but not vice versa, providing weak evidence of

[35] These conditions include a zero net foreign asset position. Otherwise, changes in the world interest rate will have a differential income effect on net debtors and net creditors, thereby leading to some adjustment of these countries' current accounts. Glick and Rogoff (1995) demonstrate that this effect is small for the set of G7 countries. In the case of Australia, this effect is likely to be more significant only in the latter part of the sample, following the more rapid accumulation of net foreign debt after 1983.

consumption smoothing. This is not the case for the VAR(3), which appears to be a consequence of the loss of the influential observation of 1952. However, the estimates of the vector $\Phi$ imply a failure of the strict test of the intertemporal model – that is, that the element applying to $CA_t^S$ should be one, with all other elements being zero.[36]

**Table A2: VAR Estimates – Using Idiosyncratic Component of Net Cash Flow**

1951–2005

| | VAR(1) | | VAR(2) | | VAR(3) | |
|---|---|---|---|---|---|---|
| | $\Delta Z_t^I$ | $CA_t^S$ | $\Delta Z_t^I$ | $CA_t^S$ | $\Delta Z_t^I$ | $CA_t^S$ |
| $\Delta Z_{t-1}^I$ | 0.08 | –0.03 | –0.09 | –0.22 | –0.08 | –0.07 |
| | (0.14) | (0.17) | (0.14) | (0.17) | (0.15) | (0.16) |
| $\Delta Z_{t-2}^I$ | | | 0.11 | –0.11 | 0.10 | –0.02 |
| | | | (0.13) | (0.15) | (0.15) | (0.15) |
| $\Delta Z_{t-3}^I$ | | | | | 0.05 | 0.14 |
| | | | | | (0.14) | (0.14) |
| $CA_{t-1}^S$ | –0.35*** | –0.03 | –0.19 | 0.18 | –0.16 | 0.39*** |
| | (0.13) | (0.15) | (0.12) | (0.14) | (0.14) | (0.14) |
| $CA_{t-2}^S$ | | | –0.20 | –0.13 | –0.21 | –0.25* |
| | | | (0.13) | (0.15) | (0.13) | (0.14) |
| $CA_{t-3}^S$ | | | | | –0.06 | –0.05 |
| | | | | | (0.13) | (0.14) |
| Durbin Watson | 1.96 | 1.46 | 1.95 | 1.28 | 2.01 | 1.70 |
| Numbers of observations | 54 | 54 | 53 | 53 | 52 | 52 |

Note: *** and * represent significance at the 1 and 10 per cent levels respectively.

**Table A3: Granger Causality Tests**

f-statistics

| | VAR(1) | | VAR(2) | | VAR(3) | |
|---|---|---|---|---|---|---|
| | $\Delta Z_t^I$ | $CA_t^S$ | $\Delta Z_t^I$ | $CA_t^S$ | $\Delta Z_t^I$ | $CA_t^S$ |
| $CA_{t-i}^S \forall i \geq 1$ | 7.72*** | | 2.68* | | 1.58 | |
| $\Delta Z_{t-i}^I \forall i \geq 1$ | | 0.04 | | 1.19 | | 0.34 |

Note: ***, ** and * represent significance at the 1, 5 and 10 per cent levels respectively.

[36] The estimates shown are based on a real interest rate of 4 per cent. Results were robust to using either a 2 or a 6 per cent real interest rate.

**Table A4: Test of the Nonlinear Consumption-smoothing Restriction**

$H_0 : \Phi_i = 0$ for all $i$ except $\Phi_{1CA} = 1$

| | VAR(1) | VAR(2) | VAR(3) |
|---|---|---|---|
| $\Phi_{1\Delta Z}$ | –0.10<br>(0.15) | –0.16<br>(0.22)[a] | –0.05<br>(0.22) |
| $\Phi_{2\Delta Z}$ | | –0.17<br>(0.17)[a] | –0.10<br>(0.19) |
| $\Phi_{3\Delta Z}$ | | | –0.01<br>(0.13) |
| $\Phi_{1CA}$ | 0.36<br>(0.14) | 0.45<br>(0.24)[a] | 0.47<br>(0.24) |
| $\Phi_{2CA}$ | | 0.16<br>(0.13)[a] | 0.13<br>(0.13) |
| $\Phi_{3CA}$ | | | 0.03<br>(0.12) |
| Wald-statistic | 47.65*** | 49.84*** | 19.60*** |

Notes: ***, ** and * indicates rejection of the joint null at a 1, 5 and 10 per cent significance levels respectively.
(a) Indicates that standard errors are adjusted using White's correction for heteroskedasticity.

This rejection of the intertemporal model could be due to the existence of credit constraints prior to 1983. To account for this, the model is re-estimated for the two periods, 1951–1983 and 1984–2005. The Granger causality and transformed VAR(1) estimates are shown in Tables A5 and A6.

In the later sample, the current account Granger causes changes in the net cash flow, but not vice versa. Furthermore, the stricter test of the null hypothesis of consumption smoothing (that is, the restriction on the vector $\Phi$) is rejected for the earlier sub-sample, but not for the latter sub-sample, although the standard errors are large. However, for the VAR(2) and VAR(3), not presented here, consumption smoothing is rejected at the 5 per cent significance level but not at the 1 per cent level for the post-float sample.

**Table A5: Granger Causality Tests**

f-statistics

| | 1951–1983 | | 1984–2005 | |
|---|---|---|---|---|
| | $\Delta Z_t^I$ | $CA_t^S$ | $\Delta Z_t^I$ | $CA_t^S$ |
| $CA_{t-1}^S$ | 2.70 | | 5.24** | |
| $\Delta Z_{t-1}^I$ | | 0.03 | | 0.03 |

Note: ***, ** and * represent significance at the 1, 5 and 10 per cent levels respectively.

**Table A6: Test of the Nonlinear Consumption-smoothing Restriction**

$H_0 : \Phi_{\Delta Z} = 0$ and $\Phi_{CA} = 1$

| | 1951–1983 | 1984–2005 |
|---|---|---|
| $\Phi_{1\Delta Z}$ | –0.00<br>(0.17) | –0.16<br>(0.24) |
| $\Phi_{1CA}$ | 0.23<br>(0.14) | 0.81<br>(0.41) |
| Wald-statistic | 59.91*** | 1.55 |

Note: ***, ** and * indicates rejection of the joint null at the 1, 5 and 10 per cent significance levels respectively.

## Appendix B: Data

**Current account**: 1861–1949 data from Vamplew (1987), Tables ITFC 1–8 and ITFC 84–100; 1950–1959 data from Foster (1996), Table 1.1; and data from 1960 onwards are from ABS Cat No 5302.0.

**Capital account**: 1861–1900, indirect estimate of long-term capital inflows from Butlin (1962), Table 250; 1901–1949, apparent capital inflows from Vamplew (1987), Tables ITFC 101–106 and ITFC 200–210; 1950–1959 data are from Foster (1996), Table 1.15; and data from 1960 onwards are from ABS Cat No 5302.0.

**GDP**: 1861–1900 is in market prices from Butlin (1962), Table 1, column 2; from 1900/01 to 1949/50, data are from Vamplew (1987), Table ANA 119–129; for 1950–1959, data are from Foster (1996), Table 5.1a; and for 1960 onwards nominal and real GDP are from ABS Cat No 5206.0.

**Net foreign liabilities**: ABS Cat No 5302.0.

**Saving, investment, terms of trade, consumption, government and investment expenditures**: ABS Cat No 5206.0, Tables 2, 9 and 32. A statistical discrepancy, averaging 2.3 per cent and –0.2 per cent of GDP from 1960–1975 and 1976–2006 respectively, reconciles the saving-investment balance to the current account.

**Public sector debt**: Australian Government debt is from Treasury Budget Paper 1, Table A3; 1960–1982 total general government and public sector debt are from Vamplew (1987), Table GF1–33; and from 1988 onwards they are from Treasury Budget Paper 1, Table A4. Some data were not available for 1983–1987.

**Trade-weighted indices** (of the exchange rate): RBA *Bulletin*, Table F.11. CPI data for Australia's trade partners, from Datastream, are used to calculate real TWI.

**Population**: ABS Cat No 3105.0.

**World net cash flow**: based on net cash flow (NCF) for Canada, China, France, Germany, Italy, Japan, the UK, and the US. Data are from the IMF, *International Financial Statistics*. Percentage changes in NCF for each country are weighted by nominal GDP. Countries with missing data were not included in that year's NCF.

## References

**Argy F (1990),** 'Australia's Current Account Deficit', in *Background Papers on External Debt*, Office of Economic Planning Advisory Council, Australian Government Publishing Service, Canberra, pp 75–83.

**ABS (Australian Bureau of Statistics) (2005),** 'Foreign Currency Exposure, Australia', Cat No 5308.0, March.

**Becker C and D Fabbro (2006),** 'Limiting Foreign Exchange Exposure through Hedging: The Australian Experience', Reserve Bank of Australia Research Discussion Paper No 2006-09.

**Bergin PR and SM Sheffrin (2000),** 'Interest Rates, Exchange Rates and Present Value Models of the Current Account', *Economic Journal*, 110(463), pp 535–558.

**BIS (Bank for International Settlements) (2005),** 'Central Bank Survey of Foreign Exchange and Derivatives Market Activity in 2004', press release, Basel, 17 March. Available at <http://www.bis.org/press/p050316.htm>.

**Blainey G (1963),** *The Rush That Never Ended: A History of Australian Mining*, Melbourne University Press, Parkville.

**Bordo M and B Eichengreen (1999),** 'Is Our Current International Economic Environment Unusually Crisis Prone?', in D Gruen and L Gower (eds), *Capital Flows and the International Financial System*, Proceedings of a Conference, Reserve Bank of Australia, Sydney, pp 18–74.

**Butlin NG (1962),** *Australian Domestic Product, Investment and Foreign Borrowing 1861–1938/39*, Cambridge University Press, London.

**Caballero RJ, K Cowan and J Kearns (2004),** 'Fear of Sudden Stops: Lessons from Australia and Chile', Reserve Bank of Australia Research Discussion Paper No 2004-03.

**Campbell JY (1987),** 'Does Saving Anticipate Declining Labor Income? An Alternative Test of the Permanent Income Hypothesis', *Econometrica*, 55(6), pp 1249–1273.

**Campbell JY and RJ Shiller (1987),** 'Cointegration and Tests of Present Value Models', *Journal of Political Economy*, 95(5), pp 1062–1088.

**Cashin P and CJ McDermott (1998),** 'Are Australia's Current Account Deficits Excessive?', *The Economic Record*, 74(227), pp 346–361.

**Chapman BJ and F Gruen (1990),** 'An Analysis of the Australian Consensual Incomes Policy: The Prices and Incomes Accord', Australian National University Centre for Economic Policy Research Discussion Paper No 221.

**Commonwealth of Australia (1988),** *Budget Paper No 1*, Australian Government Publishing Service, Canberra.

**Commonwealth of Australia (1991),** *Budget Paper No 1*, Australian Government Publishing Service, Canberra.

**Congdon T (1982),** 'A New Approach to the Balance of Payments', *Lloyds Bank Review*, 146, pp 1–14.

**Corden WM (1977),** *Inflation, Exchange Rates and the World Economy*, University of Chicago Press, Chicago.

**Corden WM** (**1991),** 'Does the Current Account Matter? The New View and the Old', *Economic Papers*, 10(3), pp 1–19.

**Daseking C (2002),** 'Debt: How Much is Too Much?', *Finance and Development*, 39(4), pp 12–14.

**Deaton A (1992),** *Understanding Consumption*, Oxford University Press, New York.

**Debelle G and M Plumb (2006),** 'The Evolution of Exchange Rate Policy and Capital Controls in Australia', *Asian Economic Papers*, 5(2), pp 7–31.

**Dvornak N, M Kohler and G Menzies (2003),** 'Australia's Medium-Run Exchange Rate: A Macroeconomic Balance Approach', Reserve Bank of Australia Discussion Paper No 2003-03.

**Edwards J (1996),** *Keating: The Inside Story*, Viking Penguin Books Australia Ltd, Ringwood.

**Edwards S (2004),** 'Thirty Years of Current Account Imbalances, Current Account Reversals, and Sudden Stops', IMF Staff Papers No 51.

**Engel C (2005),** 'The US Current Account Deficit: A Re-Examination of the Role of Private Saving', Reserve Bank of Australia Research Discussion Paper No 2005-09.

**Fisher C and C Kent (1999),** 'Two Depressions, One Banking Collapse', Reserve Bank of Australia Research Discussion Paper No 1999-06.

**Fitzgerald VW (1993)**, *National Saving: A Report to the Treasurer*, Australian Government Publishing Service, Canberra.

**Foster RA (1996)**, *Australian Economic Statistics 1949–50 to 1994–1995*, Reserve Bank of Australia Occasional Paper No 8.

**Fraser B (1994),** 'Inflation, Current Account Deficits and Unemployment', speech to CEDA Annual General Meeting Dinner, Melbourne, 29 November.

**Fraser B (1996),** 'Some Observations on Current Economic Developments', speech to The 500 Club Luncheon, Perth, 16 July.

**Fuller WA (1976),** *Introduction to Statistical Time Series*, Wiley, New York.

**Glick R and K Rogoff (1995),** 'Global Versus Country-Specific Productivity Shocks and the Current Account', *Journal of Monetary Economics*, 35(1), pp 159–192.

**Grenville SA (1997),** 'The Evolution of Monetary Policy: From Money Targets to Inflation Targets', in P Lowe (ed), *Monetary Policy and Inflation Targeting*, Proceedings of a Conference, Reserve Bank of Australia, Sydney, pp 125–158.

**Gruen D (2005),** 'Perspectives on Australia's Current Account Deficit', keynote address to the Australian Business Economists Forecasting Conference, Sydney, 13 December.

**Gruen D and A Sayegh (2005),** 'The Evolution of Fiscal Policy in Australia', Treasury Working Paper No 2005-04.

**Gruen D and G Stevens (2000),** 'Australian Macroeconomic Performance and Policies in the 1990s', in D Gruen and S Shrestha (eds), *The Australian Economy in the 1990s*, Proceedings of a Conference, Reserve Bank of Australia, Sydney, pp 32–72.

**Horne J (2001),** 'The Current Account Debate in Australia: Changing Policy Perspectives', Macquarie Economics Research Papers No 11/2001.

**IMF (International Monetary Fund) (2006),** 'Australia: 2006 Article IV Consultation – Staff Report; and Public Information Notice on the Executive Board Decision', Country Report No 06/374.

**Johnston R (1987),** 'Monetary Policy – The Lessons of History', Reserve Bank of Australia *Bulletin*, September, pp 1–10.

**Jonson P and G Stevens (1983),** 'The 1930's and the 1980's: Some Facts', Reserve Bank of Australia Research Discussion Paper No 8303.

**Kaminsky GL and CM Reinhart (1999),** 'The Twin Crises: The Causes of Banking and Balance-of-Payments Problems', *American Economic Review*, 89(3), pp 473–500.

**Keating P (1988),** *1988-89 Budget Speech*, Australian Government Publishing Service, Canberra.

**Kent C, K Smith and J Holloway (2005),** 'Declining Output Volatility: What Role for Structural Change?', Reserve Bank of Australia Research Discussion Paper No 2005-08.

**Lane PR and GM Milesi-Ferretti (2006),** 'The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970–2004', IMF Working Paper No WP/06/69.

**Langmore JV (1991),** *Australia's Current Account Deficit and Overseas Debt*, report by the Trade Sub-committee, Joint Committee on Foreign Affairs, Defence and Trade, The Parliament of the Commonwealth of Australia, Canberra.

**Macfarlane IJ (1991),** 'The Lessons for Monetary Policy', in IJ Macfarlane (ed), *The Deregulation of Financial Intermediaries*, Proceedings of a Conference, Reserve Bank of Australia, Sydney, pp 175–199.

**Macfarlane IJ (1999),** 'Australian Monetary Policy in the Last Quarter of the Twentieth Century', *The Economic Record*, 75(230), pp 213–224.

**Macfarlane IJ (2000),** 'Recent Influences on the Exchange Rate', Reserve Bank of Australia *Bulletin*, December, pp 1–6.

**Macfarlane IJ (2006a),** *The Search for Stability*, Boyer Lectures 2006, ABC Books, Sydney.

**Macfarlane IJ (2006b),** 'Some Observations on Recent Economic Developments', Reserve Bank of Australia *Bulletin*, January, pp 1–6.

**Macfarlane IJ and GR Stevens (1989),** 'Overview: Monetary Policy and the Economy', in IJ Macfarlane and GR Stevens (eds), *Studies in Money and Credit*, Proceedings of a Conference, Reserve Bank of Australia, pp 1–9.

**McCauley R (2006),** 'Internationalising a Currency: The Case of the Australian Dollar', *BIS Quarterly Review*, December, pp 41–54.

**McCray P (2000),** 'The Australian Government Bond Market', paper presented to the Asian Development Bank Conference on Government Bond Markets and Financial Sector Development in Developing Asian Economies, Manila, 28–30 March. Available at <http://www.aofm.gov.au/content/publications/speeches/2000-03-28-1/SpeechToADB_Paper.asp>.

**McDermott CJ (1999),** 'Australia's Current Account: A Consumption-Smoothing Approach', in *Australia – Selected Issues and Statistical Appendix*, IMF Staff Country Report, 99/1, pp 3–13.

**Merrett D (1997),** 'Capital Markets and Capital Formation in Australia 1890–1945', *Australian Economic History Review*, 37(3), pp 181–201.

**Milbourne R and G Otto (1992),** 'Consumption Smoothing and the Current Account', *Australian Economic Papers*, 31, pp 369–384.

**Milesi-Ferretti GM and A Razin (1996),** 'Current-Account Sustainability', Princeton Studies in International Finance No 81.

**Moore D (1989),** 'The Current Account Debate: Why Australia has a Current Account Problem', *Policy*, 5(3), pp 5–7.

**Nguyen DT (1990),** 'Fiscal Policy and the Current Account', in *Background Papers on External Debt*, Office of Economic Planning Advisory Council, Australian Government Publishing Service, Canberra, pp 5–24.

**Obstfeld M and K Rogoff (1995),** 'The Intertemporal Approach to the Current Account', in GM Grossman and K Rogoff (eds), *Handbook of International Economics: Volume 3*, Elsevier Science, Amsterdam, pp 1731–1799.

**Obstfeld M and K Rogoff (1996),** *Foundations of International Macroeconomics*, MIT Press, Cambridge.

**OECD (Organisation for Economic Co-operation and Development) (1984),** *OECD Economic Surveys 1983–1984: Australia*.

**OECD (1987),** *OECD Economic Surveys 1986/1987: Australia*.

**OECD (1994),** *OECD Economic Surveys 1993–1994: Australia*.

**OECD (2006),** *OECD Economic Surveys 2006: Australia*.

**Otto G (2003),** 'Can an Intertemporal Model Explain Australia's Current Account Deficit?', *Australian Economic Review*, 36(3), pp 350–359.

**Phillips MJ (1989),** 'A Central Banking Triptych', address to Overseas Bankers Association of Australia, Sydney, 13 September.

**Phillips MJ (1990),** 'When the Music Stops', speech to Committee for Economic Development of Australia Trustees, Melbourne, 19 June.

**Pitchford J (1989a),** 'The Current Account: Still a Secondary Issue', *Policy*, 5(3), pp 8–11.

**Pitchford J (1989b),** 'Does Australia Really Have a Current Account Problem?', *Policy*, 5(2), pp 2–5.

**Pitchford J (1989c),** 'A Sceptical View of Australia's Current Account and Debt Problem', *Australian Economic Review*, 86(Winter), pp 5–14.

**Pitchford J (1990),** *Australia's Foreign Debt: Myths and Realities*, Allen and Unwin, Sydney.

**RBA (Reserve Bank of Australia) (1989),** *Report and Financial Statements 30 June 1989*.

**RBA (1991),** *Report and Financial Statements 30 June 1991*.

**RBA (2006),** *Financial Stability Review*, March.

**Royal Commission on Monetary and Banking Systems in Australia (1937),** *Report*, Commonwealth Government Printer, Canberra.

**Stevens GR (1999),** 'Six Years of Inflation Targeting', Reserve Bank of Australia *Bulletin*, May, pp 46–61.

**Stevens GR (2004),** 'Economic and Financial Conditions December 2004', speech to Australian Business Economists and Economic Society of Australia (NSW Branch), Annual Forecasting Conference Dinner, Sydney, 14 December.

**Stevens GR (2006),** 'Capital Flows and Monetary Policy', speech to 'Investor Insights: ANZ Asia Pacific 2006' Seminar, Singapore, 17 September.

**Stone J (1984),** '1929 and All That … : The Shann Memorial Lecture 1984', University of Western Australia Department of Economics Discussion Paper No 84.12.

**Vamplew W (ed) (1987),** *Australians: Historical Statistics*, Fairfax, Syme and Weldon Associates, Netley.