

CURRENT ACCOUNT DEFICITS: THE AUSTRALIAN DEBATE

Rochelle Belkar
Reserve Bank of Australia

Lynne Cockerell
Reserve Bank of Australia

Christopher Kent
Reserve Bank of Australia

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 or a sharp reversal in capital flows, which might force an abrupt and costly adjustment.¹ Large deficits and rising indebtedness could also leave countries more vulnerable to adverse external shocks, including a change in sentiment on the part of foreign creditors. Some argue that policymakers should take steps to ensure that countries move toward 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.

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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 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.

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At the other extreme is the argument that as 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 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 liberalized financial markets.

Figure 1 shows Australia's current account balance and some related macroeconomic developments since the 1960s. A shift to larger sustained current account deficits is noticeable around the early 1980s, with the average increasing from 2.6 percent to 4.5 percent of gross domestic product (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 (public sector debt reached a little over 30 percent of GDP in the early 1990s and has declined to around zero currently) and a large depreciation of the real exchange rate (of around 30 percent between the mid-1970s and mid-1980s). Net foreign debt rose rapidly from around 6 percent of GDP at the beginning of the 1980s to over 30 percent by the mid-1980s (which partly reflects the effect of the depreciation on foreign-currency-denominated debt); it has since risen to about 52 percent. 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

2. Gruen (2005) discusses the evolution of the current account deficit in Australia and compares the case with selected economies. Data compiled by Lane and Milesi-Ferretti (2006) show that Australia is one of five OECD countries with an annual average current account deficit of greater than 4.0 percent (relative to GDP) since the late 1980s, along with Greece, Iceland, New Zealand, and Portugal. These and other OECD countries experienced peak deficits on an annual basis of around 9.0 percent or higher, compared with a peak of 6.2 percent for Australia in 2004. These countries also have higher net foreign liabilities (relative to GDP) than Australia.

Figure 1. The Current Account Balance, Debt, and Other Indicators^a

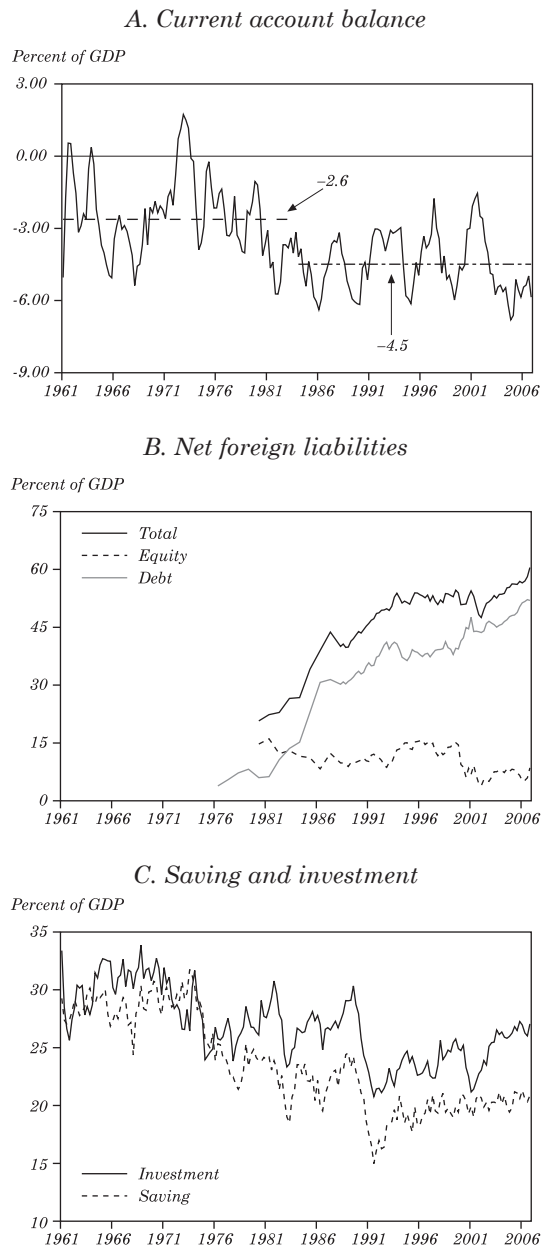
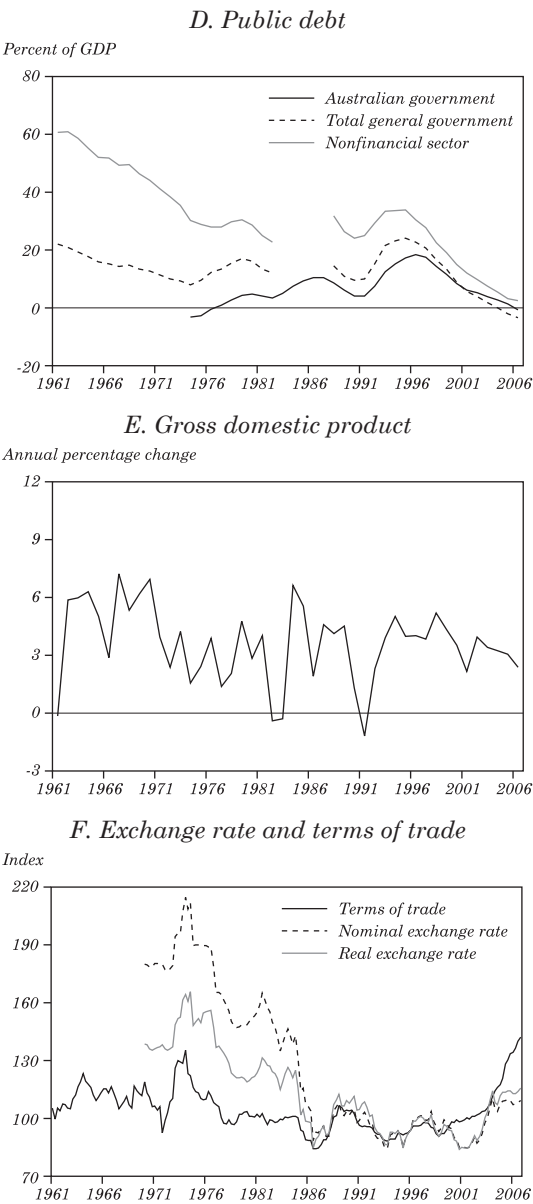


Figure 1. (continued)



Source: See appendix B.
a. 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 postfloat average of 100 (the latter are on a trade-weighted basis). Annual GDP is in calendar years.

From the early 1970s to December 1983, when Australia had a fixed (and later managed) exchange rate regime, current account deficits 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. The more general and growing concern, however, was the problem of managing a partially fixed exchange rate while pursuing monetary policy goals with an increasingly open capital account. These pressures contributed to the complete opening of the capital account and floating of the exchange rate in December 1983. (Debelle and Plumb, 2006).

The view that policy could and should 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, the rapid build-up of external liabilities in the mid-1980s heightened concerns about excessive and persistent deficits, in part reflecting the fact that policymakers could no longer rely on capital controls to rein in the current account. The key strategy to address this was fiscal consolidation, together with a number of other structural policies aimed at improving international competitiveness. While such policies had the stated objective of lowering the current account deficit, 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 realization that despite determined attempts, the trend current account deficit had recorded no reduction.

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 Reserve Bank of Australia, a debate took place 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 so-called consenting adults view was gradually taken up by policymakers in public statements from the late 1980s onward.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 it 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 4.5 percent of GDP over two decades, combined with a real exchange rate that shows no discernable trend over the same period.

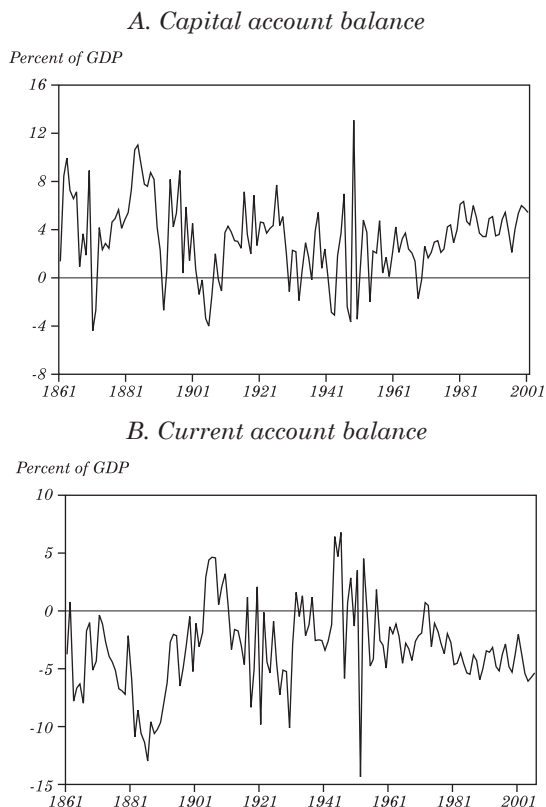
The remainder of the paper is structured as follows. Section 1 provides a brief history of Australia's current account and incidence of capital reversals going back as far as the 1850s. Section 2 steps through the various stages of the debate about the role for policy in stemming large current account deficits in Australia. Section 3 briefly discusses some empirical evidence relevant to the optimality and sustainability of the current account in Australia. In Section 4, we discuss the issue of external vulnerabilities in the context of a range of structural features of the Australian economy. Section 5 concludes.

1. THE HISTORY OF AUSTRALIA'S CURRENT ACCOUNT

Australia has recorded sizeable current account deficits in almost every decade for at least 150 years (see 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 Sharp reversals in capital flows have not been a regular—and certainly not a recent—feature of the Australian experience, however, and there have been no instances of default on Australian public debt.

3. This view is also known as the Pitchford thesis in Australia, though had an earlier origin with Corden (1977). It is termed the Lawson doctrine in the United Kingdom, where it can be traced back to Congdon (1982).

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

Figure 2. Australia's Capital and Current Account Balances^a

Source: ABS; Foster (1996); Vamplew (1987).

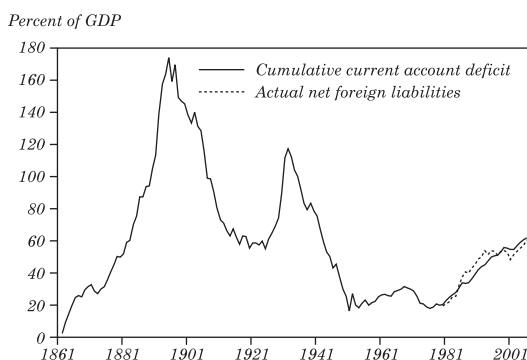
a. Annual data.

Nevertheless, the economy has undergone two episodes of rapid and unsustained rises in net foreign liabilities, the unwinding of which were associated with depressions in the 1890s and 1930s.⁵

5. The 1871 reversal appears to have reflected a decline in overseas investors' confidence, associated with the collapse of prices of gold mining shares. Confidence was restored fairly quickly, however, 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, since 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.

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. This appears to be the case in Australia given that after 120 years, the cumulative measure matches the first available direct estimate of net foreign liabilities very closely.

Figure 3. Cumulative Current Account Deficits^a



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

a. Annual data.

Large capital inflows in the 1870s and 1880s pushed up net foreign liabilities to very high levels (over 150 percent of GDP). These inflows helped to fuel substantial growth in lending by financial institutions, much of which found 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 percent of these eventually closing their doors permanently) and a large number of nonbank financial institutions failing. Deposits in many of these trading banks were effectively frozen for years while the government enforced reconstruction of these institutions. Most deposits were repaid between 1893 and 1901, but in some cases deposits were not 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. Barings, the large London discount house, 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 onward, 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. 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. 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. Foreign capital dried up after the 1929 stock market crash, but the capital flight seen in the 1890s episode was not repeated. Even so, concerns about economic weakness, combined with a reduction in foreign exchange reserves, underpinned a devaluation of the exchange rate in late 1930—despite initial resistance by the trading banks, which kept interest rates high earlier in the year. 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. The Australian government and the Commonwealth Bank made good on these payments, however, to protect the ratings of Australian governments (with compensating reductions in revenue payments made to New South Wales 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 to ensure adequate funds for the payment of foreign debts. Australia thus maintained an unblemished record with regard to foreign holders of debt.

Foreign capital inflows were largely curtailed during 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 the 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. This tension eventually led to the floating of the Australian dollar in December 1983 and a complete liberalization of the capital account.

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 Secretary to the Treasury, John Stone, expressed concern that a default elsewhere in the world would harm Australia as international financial markets took flight to quality (Stone, 1984, p 8). Argentina came close to default a number of times in 1984, and Stone suggested that lessons could 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 percent in nominal effective

6. Heavy outflows occurred in the week leading up to the federal election in March 1983. After the election, the exchange rate was devalued by 10 percent, contributing to the perception that speculators could precipitate significant exchange rate adjustments. Speculative inflows also occurred in anticipation of revaluations, particularly toward the end of 1983.

7. Other pieces written in the 1980s are less alarmist (Jonson and Stevens, 1983; Johnston, 1987), acknowledging both similarities and differences between the 1980s and the 1930s. In terms of overseas borrowings, foreign debt as a percent 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, the 1980s recorded significant capital inflow.

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 continued reform efforts. The banking sector underwent further deregulation, a process that had started in the late 1970s. Controls on lending to businesses and households were largely removed, and access to international capital markets was facilitated. Industrial reforms were also implemented in an effort to make Australian industry more internationally competitive. A key aspect of this process 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 percent in 1973) was another important change.

The large depreciation that followed the floating of the exchange rate helped improve the competitiveness of domestic firms and insulated 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 owing to the impact of the Prices and Incomes Accord), and it 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 in the late 1990s also illustrates this general point. At the height of the global technology boom, Australia was apparently viewed as an “old economy” which contributed to a sizeable depreciation of the exchange rate that was not matched by a change in the terms of trade (Macfarlane, 2000). The trade balance moved from a deficit of about 2.5 percent of GDP in 1999 to a surplus of 0.5 percent by 2001, with a commensurate turnaround in the current account deficit.⁹

8. Because the depreciation raised the Australian-dollar values of debt denominated in foreign currency, it generated 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.

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

The question of resiliency in the face of large external shocks and exchange rate volatility is taken up again in section 4 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.

2. THE AUSTRALIAN POLICY DEBATE

The policy debate in Australia occurred 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 a general realization that demand management should be directed toward 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 exchange rates, there was no longer a balance-of-payments problem per se, but concerns about vulnerability to external shocks and long-run solvency remained. Third, Mundell-Fleming models (and later, more sophisticated variants) highlighted that monetary policy is well suited to controlling inflation in an environment of flexible exchange rates (via its affect on aggregate demand), though fiscal policy was relevant to questions of international solvency.¹⁰

2.1 An Evolving Policy Framework: The Late 1980s

Through the mid-1980s, under the fixed exchange rate, current account deficits were a cause of concern for policymakers 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 policymakers' efforts to contain growth in domestic liquidity. These particular difficulties were largely removed with the float of the Australian dollar, not the least because policymakers regained control over the setting of domestic interest rates. By the

10. Discussions of these and related issues include Grenville (1997), Gruen and Stevens (2000), Horne (2001), Gruen and Sayegh (2005), and Macfarlane (1999, 2006b). In an early case for flexible exchange rates, Friedman (1953) suggests that monetary policy should be directed away from external balance and that an exchange rate depreciation need not produce inflation.

mid-1980s, large current account deficits were becoming the norm, and the Australian-dollar value of foreign debt was growing rapidly. At this stage, there was less concern regarding the implications of the deficit for the implementation of policy, and the current account deficit 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. Policymakers 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 view 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.

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 was being blamed in part for the emergence of the balance-of-payments problem.

In the 1980s, the fiscal authorities took a lead role in setting 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 introduced, including the phased reduction in trade barriers and the continuation of the Prices and Incomes Accord to restrain wage growth. As already mentioned, the prominence given to the current account throughout this period may have partly reflected its usefulness as an argument to pursue other worthwhile reforms (Edwards, 1996). The value of such a strategy eventually weakened, however, as it became increasingly apparent that policy was ineffective at reducing the trend in the current account deficit.

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

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 contributing to 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 toward the end of the monetary targeting period of 1976–85, particularly after financial deregulation when the already tenuous relationship between monetary aggregates and inflation broke down (Johnston, 1985, p. 811). In its place, the Reserve Bank of Australia instituted a checklist approach, which included “all major economic and financial factors—present and prospective” (Johnston, 1985, p. 812). Among other things, the balance of payments was listed as an explicit factor and was given a high weight in monetary policy settings (see the Reserve Bank of Australia's 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, as well as 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 Reserve Bank believed it could operate policy as a “potent demand management tool” (Reserve Bank of Australia, 1989, p. 7), with inflation and current account deficits being symptoms of excess demand.

Over this period, however, there was a growing 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—namely, fiscal restraint and microeconomic reforms—were more effective tools for bringing about a lasting reduction in the deficit, and the Reserve Bank came to question whether monetary policy was able to contribute to the adjustment process at all.

Toward the end of the 1980s, persistent high inflation increasingly became the Reserve Bank's main focus, though the current account deficit still rated a mention in policy discussions.¹² This shift in focus also reflected evolving views within the Bank about the appropriate policy framework. The emerging view was that the single instrument of monetary policy could only be effectively directed to a single target, namely, inflation (Macfarlane and Stevens, 1989, p. 8; Phillips, 1989). It was believed that "monetary policy can best contribute to a sustainable external position in the same way that it can best contribute to overall growth, namely, by providing an environment of low inflation" (Reserve Bank of Australia, 1991, p. 4). By early 1993, the Reserve Bank 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 no permanent reduction in the current account deficit had been achieved despite the concerted efforts of policymakers. The current account deficit was back to 6 percent, 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.

2.2 The Challenge from Academia

In 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, although the so-called Pitchford thesis—or consenting adults view, as it is commonly known in Australia—can be traced back to Max Corden, (Corden, 1977).¹³

The Pitchford thesis rests on the understanding that the current account balance is the net result of investment and saving decisions

12. Treasurer Paul Keating reflects this sentiment 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).

13. Makin (1988) also made an early contribution to the debate.

made by agents within the economy (Pitchford, 1989a, 1989b, 1990). 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 and therefore welfare maximizing. The households and firms have made these decisions with every expectation that they will have the capacity to repay, and 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 aired, the Australian government was running a budget surplus and the public sector borrowing requirement was low, so the current account deficit could largely be 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 represents a means of taking advantage 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 macroeconomic policies had no role in responding to current account deficits and that current policies aimed at reducing the current account deficit might be severely misplaced. If the government had any role at all in addressing the current account deficit, it would be to remove distortions and externalities adversely affecting the decisions of private agents. Even then, the first-best solution would be to use microeconomic-based policies to remove the identified problems at their source.¹⁴

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 behavior will not change in response to changes

14. While the government undertook a lot of microeconomic reforms in the 1980s, Pitchford (1989b, p. 2) claims that the relevant microeconomic policies were largely not being considered.

in government behavior (see, for example, Argy, 1990). This does not imply that fiscal consolidation is inappropriate, but rather 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, policymakers might not undertake reforms that are likely to lead to an increase in the current account deficit but are otherwise beneficial (Pitchford, 1989c, p. 11).

2.3 The Response

Not all academics and policymakers sided with Pitchford in his thinking, particularly with regard 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 emphasized practical considerations (see, for example, Corden, 1991). First, private agents are not always able to make optimal decisions. Distortions and externalities interfere with incentives and provide a rationale for policy intervention. Moore (1989) argued that history provided plenty of examples 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 stemming from the imposition of a risk premium applying to the country as a whole. Third, the economy was at risk of an adverse swing in sentiment of foreign investors, possibly resulting in a sharp and severe adjustment process. In this case, it would be preferable to undertake some adjustment preemptively through appropriate restrictive policy settings (Argy, 1990).¹⁵

While these counter arguments have valid elements, they often are not concerned with the current account deficit per se, but see it as a symptom of another underlying problem. The appropriate

15. Argy (1990, p. 79), who at the time was the director of the Economic Planning Advisory Council, suggested that this view was shared "by many of us in Canberra."

policy response, then, is to address the underlying problem, be that overspending or the distortions and externalities themselves.¹⁶

Policymakers started to acknowledge the intellectual weight of the Pitchford thesis in the late 1980s. In September 1989 and again in June 1990, the Deputy Governor of the Reserve Bank of Australia, 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 the current account deficit was therefore not an appropriate target of monetary policy. Instead, the appropriate role for monetary policy was controlling inflation, and the Reserve Bank’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).

The Australian government acknowledged the broader implications of the Pitchford thesis in the early 1990s, but it 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).¹⁷ While strategies such as microeconomic 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.¹⁸

Likewise, the Reserve Bank at this time did not 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,” at which horizon deficits of around 5–6 percent 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, the Deputy Governor, Glenn Stevens, restated the Reserve Bank of Australia’s view as follows: “whether the current account deficit should be a target of any policy is not obvious—it would need to be argued. But

16. Responses to other arguments can be found in the many papers that constitute this debate (see, for example, Corden, 1991; Pitchford, 1989a).

17. The broader community feeling was that the deficit should be regarded as a concern, and this led the government to initiate a formal enquiry in October 1991 into the causes and consequences of Australia’s current account deficit and overseas debt (Langmore, 1991).

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

whatever one's view on that question, the current account is not, and should not, be an objective of monetary policy" (Stevens, 2004, emphasis in the original).

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

2.4 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, however, have only been publicly available since the mid-1990s. The OECD in the 1980s concurred with Australian authorities that the country's current account deficit and external debt position were unsustainable and that such concerns needed to be the overriding priority of policy (OECD, 1987). The organization 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 regard to the latter recommendation, the OECD pointed in particular to a need for real wage moderation and reduced trade protection. In the areas of fiscal policy, the OECD acknowledged that the Australian government had made substantial progress in reducing its deficit, but pressed for greater efforts by state and local governments.

OECD concern regarding Australia's current account deficit moderated in the 1990s. The OECD describes the current account deficit as sustainable in view of current government policies (OECD, 1994), but the OECD raised concerns throughout the 1990s 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 onward 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. These IMF reports often attribute weight to either the narrowing or widening that had been recently observed in the current account deficit, without always

appreciating that most of these movements are part of a standard cyclical pattern around a longer-term average.

Since the Asian crisis, IMF staff have stressed the potential risk from a shift in market sentiment, particularly considering that around one-half of Australia's foreign debt has a relatively short 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 that the one-size-fits-all approach fails to recognize some special factors relevant to the Australian situation, such as 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.

3. OPTIMALITY AND SUSTAINABILITY: AN EMPIRICAL ASSESSMENT

The intertemporal approach to the current account forms the foundation of Pitchford's view of the current account (Pitchford, 1989a, 1989b, 1990). Several studies use the methodology developed by Campbell (1987) and Campbell and Shiller (1987) to test whether Australian current account data support the intertemporal model, with mixed results. Milbourne and Otto (1992), reject the intertemporal model using quarterly data, while Cashin and McDermott (1998) and Otto (2003), who use annual data, and McDermott (1999), who uses 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 account balance, with two innovations. First, in accounting for the effect of the capital market opening and financial market deregulation, we take advantage of a longer sample of data postdating these changes. Prior to these changes, net foreign debt may have been less than optimal (because consumption or investment were too low), and credit constraints may have prevented optimal consumption

smoothing in the face of shocks to income. Second, we account for the fact that shocks to the Australian net cash flow (that is, output minus investment and government expenditure) may be correlated with shocks in the rest of the world and thus 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 in current account balances.

The full details of the model and estimation approach, along with detailed results, are reported in appendix A. In summary, we find tentative evidence in support of the intertemporal model. 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 liberalization in the early 1980s, in line with the removal of capital controls and the easing of credit constraints. We also find 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 on the order of 4.5 percent 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, building up the capital stock (both private and public) while maintaining a relatively high level of consumption would seem a natural outcome for a relatively undeveloped, “new” country with considerable natural wealth. This is particularly true in the case of an economy that 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 the intertemporal budget constraint has been satisfied. Indeed, as Milesi-Ferretti and Razin (1996) note, it is difficult in practice 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 stabilize 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 of around 0.50 to 0.75 percent of GDP can sustain foreign liabilities at a ratio of 60 percent, whereas Australia has actually run a deficit on the trade account of 1.5 percent of GDP, on average, since 1980. Alternatively, if the trend current account balance (of about 4.5 percent of GDP since 1984) were to be sustained, net foreign liabilities would eventually stabilize around 86 percent of GDP (assuming average growth of nominal GDP of 5.5 percent per year).

Such calculations, however, 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, or exactly when these changes need to occur. Again, this reflects the difference between solvency and sustainability: the latter is an assessment of what constitutes a stable equilibrium, while the former allows for the possibility that even higher, and potentially sustainable, levels of foreign indebtedness could be welfare enhancing.

4. 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 an economy's vulnerability to external shocks. This approach essentially falls somewhere in between the position that markets are always efficient and all current account deficits are therefore optimal, and admonitions 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 (in the form of either a deep recession associated with higher borrowing costs or a cessation or reversal of capital flows).¹⁹ 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 have contributed to a perceived association between large net external

19. For example, see Kaminsky and Reinhart (1999).

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.

This approach is generally restricted to a limited set of potential indicators, and it tends to encourage a one-size-fits-all approach to assessing vulnerability, which leads analysts to treat large current account deficits and external debt as sufficient statistics for vulnerability. However, economists increasingly acknowledge the value of recognizing the role of institutional differences among countries (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 that encourages sizeable capital inflows in the first place. This suggests that a high debt level may not signal vulnerability, but rather reflects resilience that permits high debt to be sustained.

One feature, in particular, helps 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; for instance, foreigners are willing to hold Australian debt denominated in Australian dollars. This allows the balance sheets and trading activities of domestic corporations and households (which are net foreign debtors) to withstand large, sharp nominal exchange rate fluctuations. Such markets can only 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 for adjusting to external shocks. 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.²⁰

The development of this resilience of the Australian economy to external shocks is well documented (Caballero, Cowan, and Kearns, 2004; Becker and Fabbro, 2006; Debelle and Plumb, 2006;

20. The Reserve Bank of Australia believes occasional intervention in foreign exchange markets is 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).

Macfarlane, 2006a; McCauley, 2006). These studies emphasize the value of maintaining investor confidence in the face of sizeable external shocks via the following mechanisms: a robust financial system, with deep, liquid, and stable financial markets and strong financial institutions; credible and stabilizing macroeconomic policies; and low net foreign currency exposure.²¹ Arguably, an element of luck and perseverance in the early stages of floating helped these markets and policies to develop. This section of the paper summarizes this literature by briefly tracing through these key features. The exercise illustrates that while many of these features have come about through a conscious effort on the part of policymakers seeking to generate resilience, others have arisen as a by-product of other pursuits or the result of learning-by-doing.

4.1 The Record on Inflation

A record of, and 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 Reserve Bank in 1993 achieved the goal of keeping year-ended inflation between 2 and 3 percent, on average, over the cycle. Caballero, Cowan, and Kearns (2004) argue that, notwithstanding higher inflation in the 1970s and 1980s, Australia has established a reputation over the past hundred years of being willing and able to maintain modest and stable inflation.

4.2 The Government Debt Market

A key factor behind foreigners' confidence in the market for Australian government debt is the fact that foreign holders have never suffered from any defaults on the debt, as discussed above. In addition, a number of changes in the early 1980s strengthened the market for government debt in Australia, apparently contributing to the take-up by foreigners of Australian-dollar-denominated debt. McCray (2000) highlights the role of financial deregulation in reducing the extent to which domestic financial institutions acted

21. Caballero, Cowan, and Kearns (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 internationalization of the Australian dollar.

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.²²

As a result, more than half of Australian government debt—almost all of which is issued domestically in Australian dollars—is held offshore.²³ Foreign investors also hold debt issued by Australian state and local governments and corporations. Indeed, more than 70 percent of corporate debt is held by offshore investors, with the corporate bond market around eight times larger than the Australian government bond market. Foreign investors' 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 while insulating themselves from the credit risk associated with lending to Australian firms (McCauley, 2006).

4.3 Financial Markets

Caballero, Cowan, and Kearns (2004) emphasize the importance of deep, efficient financial markets for 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 in Australia. For example, Australia's share of world output is relatively small at around 1.5 percent (making it the fifteenth largest economy), but turnover in the Australian dollar spot and derivatives markets (against the U.S. dollar) is the fourth largest in the world (BIS, 2005). The average daily turnover of the Australian dollar swaps market is A\$45 billion (US\$34 billion). 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).²⁴

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

22. See also McCauley (2006).

23. As of June 2006, the Australian government had A\$65 billion of bonds on issue, of which A\$33 billion, or 52 percent, was held by offshore investors.

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

were eased. Australian borrowers learned about the dangers of unhedged foreign-currency borrowing early on in the postfloat period (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 percent against the Swiss franc between January 1985 and August 1986. The scale of the borrowing was relatively small, so the losses did not disrupt the economy or the banking system overall. They did, however, generate enough publicity to provide a salutary lesson to both businesses and households.

The bulk of Australia's nongovernment foreign debt is currently 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 thus advantageous 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 percent 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 nonresidents as counterparties, thereby insulating domestic residents as a whole against unfavorable exchange rate fluctuations.

Given that 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 percent of Australian banks' total liabilities, compared with around 15 percent a decade ago. While debt securities make up 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, 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 (Reserve Bank of Australia, 2006). Third, in the event of an adverse shock, much of the adjustment would likely occur through a depreciation of the exchange rate.

4.4 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 for both factors of production and outputs. In the extreme, these reduce the likelihood of some type of expropriation of wealth or income (to the advantage of particular domestic residents), either by direct or indirect means. More generally, however, they allow countries to better withstand adverse external shocks that might otherwise harm foreign investors' interests.²⁵ Australia appears to rank highly on a range of indicators in this regard. For example, in 2006 Australia ranked ninth (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 Asian economic crisis of 1997 and 1998, when demand from many of Australia's major trading partners in the region declined significantly. The nominal exchange rate depreciated in effective terms by about 20 percent from mid-1997 to early 2001, but the inflationary impact of this was relatively modest. Unlike a number of countries

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

with substantial commodity exports to the region, the Reserve Bank of Australia 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, Cowan, and Kearns (2004) note that the stimulatory impact of the depreciation (including by facilitating a diversion of exports to the United States and Europe) contrasted with the experience of less-developed economies, for which the depreciation adversely affected the balance sheets of corporations with sizeable exposures to unhedged foreign-currency-denominated debts.

5. CONCLUSION

Australia has a long history of large and persistent current account deficits. Even so, the deficit rose considerably in the mid-1980s following the floating of the Australian dollar and the opening of the capital account. It has since been sustained around an average of 4.5 percent of GDP, 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 policymakers in its own right. The chief concern was that such deficits raised the prospects of default or a sharp reversal in capital flows (or both). In other words, policymakers 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 by 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 who argued that the current account merely reflected the optimal decisions of private agents and that for this reason, concerns about sustainability were misplaced, and macroeconomic policy certainly had no role 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. Policymakers ultimately accepted many elements of this view, perhaps because they realized that the current account

deficit remained stable in trend terms despite widespread reforms (including a substantial fiscal consolidation leading ultimately to no net public debt).

This so-called consenting adults view of current account deficits has become widely accepted in Australia among academics and policymakers. 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 behavior. Sustainability calculations imply that if the recent trend level of the current account deficit continues, foreign liabilities will eventually stabilize at around 86 percent of GDP, compared with around 60 percent in 2006. This says nothing about the more important question of solvency, which, under a flexible exchange rate regime, 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 has a number of institutional features that ameliorate 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 for both factors of production and outputs are critical features for maintaining the confidence of 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 the balance sheets and trading activities of domestic corporations and households (which are net foreign debtors) to withstand 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, Australia's high debt level may be less a signal of vulnerability than a reflection of the resilience that 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 maximize lifetime utility (equation A1) subject to a budget constraint (equation A2) and a production function:

$$U_t = \sum_{s=t}^{\infty} \beta^{s-t} \frac{C_s^{1-1/\sigma} - 1}{1-1/\sigma} \quad \text{and} \quad (\text{A1})$$

$$CA_t \equiv B_{t+1} - B_t = rB_t + Y_t - C_t - G_t - I_t, \quad (\text{A2})$$

where C_t is consumption at time t , β is the agent's discount rate, and $1/\sigma$ is the agent's intertemporal elasticity of substitution.²⁶ 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.²⁷ 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:

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

Optimal consumption can be shown to be proportional to wealth:

$$C_t^* = \left(\frac{r+v}{1+r} \right) W_t, \quad (\text{A4})$$

26. We use an isoelastic utility function and assume no uncertainty, rather than the more commonly 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.

27. Labor 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 $v \equiv 1 - \beta\sigma(1+r)^\sigma$ and 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,

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

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

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

$$CA_t^* = (Z_t - \tilde{Z}_t) - \frac{v}{r+v} W_t, \quad (\text{A6})$$

where \tilde{Z}_t is the permanent (or annuity) level of the net cash flow. The term in parentheses 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 to smooth consumption in the face of temporary disturbances to the net cash flow.²⁸ The second right-hand-side term captures consumption tilting that occurs when the rate of time preference, which equals $(1-\beta)/\beta$, is different from the world interest rate (that is, when $v \neq 0$). A country that is more impatient than the rest of the world will thus 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:

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

$$CA_t^T \equiv - \frac{v}{r+v} W_t = \lambda C_t, \quad (\text{A8})$$

28. 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).

where $\lambda \equiv -[v(1+r)/(r+v)^2]$. 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, we remove the trend behavior of the current account 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, we derive the net present value of future changes in the net cash flow by estimating a vector auto regression (VAR), which provides the basis for estimating future changes in net cash flow:²⁹

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

A weak test of the consumption-smoothing hypothesis is to determine whether 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.

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

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

29. The estimation procedure is justified by asserting that both CA_t^S and ΔZ_t are subject to measurement error. This model is easily generalized to incorporate higher-order VARs.

Let Ψ be the matrix $[\Psi_{ij}]$ 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).³⁰ The result is

$$C\hat{A}_t^S = -[1 \quad 0] \left(\frac{1}{1+r} \Psi \right) \left(\mathbf{I} - \frac{1}{1+r} \Psi \right)^{-1} \begin{bmatrix} \Delta Z_t \\ C\hat{A}_t^S \end{bmatrix} \equiv [\Phi_{\Delta Z} \quad \Phi_{CA}] \begin{bmatrix} \Delta Z_t \\ C\hat{A}_t^S \end{bmatrix} \quad (\text{A11})$$

From equation (A11), a stronger test of the intertemporal model is the joint test of $\Phi_{\Delta Z} = 0$ and $\Phi_{CA} = 1$.³¹

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.³²

The level of the current account has an obvious downward trend over the second half of the sample period, which suggests the existence of consumption tilting. We checked the series 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 nonstationary variables, but the change in net cash flow is stationary.

An estimate of the consumption-tilting coefficient, λ , is obtained in equation (A7) using dynamic ordinary least squares (DOLS):

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

30. Both $C\hat{A}_t^S$ and ΔZ_t need to be stationary in order for equation (A11) to be well defined.

31. 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.

32. There are two problems with the current account data. First, the current account should preferably incorporate changes in net foreign assets stemming from 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 ran a net income deficit over this entire period. This bias will be increasing over time, since net foreign debt has been steadily increasing, although it will be offset somewhat by the fall in world inflation rates since the mid-1980s.

where D_t is a dummy variable that takes the value of one from 1984 onward and zero otherwise. We expect λ to 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, consumers probably 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, δ will be negative.

The current account balance and consumption are clearly cointegrated. The ADF for the residuals is -5.61 .³³ The estimate of λ is less than zero, at -0.035 (with a t statistic of -4.65).³⁴ Furthermore, δ is significantly less than zero at -0.029 (with a t statistic of -5.16), which confirms that the degree of consumption tilting increased after financial liberalization 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).

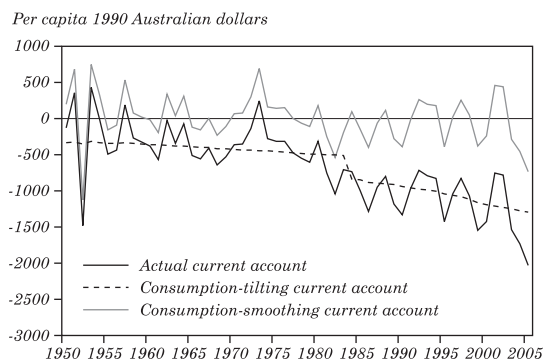
Figure A1 separates the actual current account into its stationary and nonstationary components.³⁵ Using estimates of the sum of λ and δ , we can obtain a rough estimate of the Australian rate of time preference, $(1 - \beta)/\beta$. Deaton (1992) provides a summary of estimates of the intertemporal elasticity of substitution ($1/\sigma$) that range from 0.35 to 0.75. Using an interest rate of 4 percent implies that the rate of time preference is between 0.04004 and 0.04008.³⁶ That is, the consumption-tilting behavior implies rates of time preference only marginally above the world interest rate.

33. Critical values for the ADF statistic are from Fuller (1976). The null hypothesis of no cointegration is rejected at the 5 percent significance level.

34. Reported t statistics have been adjusted as follows, so that the standard t tables are applicable. The OLS t statistics were multiplied by the factor (s^2/η^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 $\hat{\phi}_1$ and $\hat{\phi}_2$. Consistent with theory, no constant term was included in the regression. Furthermore, a constant was insignificant when included and had a negligible effect on the slope coefficient estimates.

35. 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 nonzero mean because of the inclusion of leads and lags of consumption changes in the right-hand side of equation A12. The nonstationary consumption-tilting component of the current account is simply $\hat{\lambda}C_t + \hat{\delta}D_tC_t - \hat{\mu}$.

36. For an interest rate of 2 percent, the estimate is between 0.02001 and 0.02002. For an interest rate of 6 percent, the estimate is between 0.06008 and 0.06017.

Figure A1. Current Account Tilting and Smoothing Components

Source: ABS; authors' calculations.

Before we can estimate the VAR shown in equation (A9), we need 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.

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

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

where ΔZ_t and ΔZ_t^W are changes in the Australian and world net cash flows, respectively. Obstfeld and Rogoff (1995) show that under certain conditions, ΔZ_t can be replaced by ΔZ_t^I in equation A7.³⁷ We estimated a VAR(1), VAR(2), and VAR(3); the results are presented in table A1. The results of the Granger causality test and the transformed coefficient vector, Φ , are shown in tables A2 and A3, respectively.

37. 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.

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 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 Φ imply a failure of the strict test of the intertemporal model—that is, the element applying to CA_t^S should be one, with all other elements being zero.³⁸

Table A1. VAR Estimates: Using Idiosyncratic Component of Net Cash Flow, 1951–2005^a

<i>Explanatory variable</i>	<i>VAR(1)</i>		<i>VAR(2)</i>		<i>VAR(3)</i>	
	ΔZ_t^I	CA_t^S	ΔZ_t^I	CA_t^S	ΔZ_t^I	CA_t^S
ΔZ_{t-1}^I	0.08 (0.14)	−0.03 (0.17)	−0.09 (0.14)	−0.22 (0.17)	−0.08 (0.15)	−0.07 (0.16)
ΔZ_{t-2}^I			0.11 (0.13)	−0.11 (0.15)	0.10 (0.15)	−0.02 (0.15)
ΔZ_{t-3}^I					0.05 (0.14)	0.14 (0.14)
CA_{t-1}^S	−0.35*** (0.13)	−0.03 (0.15)	−0.19 (0.12)	0.18 (0.14)	−0.16 (0.14)	0.39*** (0.14)
CA_{t-2}^S			−0.20 (0.13)	−0.13 (0.15)	−0.21 (0.13)	−0.25* (0.14)
CA_{t-3}^S					−0.06 (0.13)	−0.05 (0.14)
<i>Summary statistic</i>						
Durbin-Watson statistic	1.96	1.46	1.95	1.28	2.01	1.70
No. observations	54	54	53	53	52	52

Source: Author's estimations.
* Statistically significant at the 10 percent level. *** Statistically significant at the 1 percent level.
a. Standard errors are in parentheses.

38. The estimates shown are based on a real interest rate of 4 percent. Results are robust to using either a 2 or a 6 percent real interest rate.

Table A2. Granger Causality Tests, 1951–2005
F statistics

<i>Explanatory variable</i>	<i>VAR(1)</i>		<i>VAR(2)</i>		<i>VAR(3)</i>	
	ΔZ_t^I	CA_t^S	ΔZ_t^I	CA_t^S	ΔZ_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	

Source: Author's estimations.

* Statistically significant at the 10 percent level. *** Statistically significant at the 1 percent level

Table A3. Test of the Nonlinear Consumption-Smoothing Restriction, 1951–2005^a

<i>Parameter</i>	<i>VAR(1)</i>	<i>VAR(2)</i>	<i>VAR(3)</i>
$\Phi_{1\Delta Z}$	−0.10 (0.15)	−0.16 (0.22) ^(b)	−0.05 (0.22)
$\Phi_{2\Delta Z}$		−0.17 (0.17) ^(b)	−0.10 (0.19)
$\Phi_{3\Delta Z}$			−0.01 (0.13)
Φ_{1CA}	0.36 (0.14)	0.45 (0.24) ^(b)	0.47 (0.24)
Φ_{2CA}		0.16 (0.13) ^(b)	0.13 (0.13)
Φ_{3CA}			0.03 (0.12)
<i>Summary statistic</i>			
Wald statistic	47.65***	49.84***	19.60***

Source: Author's estimations.

*** Rejection of the joint null hypothesis at a 1 percent significance level.

a. The null hypothesis is $\Phi_i = 0$ for all i except $\Phi_{1CA} = 1$.

b. Standard errors 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, we reestimated the model for the two periods, 1951–1983 and 1984–2005. The Granger causality and transformed VAR(1) estimates are shown in tables A4 and A5. 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 Φ) is rejected for the earlier subsample, but not for the later subsample, although the standard errors are large. For the VAR(2) and VAR(3), however, which are not presented here, consumption smoothing is rejected at the 5 percent significance level but not at the 1 percent level for the postfloat sample.

Table A4. Granger Causality Tests, 1951–1983 and 1984–2005
F statistics

<i>Explanatory variable</i>	<i>1951–1983</i>		<i>1984–2005</i>	
	ΔZ_t^I	CA_t^S	ΔZ_t^I	CA_t^S
CA_{t-1}^S	2.70		5.24**	
ΔZ_{t-1}^I		0.03		0.03

Source: Author's estimations.
** Statistically significant at the 5 percent level.

Table A5. Test of the Nonlinear Consumption-Smoothing Restriction, 1951–1983 and 1984–2005^a

<i>Parameter</i>	<i>1951–1983</i>	<i>1984–2005</i>
$\Phi_{1\Delta Z}$	–0.00 (0.17)	–0.16 (0.24)
Φ_{1CA}	0.23 (0.14)	0.81 (0.41)
<i>Summary statistic</i>		
Wald statistic	59.91***	1.55

Source: Author's estimations.
*** Rejection of the joint null hypothesis at a 1 percent significance level.
a. The null hypothesis is $\Phi_{\Delta Z} = 0$ and $\Phi_{CA} = 1$.

APPENDIX B

Data

—Current account: 1861–1949 data from Vamplew (1987), tables ITFC 1–8 and ITFC 84–100; 1950–59 data from Foster (1996), table 1.1; and data from 1960 onward are from ABS, catalog no. 5302.0.

—Capital account: 1861–1900, indirect estimate of long-term capital inflows from Butlin (1962), table 250; 1901–49, apparent capital inflows from Vamplew (1987), tables ITFC 101–106 and ITFC 200–210; 1950–59 data are from Foster (1996), table 1.15; and data from 1960 onward are from ABS, catalog 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 1950–59, data are from Foster (1996), table 5.1a; and for 1960 onward nominal and real GDP are from ABS, catalog no. 5206.0.

—Net foreign liabilities: ABS, catalog no. 5302.0.

—Saving, investment, terms of trade, consumption, government, and investment expenditures: ABS, catalog no. 5206.0, tables 2, 9, and 32. A statistical discrepancy, averaging 2.3 percent and –0.2 percent of GDP from 1960–75 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; 1960–82 total general government and public sector debt are from Vamplew (1987), table GF1–33; and from 1988 onward they are from Treasury Budget Paper 1, table A4. Some data were not available for 1983–87.

—Trade-weighted indices (of the exchange rate): Reserve Bank of Australia Bulletin, table F.11. CPI data for Australia's trade partners, from Datastream, are used to calculate real trade-weighted indices.

—Population: ABS, catalog no. 3105.0.

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

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