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Project 6216.101 CP89934

34th Annual Conference of the
Australian Agricultural Economics Society
University of Queensland, Brisbane, 13-15 February 1990

SOME IMPLICATIONS OF INFLATION ADJUSTMENT OF INTEREST PAYMENTS ON AUSTRALIA'S FOREIGN DEBT

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Interest payments on foreign debt are decomposed into real and inflationary components using the Fisher relationship, and the inflation component is treated as an implicit repayment of foreign debt. As a consequence, the size of the current account deficit is reduced, and capital inflow is reduced by the value of this implicit capital repayment. It is demonstrated also that the flow of domestic savings is increased by the amount of the implicit capital repayment. Further, the size of these adjustments have increased during the 1980s, and these increases have probably been more marked in Australia than in many other debtor countries.

Introduction

In recent times, the attention of economic policy makers in Australia has been focussed on the growth of Australia's foreign debt, the growth in the current account deficit and the proportion of that deficit which is attributable to interest payments on foreign debt. Concern has also been expressed about the sharp fall in the ratio of household savings to household disposable income. This ratio has fallen from a peak of about 15 per cent in the mid-1970s to 6.6 per cent in 1988-89. The ratio of private savings to gross domestic product has also fallen, from a peak of 20.5 per cent in 1973 to 13.9 per cent in 1988-89.

The objective in this paper is to reappraise the recent history of Australia's current account deficit and its rate of private sector savings, by adjusting the interest payments on Australia's foreign debt for implicit capital repayments due to inflation. This adjustment provides a more accurate view of Australia's economic position.

It is well known that, in times of inflation, the nominal interest rate consists of two components - the real interest rate and an inflation component. From the viewpoint of borrowers, the inflation component of interest payments is, in effect, equivalent to a repayment of real principal, because the real value of the principal outstanding falls by the same amount. In other words, the inflation component represents a flow of savings or an accumulation of wealth on the part of the borrower. Similarly, from the viewpoint of lenders, the inflation component of interest receipts is equivalent to receiving back part of the principal originally lent, because the real value of that principal has declined by the same amount. In other words, the inflation component of interest receipts does not represent true economic income for lenders.

Unfortunately, standard national accounting conventions adopted in Australia and most other developed economies do not draw a distinction between real and nominal interest payments and receipts in times of inflation. Anstie, Gray and Pagan (1982) showed that, in consequence, the standard national accounting measure of household income and saving in Australia did not present an accurate picture of true or economic income and savings during the 1970s and early 1980s.

In the present study, this line of argument is extended to the Australian economy as a whole, rather than just to the household sector. In the 1970s and early 1980s, Australia's foreign debt and hence interest payments on foreign debt were both very small relative to the size of the Australian economy. Therefore, the distinction between the real and inflation components of those foreign interest payments was of little consequence at the time of the Anstie et al. study, and was not considered explicitly by those authors. However, the rapid growth of Australia's foreign debt and interest payments on that debt during the 1980s raises the possibility that the distinction between the real and inflation component of foreign interest payments is now of considerable importance.

It is shown in the paper that, when allowance is made for the implicit capital repayments represented by the inflation component of foreign interest payments, the current account deficit is reduced and the private sector savings ratio is increased. Of critical importance, the implicit capital repayments have increased steadily in significance during the 1980s. This increase is probably more marked in Australia than in many other developed countries. Thus, Australia's comparative economic performance, as

implied by the official estimates of the current account balance and private savings, may have been undervalued.

The method used in the analysis is to decompose interest payments on foreign debt into real and inflationary (or capital) components. The latter - the annual implicit capital repayment - is the inflation rate of the creditor nation multiplied by the value of the debt in that nation's currency. This amount is treated as a capital repayment in that it is both deducted from the current account deficit and - being also part of savings is added to domestic savings.

The next section contains a brief description of recent developments in Australia's current account deficit and foreign debt position. This is followed by a theoretical discussion of the implications of inflation when measuring Australia's foreign debt servicing commitments in the balance of payments. The results of the applied analysis are then presented, followed by some concluding comments.

Recent Developments in Australia's Current Account and Foreign Debt Position

The increase in the current account deficit as officially measured has been associated with a growing imbalance between domestic savings and investment. Between 1976-77 and 1988-89 this discrepancy widened markedly; aggregate savings fell over most of this period as a proportion of gross domestic product, while gross fixed capital expenditure remained approximately the same at around 24 per cent of gross domestic product (see Table 1). Both private sector savings and the ratio of household savings to household disposable income have fallen during this period. The household savings to disposable income ratio fell from a peak of about 15 per cent in 1974-75 to about 7 per cent in 1988-89 (see Figure 1).

As a result, between 1976-77 and 1988-89, the current account deficit rose from $A2.4 billion to $A17.5 billion or, as a percentage of gross domestic product, from about 3 per cent to about 5 per cent (see Figure 2). This deficit has been financed by foreign capital inflow, partly in the form of debt and partly as equity investment. However, of critical importance is the fact that the share of debt in capital inflow averaged over 75 per cent in the 1980s as against about 40 per cent during the 1970s (O'Mara, Hogan and Kirby 1988).

Between 1976-77 and 1988-89, Australia's nominal net foreign debt increased from $A3.9 billion to $A108.2 billion, while net foreign debt in 1984-85 prices rose from $A17.6 billion to $A79.8 billion. The ratio of foreign debt to gross domestic product rose from about 3 per cent in 1976-77 to about 32 per cent in 1988-89 (see Figure 3). This ratio increased much faster in the 1980s than for many other industrial debtor countries (see Table 2).

As a consequence of this rise in foreign debt, interest payments on foreign debt rose from $A1 billion in 1976-77 to $A9 billion in 1988-89, raising questions about Australia's credit rating and ability to meet interest payments and capital repayments as these payments become an increasingly high proportion of export income (Macquarie Bank 1989).

TABLE 1

Contributions to the Current Account Balance (Shares of gross domestic product)

Financial year	Balance of payments(a)			National saving-investment balance(b)						Current account balance (10)(a)
				Private			Public			
	Trade in goods and services (1)	Net income (2)	Net transfers (3)	Saving (4)	Investment (5)	Net lending (6)	Saving (7)	Investment (8)	Net lending(c) (9)	
	%	%	%	%	%	%	%	%	%	%
1970-71	-0.0	-2.0	-.01	17.3	18.1	-0.9	6.6	7.8	-1.2	-2.1
1972-72	1.1	-1.8	-0.1	18.2	17.6	0.6	6.7	8.0	-1.3	-0.7
1972-73	3.7	-1.7	-0.2	20.5	17.1	3.4	5.6	7.3	-1.7	1.7
1973-74	0.0	-1.4	-0.3	15.8	16.7	-1.0	6.4	7.1	-0.7	-1.7
1974-75	-0.4	-1.8	-0.4	18.4	14.7	3.1	3.5	8.4	-4.9	-1.8
1975-76	0.4	-1.8	-0.4	18.4	15.7	2.7	3.9	8.4	-4.5	-1.8
1976-77	-0.7	-1.8	-0.3	17.4	16.2	1.2	3.8	7.8	-4.0	-2.8
1977-78	-1.1	-1.8	-0.2	17.9	16.0	1.9	2.7	7.7	-5.0	-3.1
1978-79	-1.1	-2.0	-0.3	18.1	16.8	1.3	2.5	7.2	-4.7	-3.4
1979-80	0.6	-2.2	-0.1	18.4	16.4	2.0	3.4	7.0	-3.7	-1.6
1980-81	-2.0	-1.9	-0.1	17.5	18.4	-0.8	3.7	6.8	-3.2	-3.9
1981-82	-3.7	-2.0	-0.1	16.7	19.1	-2.4	3.9	7.3	-3.5	-5.8
1982-83	-2.3	-1.6	-0.1	18.3	16.3	2.0	1.9	7.8	-5.9	-3.9
1983-84	-1.5	-2.5	0.1	18.5	15.6	2.9	0.7	7.4	-6.7	-3.8
1984-85	-2.3	-3.1	0.1	16.6	16.8	-0.1	2.0	7.1	-5.1	-5.2
1985-86	-3.2	-3.4	0.3	16.1	17.3	-1.2	2.4	7.5	-5.1	-6.3
1986-87	-1.8	-3.6	0.5	15.7	17.1	-1.4	3.7	7.2	-3.5	-4.9
1987-88	-0.8	-3.8	0.6	14.8	18.4	-3.6	5.5	5.9	-0.4	-4.0
1988-89	-2.0	-3.9	0.7	13.9	20.1	-6.2	6.4	5.4	1.0	-5.2
1970-71 to 1979-80(d)	0.3	-1.8	-0.2	18.0	16.5	1.4	4.5	7.7	-3.2	-1.7
1980-81 to 1988-89(d)	-2.2	-2.9	0.2	16.4	17.7	-1.3	3.3	6.9	-3.6	-4.9

(a) Note that (10) = (1) + (2) + (3). (b) Several components of the saving-investment balance were derived residually: (6) = (10) - (9); (4) = (5) + (6); (7) = (8) + (9). (c) Negative of the net public sector borrowing requirement. (d) Period average.

Sources: Australian Bureau of Statistics; Treasury; Hogan and Thorpe (1989) (updated).

FIGURE 1 - Ratio of Household Savings to Household Disposable Income

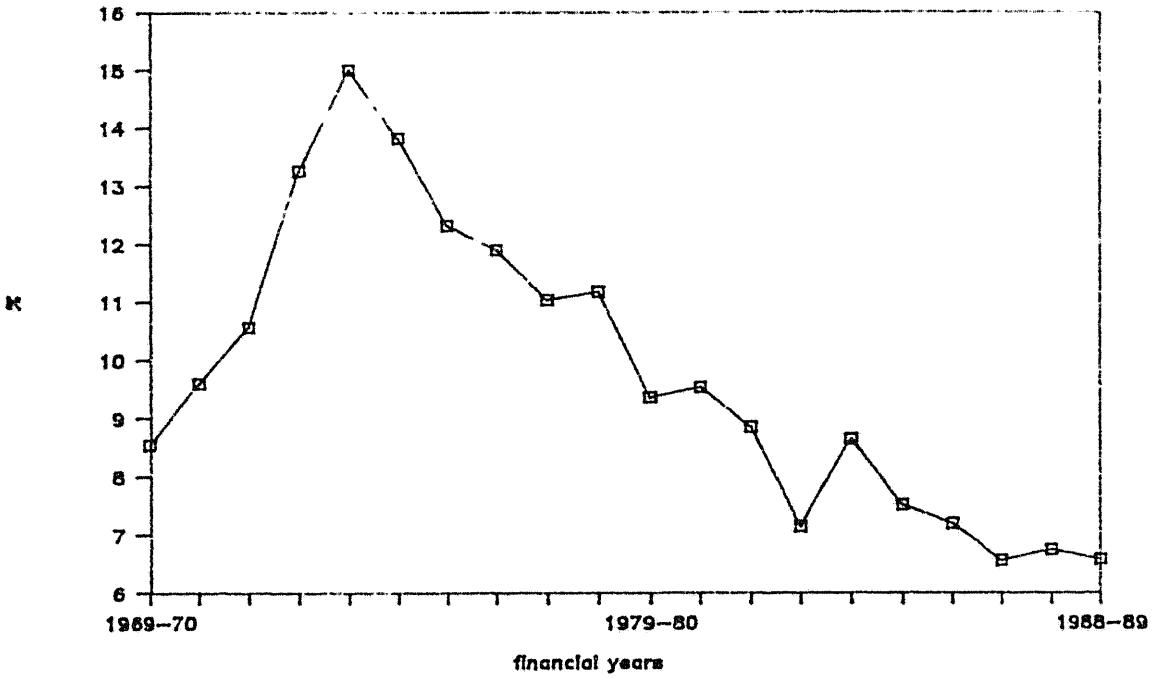


FIGURE 2 - Ratio of Balance of Current Account to Gross Domestic Product

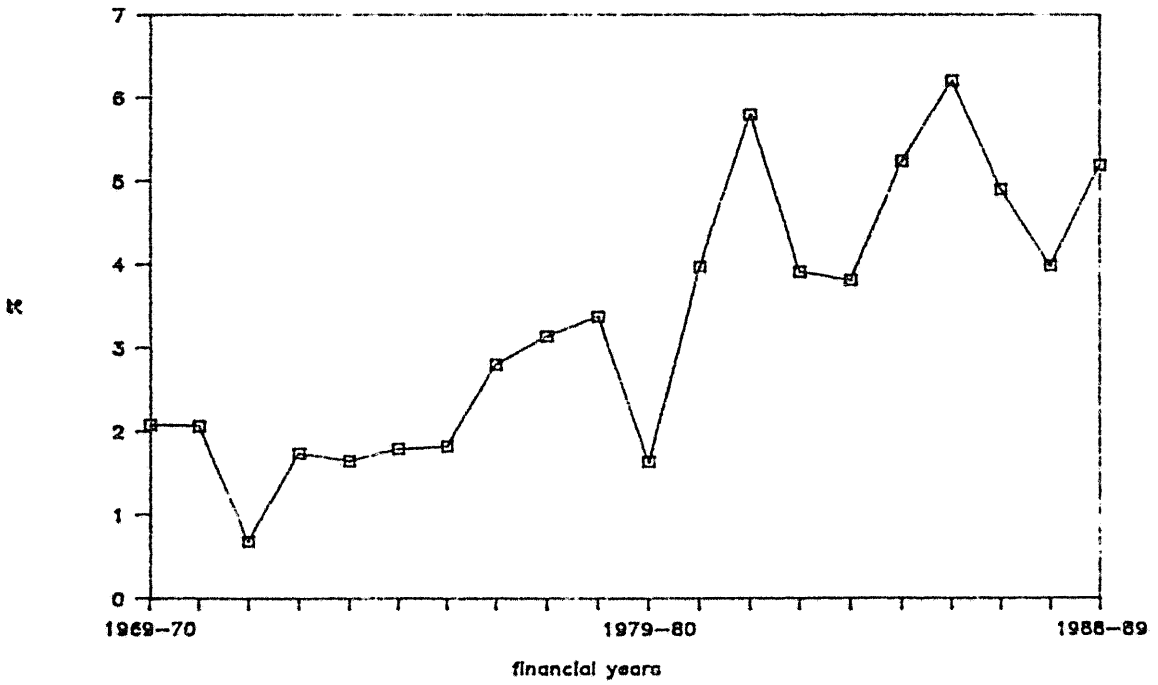


FIGURE 3 - Ratio of Foreign Debt to Gross Domestic Product

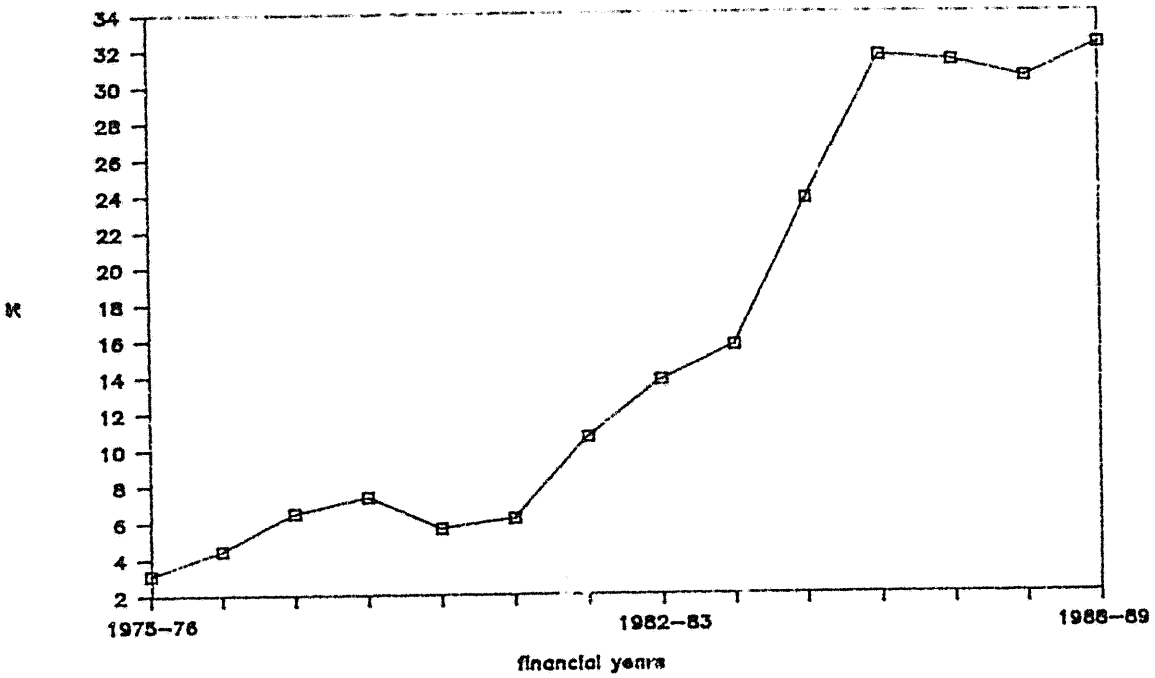


TABLE 2

External Debt of Small Industrial Debtor Countries

Country	Net debt as proportion of GDP	
	1981	Latest (1987 except where indicated)
	%	%
Australia	6	32(1989)
Canada	25	24
Denmark	30	41
Finland	15	17
Iceland	28	43(1988)
Ireland	56	87
Norway	27	28(1989)
New Zealand	22	66
Portugal	34 (1982)	25
Sweden	15	23

Source: Economic Planning Advisory Council (1989a)

Theoretical Analysis of Foreign Debt Interest Payments in the Balance of Payments

The Fisher relationship between nominal and real interest rates is used to decompose all nominal interest payments on Australia's foreign debt into two components: the real interest payment; and the capital repayment, which is the compensation to the lender for the effects of inflation. Such a decomposition is based on the (approximate) Fisher relationship between real and nominal interest rates: the nominal interest rate per period (i) equals the real interest rate (r) plus the expected inflation rate (f) over the same period.

(1) $\quad i = r + f$

For the ex post analysis of historical data attempted in this paper, the expected inflation rate is replaced by the actual inflation rate in each period. The inflation component can be interpreted as a repayment of principal to the lender, such as to compensate for the reduction in the real value of the debt outstanding which would otherwise occur at the rate of inflation. The real interest rate is the lender's payment beyond the amount which provides this compensation (Pagan and Trivedi 1982)

The focus of the theoretical analysis is on the treatment of this capital repayment in the balance of payments accounts. To assess the nature of these capital repayments, three models are developed in which simplifying assumptions are progressively relaxed.

Single-country model

Assume the domestic economy is closed, so there is domestic borrowing, but no foreign debt. Let the original amount borrowed domestically, valued in domestic currency terms, be Q. Then, based on the Fisher relationship in equation (1), the nominal interest payments are iQ, the real interest payments are rQ and the implicit capital repayment is fQ. Thus, when all debt is domestic, the implicit capital repayment depends on the domestic inflation rate and the level of domestic debt (see also Anstie, Gray and Pagan 1982).

Two-country model

Extend the model to include both a domestic and a foreign country. Each economy has a different currency and inflation rate. Assume further that the domestic country borrows only from the foreign country. It is further assumed that the real exchange rate is fixed, so that the foreign debt will not change in domestic currency terms as a result of nominal exchange rate movements. That is, the nominal exchange rate, e (defined as units of domestic currency per unit of foreign currency), is assumed to vary with the relative inflation rates: $e = f - f'$, where $'$ represents a corresponding foreign variable.

The value of foreign debt in domestic currency terms, Q, is given by:

(2) $\quad Q = eQ'$

where Q' is the foreign debt valued in foreign currency terms.

It is assumed that the domestic economy is small, and therefore takes as given the foreign nominal interest rate for each of its foreign currency

denominated debts. Thus, the nominal interest payment in foreign currency terms is $i'Q'$. Applying the Fisher relationship to the foreign country, the implicit principal repayment, valued in the foreign currency, is $f'Q'$. In terms of the domestic currency, this repayment is $ef'Q' = f'Q$, the foreign inflation rate multiplied by the value of the debt in domestic currency terms.

Note that the principal repayment in terms of the foreign currency is related only to the foreign inflation rate. The role of the exchange rate is just to convert this principal repayment to the domestic currency. The principal repayment in domestic terms is entirely independent of the domestic inflation rate, and thus independent of nominal exchange rate movements assuming that the real exchange rate is fixed. In this case, where all debt is foreign, the implicit capital repayment in domestic terms depends on the foreign inflation rate and the level of foreign debt denominated in domestic currency.

Of course, if the real exchange rate varies there will also be real valuation effects on the level of foreign debt, but this is ignored in the present analysis because such valuation effects do not affect the current account balance and domestic savings ratio as conventionally measured.

Several countries

Assume there are n countries. Let the domestic currency value of total foreign debt be Q such that:

$$(3) \qquad Q = Q_1 + \sum_{k=2}^{n} Q_k$$

where Q_1 is debt denominated in the domestic currency (Australian domestic debt, plus any foreign debt denominated in Australian dollars) and Q_k ($k = 2,3...n$) is the value in the domestic currency of the foreign debt denominated in the currency of the country k.

The domestic currency value, Q_k, of a foreign debt, Q'_k, is given as before by:

$$(4) \qquad Q_k = e_k Q'_k \quad \text{for } k = 2,3...n$$

where e_k is the corresponding nominal exchange rate in units of domestic currency per unit of foreign currency.

If the nominal interest rate prevailing in country k is i_k, then the nominal interest paid in the foreign currency of country k is $i_k Q'_k$.

Let the inflation rates be f_1, f_2, f_n...f . For the domestic debt, the implicit principal repayment is $f_1 Q_1$, and that for each of the other countries in the respective foreign currency is $f_n Q'_n$.

The principal repayment for each of the other countries in domestic currency (Australian dollar) terms, R_n, is given by:

$$(5) \qquad R_n = e_n f_n Q_n' = f_n Q_n.$$

Thus, total implicit principal repayments in Australian dollar terms, R, are:

$$(6) \qquad R = f_1 Q_1 + \sum_{k=2}^{n} e_k f_k Q_k' = f_1 Q_1 + \sum_{k=2}^{n} f_k Q_k$$

That is, the total Australian dollar value of implicit capital repayments on all foreign debt is the sum of the foreign currency values of that debt times the inflation rates of the respective countries and the Australian exchange rates against their respective currencies. If any of the debt held abroad is denominated in Australian dollars, its implicit capital repayment rate is the Australian inflation rate times the Australian dollar value of this debt.

By convention, the official estimates of the current account deficit and domestic savings in Australia and most other countries are calculated without making allowance for implicit capital repayments. It can be readily shown that, if allowance is made for these implicit capital repayments, the measured current account deficit of a debtor country will thereby be reduced, and the level of domestic savings will be correspondingly increased - see Appendix.

Some Empirical Results

The data source for the foreign currency amounts of foreign debt was the Australian Bureau of Statistics (ABS) publication Foreign Investment - Australia (Cat. No. 5305.0). Unfortunately no information on the currency denomination of foreign debt is available prior to 1976-77. Other information was obtained from the ABS Australian National Accounts (Cat. Nos 5205.0, 5206.0, 5207.0). Table 3 shows the Australian dollar value of total private and government debt, arranged by currency of nomination.

The change of the ratio of private savings to gross domestic product between 1976-77 and 1987-88, with and without the adjustment for implicit capital payments on foreign debt, is set out in Figure 4. The decline in total private sector savings over the period is somewhat less marked once allowance is made for the implicit capital repayments. The size of the adjustment varies from 0.5 per cent of gross domestic product in 1976-77 to 1.8 per cent in 1987-88.

An important policy variable is the ratio of household savings to household disposable income. Although household savings are only a component of total savings, it is of interest to measure the effect of implicit capital repayments if all of the adjustment falls on to the household sector, and hence the household savings ratio is increased by the full

TABLE 3

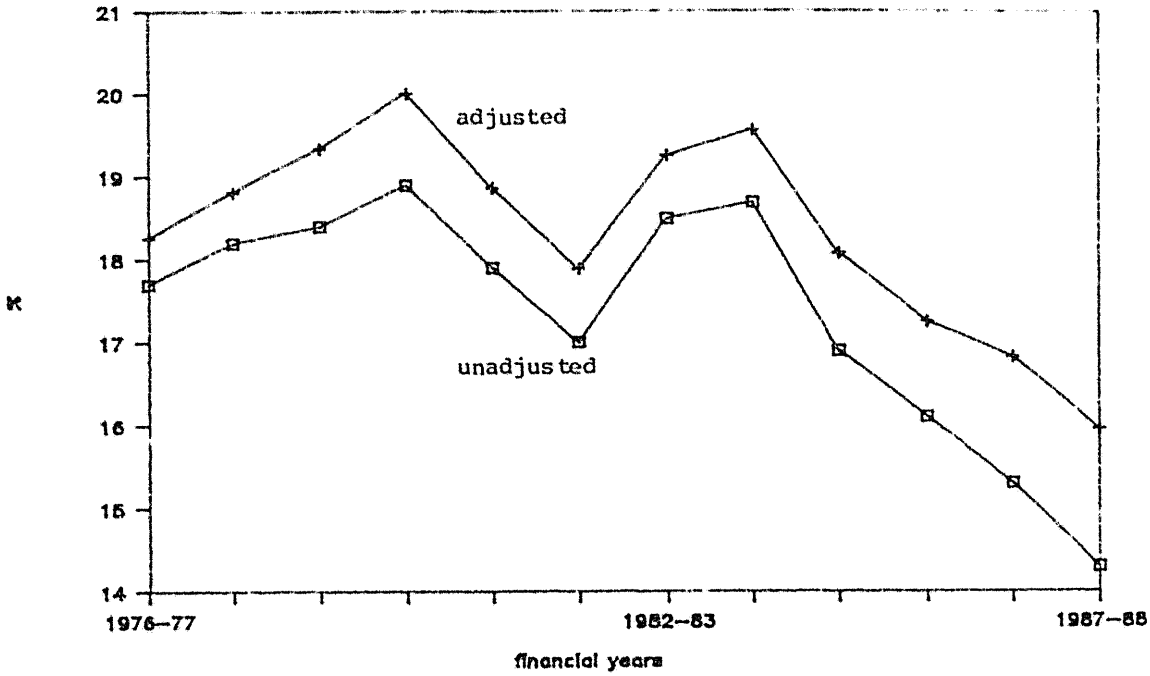
Total Australian Debt Nominated in Each Currency, Valued in Australian Dollars

Financial year	Currency of nomination							Gross foreign debt	Australian lending abroad	Gross debt less lending abroad	Debt Less official reserves	Net foreign debt
	US dollar	Pound sterling	Swiss franc	Deutch-mark	Japanese yen	Other	Australian dollar					
	A$m	A$m	A$m	A$m	A$m	A$m	A$m	A$m	A$m	A$m	A$m	A$m
1976-77	4 137	371	368	675	34	1 229	998	7 812	581	7 231	3 343	3 888
1977-78	5 106	322	490	1 244	255	1 554	1 162	10 133	724	9 409	3 254	6 155
1978-79	5 332	367	1 173	1 555	779	1 828	1 617	12 651	809	11 842	3 912	7 930
1979-80	6 358	375	1 747	1 350	540	1 920	1 208	13 498	923	12 575	5 712	6 863
1980-81	8 047	510	983	1 396	601	2 040	1 642	15 219	939	14 280	5 727	8 553
1981-82	13 938	767	1 987	1 677	723	2 819	2 528	24 350	1 276	22 974	6 527	16 447
1982-83	20 220	1 228	2 356	2 017	1 726	2 950	5 395	35 891	1 752	34 140	10 755	23 385
1983-84	26 085	1 435	2 570	1 816	1 585	3 332	7 278	44 101	1 788	32 313	12 420	29 893
1984-85	37 192	1 836	4 023	2 187	4 924	4 529	12 982	67 573	2 642	64 931	13 623	51 308
1985-86	45 430	3 032	5 380	3 399	9 133	4 501	21 175	92 051	3 845	88 206	13 161	75 045
1986-87	50 293	4 049	5 171	3 733	10 154	5 360	26 146	104 909	4 499	100 410	17 950	82 452
1987-88	44 747	5 337	5 445	2 928	12 830	8 320	37 421	117 018	5 899	111 119	20 831	90 289

Source: ABS, Foreign Investment Australia, Cat. No. 5305.0.

Note: Official Reserves were not treated as lending abroad in calculations of implicit capital repayments. This was because it was assumed that most official reserves were not interest bearing. In 1987-88 investment income on reserves was $A706m, a return of 3.4 per cent per annum. The implicit capital repayments on official reserves would have had a negligible effect on the savings ratios or current account deficit.

FIGURE 4 Ratio of Private Savings to Gross Domestic Product, Unadjusted and Adjusted



amount of the implicit capital repayment. The effect can be seen in Figure 5. The household savings ratio, as conventionally measured, fell from 11.9 per cent in 1976-77 to 6.7 per cent in 1987-88. The adjusted series falls somewhat less in the same period, from 12.8 per cent to 9.4 per cent. Table 4 shows household savings in absolute terms together with the capital repayments adjustment, and with the adjustment as a percentage of household disposable income. It can be shown that real net implicit capital repayments quadrupled in real terms between 1976-77 and 1987-88.

In Figure 6 the ratios of the unadjusted and adjusted current account balances to gross domestic product are shown. The size of the adjustment is, of course, the same as for the private savings adjustment. Note that the balances are negative, and the adjustments have effectively improved the balances. The adjusted balance as a proportion of GDP is only slightly larger in 1987-88 than in 1976-77.

In summary:

- The adjusted savings ratio is higher than that obtained using the official statistics. If the implicit repayment adjustment is taken into account, the decline in Australian private sector savings since the latter part of the 1970s is somewhat less marked than is implied by the official statistics.

- The adjusted current account deficit is lower than the official estimates. If the implicit repayment adjustment is made, the ratio of the current account deficit to GDP is only slightly higher in 1988 than it was in 1977.

FIGURE 5 - Ratio of Household Savings to Disposable Income, Unadjusted and Adjusted

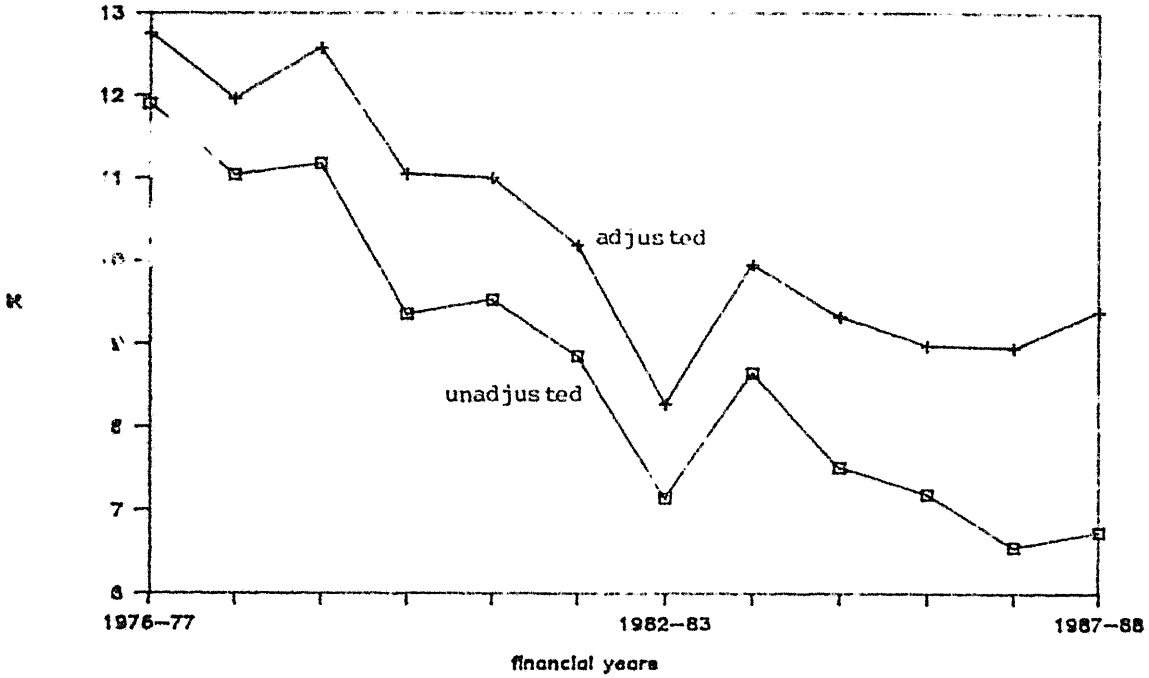


FIGURE 6 - Ratio of Balance of Current Account to Gross Domestic Product, Unadjusted and Adjusted

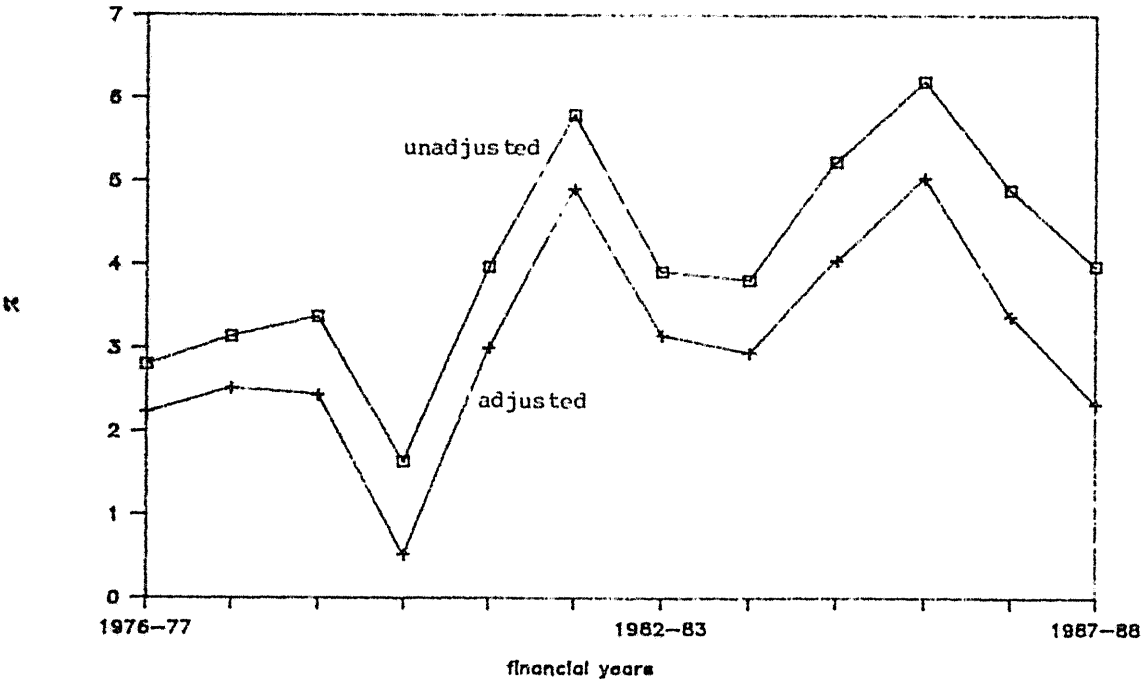


TABLE 4

Nominal Household Savings

Financial year	Household saving	Implicit adjustment for capital repayments overseas	Adjustment as a percentage of household disposable income
	$m	$m	%
1976-77	6 915	495	0.85
1977-78	7 063	589	0.92
1978-79	8 076	1 010	1.39
1979-80	7 485	1 349	1.68
1980-81	8 675	1 334	1.46
1981-82	9 120	1 384	1.34
1982-83	8 132	1 295	1.14
1983-84	11 024	1 683	1.31
1984-85	10 376	2 516	1.82
1985-86	11 064	2 760	1.79
1986-87	10 938	4 009	2.40
1987-88	12 480	4 919	2.66

Policy Implications

There has been considerable concern expressed in recent times over the rise in the current account deficit (for example, EPAC 1989a) and the concurrent fall in the household and private savings ratio (Treasury 1989; EPAC 1988; EPAC 1989b). The low level of savings in the private sector is seen as, in the short term, a factor contributing to high current account deficits, and in the long term as resulting in insufficient savings to support an ageing population. This perceived shortage of private sector savings has been a central issue in the recent debate about Australia's taxation system (Freebairn, Porter and Walsh 1988) and has contributed to recent policy changes in the area of Australia's superannuation arrangements designed to encourage longer term saving (Treasury 1989).

These concerns about the high current account deficits and low savings ratios may also have affected the perception of Australia's economic performance by participants in financial markets. Australia's international credit rating may have been affected, and there is some evidence that a risk premium is demanded by participants in financial markets in order to encourage them to invest in Australia (Hogan, Thorpe and Coote 1988). This has probably contributed to the high domestic interest rates which have ruled over much of the period since 1985.

The key conclusion of this paper is that the official statistics on which such concerns are based need to be interpreted carefully, after adjusting the current account balance and savings rates for the implicit capital repayments inherent in the estimates in times of inflation. In particular, the adjustments reflect the fact that part of the interest payments on Australia's foreign debt may be seen, in times of inflation, as repayments of real principal. That is, such payments constitute a component of domestic savings. In other words, domestic savings are higher, and the current account deficit is lower, when the adjustment is undertaken.

Of critical importance, the size of the implicit capital repayment has increased dramatically during the 1980s. Hence, the observed decline in savings and rise in the current account deficit during the 1980s, as officially measured, were not necessarily caused entirely by the emergence of a major structural change in the economy, as suggested by some economic commentators. Rather, they reflect, at least in part, an increase in a component of domestic savings during the 1980s which has not been identified and captured in the official statistics. It is important that policy makers take this into account when assessing whether major changes in economic policy are needed in Australia to increase domestic savings and reduce the current account deficit.

Further, the effect of the growth of implicit capital repayments is likely to have been more marked for Australia than for many other small industrial debtor countries. Because of the relatively rapid growth in Australia's ratio of net foreign debt to gross domestic product compared to other countries (Table 2), the divergence between the adjusted and measured savings ratio and current account deficit has increased more rapidly in Australia than in many other countries. In consequence, perceptions of Australia's comparative economic performance may have been adversely affected, resulting in a larger risk premium in the Australian interest rate structure than might otherwise have been called for. This also raises the possibility that sentiment in financial markets could improve, with consequent lowering of the risk premium, if the broad conclusions outlined above were to become widely appreciated.

APPENDIX

Let the national accounting identity be defined as:

(A1) $Y = C + I + X - M$

where Y is national income, C is total consumption (including government consumption), I is total investment (including government investment), X is exports and M is imports.

Savings and offshore interest payments appear as follows:

(A2) $C = Y - S - R^N$

where S is total measured savings and R^N is nominal interest payments on foreign debt (assuming that there is no foreign equity investment). Substituting (A2) into (A1), the difference between total savings and total investment is seen to be the measured current account balance:

(A3) $S - I = X - M - R^N$

Suppose R^N is divided into the real repayment, R*, and the inflation component (the implicit capital repayment), R, so that:

(A4) $R^N = R^* + R$

Substitution of (A4) into (A3) gives:

(A5) $S = X - M - R^* - R + I$

It is clear that, if there were no inflation in creditor countries, there would be no capital repayment component R. Measured saving in the absence of inflation, S_0, will therefore be:

(A6) $S_0 = X - M - R^* + I$

Thus, the difference in measured savings with and without inflation is

(7) $S_N - S = R.$

In other words, the implicit capital repayment is a reduction in the measured savings rate relative to the non-inflationary situation.

Similarly, $X - M - R^*$ is the measured current account balance where there is no inflation in creditor nations, and $X - M - R^* - R$ in the inflationary situation. In the inflationary situation, the measured current account surplus is reduced, or the measured deficit increased, by the implicit capital repayment, R.

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