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THE CURRENT ACCOUNT, MONETARY POLICY, MARKET SENTIMENT AND THE REAL EXCHANGE RATE: SOME IMPLICATIONS FOR THE FARM SECTOR

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The real effective value of the Australian dollar declined sharply between early 1985 and September 1986. 'Market fundamentals' associated with the deterioration in Australia's terms of trade and current account, and rising foreign debt levels are the commonly cited explanation for the decline. However, several other shorter term influences may have also contributed. Theoretical and empirical analysis indicates that market fundamentals might explain, at most, 20 percentage points of the 37 per cent decline in the rate over this period. Thus, a significant real appreciation would be expected over the medium term prior to, and quite independently of, any recovery in Australia's terms of trade in general or in world farm commodity prices in particular.

One of the most striking macroeconomic developments in Australia in recent times has been the dramatic decline in the nominal and real effective value of the Australian dollar between early 1985 and September 1986. This has had a major bearing on farm sector returns. Similarly, the medium-term outlook facing the farm sector is likely to be strongly dependent on the future course of the real exchange rate — whether the partial recovery in the real exchange rate during much of 1987 will be maintained or extended, or whether further falls may be in prospect over the medium term. The recent sharp fall in prices on world share markets has added an element of uncertainty to the outcome because of its potential effects on Australia's terms of trade.

The objective in this paper is to identify the possible causes of the real devaluation and to assess their relative importance. While the deterioration in Australia's terms of trade is perhaps the most obvious causal factor, it is argued in the paper that there are several other shorter term influences which could also have contributed significantly to the fall in the real exchange rate.

The remainder of the paper is organised as follows. Some background is provided on the extent of the real devaluation and the various factors which might be hypothesised to have contributed to the real devaluation. The theoretical model and analysis are then discussed very briefly and in general terms. (A more formal and detailed exposition is presented in O'Mara, Wallace and Meshios 1987). Next, the empirical results are summarised and discussed, and finally, some concluding comments are made.

Background

Extent of the real devaluation

Since the Australian dollar was floated in December 1983, the exchange rate has become more volatile (Treasury 1985; Trevor and

Donald 1986; Lim and Parmenter 1985). This increased volatility has been accompanied by a marked decline in the value of the Australian dollar, both against the US dollar and on a trade weighted basis, particularly over the period between early 1985 and September 1986 (Figure 1). Some recovery was evident during much of 1987.

The decline in the nominal exchange rate was reflected substantially in a decline in the real effective exchange rate. For example, the measure of Australia's real effective exchange rate used by the Australian Bureau of Agricultural and Resource Economics (see O'Mara, Carland and Campbell 1980) fell by around 37 per cent between the December quarter 1984 and the September quarter 1986. Around 8 percentage points of that fall was reversed over the period to the September quarter 1987.

Possible causes of the devaluation

Identification of the possible causes of the recent devaluation of the Australian dollar is a necessary precursor to a determination of the dollar's likely future value. In particular, if the devaluation was largely in response to market fundamentals in the form of a deterioration in the terms of trade and the current account, then the dollar would be likely to remain weak until the terms of trade improve. On the other hand, if the dollar's decline can be attributed partly to, for example, a relatively expansionary monetary policy, then it is possible that the real devaluation 'overshot' in the short term and some correction would be expected over the medium to longer term (see below). A third alternative is that the devaluation of the Australian dollar can be explained partly in terms of 'market sentiment' or by the concept of a 'speculative bubble' (Frankel and Froot 1986). Each of these possible explanations is examined.

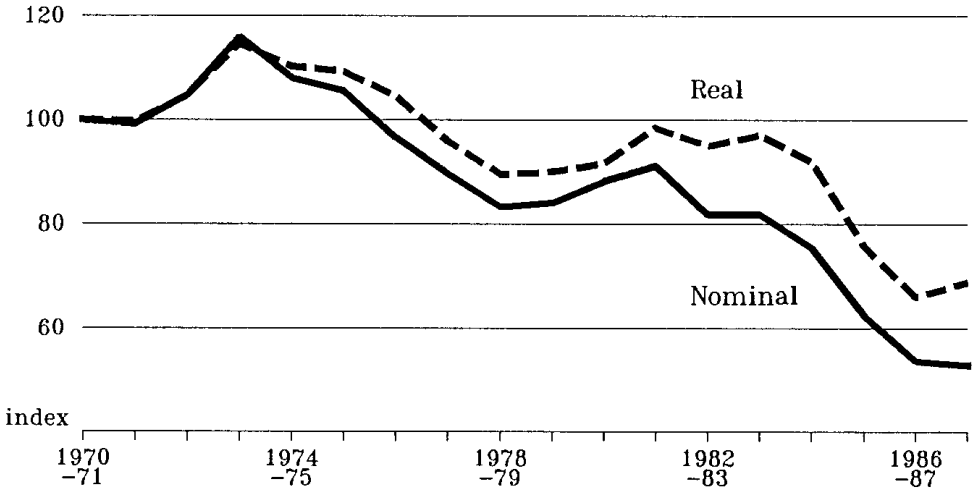

FIGURE 1—ABARE Nominal and Real Effective Exchange Rates.

The deterioration of the current account

The current account has shown a declining trend since about mid-1984 (Figure 2), with record current account deficits in 1984–85 and 1985–86. As a proportion of gross domestic product (GDP), the current account deficit was around 6 per cent in 1985–86, compared with an average of around 2 per cent over the period since the early 1950s. The deterioration in the current account has coincided with a marked deterioration in Australia's terms of trade (Figure 3). It might be noted, however, that the recent decline in the terms of trade, while

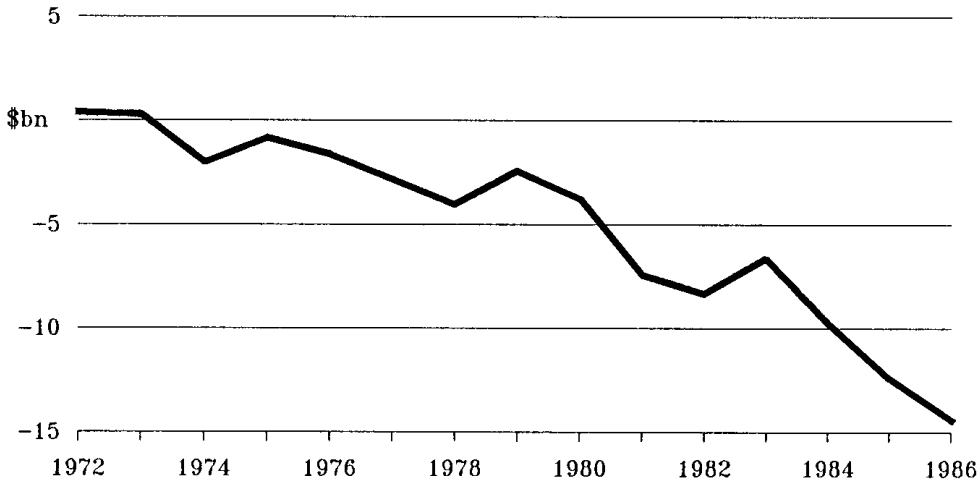

FIGURE 2—Balance on Current Account (yearly average).

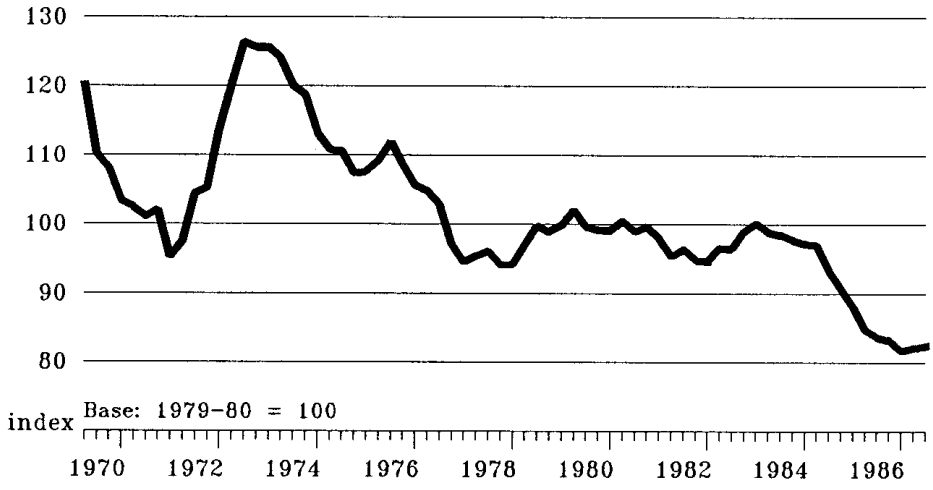

FIGURE 3—Terms of Trade.

substantial, does not appear to be unusually large when compared with the experience of some earlier periods.

The increase in the current account deficit has been accompanied by a sharp rise in Australia's external debt to GDP ratio since 1980–81. The debt servicing requirement has also risen sharply over the same period (see Economic Planning Advisory Council 1986).

From the viewpoint of some authors, these developments on the current account provide an adequate explanation for the decline in the real exchange rate. For example, Matthews and Valentine (1986) argue that the real devaluation was the best possible reaction to the current account problems facing the Australian economy and that the Australian dollar may have been overvalued even at the levels reached at the end of 1985–86.

Lim and Parmenter (1985) used the ORANI model to test the hypothesis that the real devaluation during 1984–85 represented 'an attempt on the part of foreign holders of Australian dollars to return our current account balance to its historical norm' (p. 23). They conclude that the real devaluation which occurred during 1984–85 (around 13 per cent on their measure) would, if sustained, meet that objective, that is, would reduce the current account deficit from around 5 per cent of GDP to its historical norm of around 2 per cent. In other words, at least that part of the real devaluation which occurred during 1984–85 could, according to the Lim and Parmenter analysis, be justified on the basis of developments on the current account.

Several authors have recently addressed the fall in the real exchange rate since early 1985 from the viewpoint of the adjustments necessary to stabilise Australia's growing foreign debt to GDP ratio. For example, the Economic Planning Advisory Council (1986) suggests that, provided that it is accompanied by other adjustments including restraint on absorption, the decline in the real exchange rate during 1984–85 and 1985–86 would be consistent with stabilising the debt to GDP ratio at about 40 per cent by 1990. In contrast, Dixon and Parmenter (1987) argued that, in order to first stabilise and then gradually reduce the debt to GDP ratio, the real exchange rate would need to fall by around 50 per cent between 1984 and 1990. In other words, on their analysis, the decline which occurred up to the September quarter 1986 was significantly less than the decline in the real exchange rate which would be required eventually, and the subsequent real appreciation was only a temporary aberration. The major difference between the two analyses seems to be that Dixon and Parmenter assume that, in the absence of a marked downward trend in the real exchange rate and the resulting high level of real interest rates in Australia, investment expenditure would rise sharply. With other factors unchanged, this would lead to a major deterioration in Australia's current account (an outcome that is assumed to be unsatisfactory from the viewpoint of the international community) and hence a marking down in the real value of the exchange rate.

Monetary conditions

Over the past decade, an extensive literature has emerged dealing with the impact of monetary policy on the nominal and real exchange rates. Of most interest in the present context is the result that an

unexpected increase (or decrease) in the money supply or its rate of growth can produce a *real* devaluation (or appreciation) in the *short* term (see, for example, Dornbusch 1976; Gray and Turnovsky 1979; Bhandari 1981; Turnovsky 1981; Chalfant, Love, Rausser and Stamoulis 1986). In brief, these analyses hinge on an assumption that prices in financial markets, such as interest rates and exchange rates, adjust more quickly to a monetary shock than do commodity prices. Hence, an unexpected increase in the money supply may lead to an immediate decline in the nominal exchange rate, while commodity prices, particularly in the non-traded goods sector, adjust upward with a lag. Such a combination of events would clearly represent a real devaluation. These short-term movements in the real exchange rate may or may not involve an element of 'overshooting' of the nominal exchange rate relative to its long-run equilibrium level. It should be stressed, however, that the theoretical models indicate that the impact of a monetary shock on the real exchange rate is only a short-term phenomenon. Over the medium to longer term, the real exchange rate would return gradually, other things being equal, to its pre-shock level.

From Figure 4, it is clear that a substantial increase occurred in the rate of growth of the major monetary aggregates in Australia in the latter part of 1984 and during 1985. This would seem to provide at least a prima facie case for supposing that a monetary shock may have contributed to the fall in the real exchange rate during this period. However, the picture is complicated by the fact that deregulation of the financial system, with its attendant improvement in the competitiveness of banks relative to non-bank financial institutions, seems to have caused a slowdown in the velocity of circulation of the money supply, particularly that of M3. Nevertheless, despite these

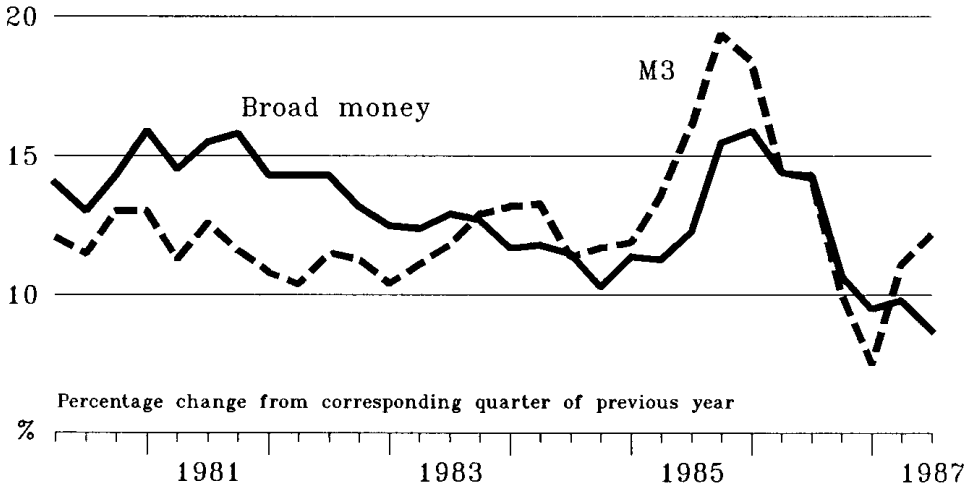

FIGURE 4—Monetary Aggregates.

problems of interpretation, the rapid growth in the monetary aggregates and the abandonment of monetary targeting in February 1985 have been interpreted widely as a source of major concern in financial markets. For example, the Reserve Bank of Australia (1985, p. 7) commented that:

> In February (1985), and again in April (1985), the Australian dollar fell abruptly. Nervousness evident first in the foreign exchange market spread to domestic financial markets. Uncertainties which had been important influences in previous months abated — the economy was shown to be stronger than had been feared earlier and it was now judged that money and credit were growing too strongly, even given the problems of interpreting the data.

The Macquarie Bank (1985, p. 5) identified the abandonment of monetary targeting as the 'trigger' for the dollar's fall:

> While there was a coincidence of a number of political and economic events in January and early February that contributed to the fall in the $A, the essential 'trigger' seems to have been the decision to abandon the monetary target, and the 'discipline' it provided, in an environment where markets had been uncertain for a number of months as to the 'correctness' of the monetary policy that was being pursued.

It is also instructive to note that the strong growth in economic activity during the first three quarters of 1985 (see Figure 5) and the emergence of sharply increased inflationary pressure in 1985–86 are both consistent with the hypothesis that a substantial expansionary monetary shock may have occurred during this period. More formal empirical support for the hypothesis is provided by Hogan (1986) who estimated several conventional monetary models of exchange rate

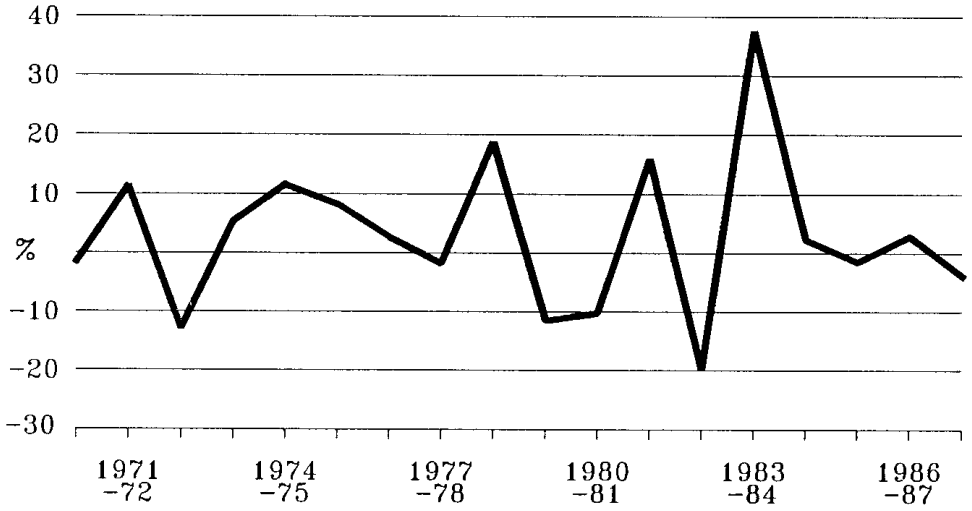

FIGURE 5—Gross Domestic Product.

behaviour which seem to be capable of explaining part of the fall in the exchange rate which occurred during 1985.

On the other hand, the overshooting model also suggests that, following these initial effects of an expansionary monetary shock, the subsequent adjustment period would be characterised by a strengthening exchange rate and a relatively low (but gradually rising) interest rate. In reality, the actual Australian experience since early 1985 has been one of persistent weakness in the exchange rate, with a rapid rise in real interest rates to record levels. This would suggest that, to the extent that a monetary shock contributed to the fall in the exchange rate during 1985, the nature of the subsequent adjustments has been modified substantially by other influences, such as the possible emergence of risk premiums (discussed below).

Exchange rate expectations, 'speculative bubbles' and market sentiment

It is widely accepted that, in a world of perfect capital mobility, interest rates, adjusted for exchange rate expectations, tend to be equalised around the world — the interest rate parity condition. This is a fundamental premise on which the overshooting model, as discussed above, is based. Most such models also assume that exchange rate expectations are formed rationally (or at least 'quasi-rationally' or 'regressively'). However, in an important paper by Frankel and Froot (1986) some implications of a limited departure from rationally formed exchange rate expectations are explored, leading to the concept of a 'speculative bubble'. It is also becoming increasingly recognised that the interest rate parity condition can be modified substantially by the existence of risk premiums reflecting the state of market sentiment, for example, the degree of certainty with which an exchange rate expectation is held as well as other more general or nebulous aspects of market optimism or pessimism.

The concept of a speculative bubble might be described briefly as follows. During a period when the exchange rate exhibits a significant trend, it is likely that exchange rate forecasts based on time-series analysis would perform reasonably well and receive a significant weighting by participants in the foreign exchange market. This may be sufficient to ensure that such forecasts become self-fulfilling *for a time*, resulting in a continuation of the trend in the exchange rate beyond the point considered appropriate on the basis of market fundamentals, that is, a speculative bubble may emerge. As the time-series forecasts gradually move out of line with market fundamentals, their accuracy declines, encouraging market participants to give more weight to market fundamentals, leading eventually to a 'bursting' of the speculative bubble.

While Frankel and Froot applied this theory to the behaviour of the US dollar during the 1980s, it would seem relatively straightforward to apply the basic notion to the behaviour of the Australian dollar since early 1985. For example, it might be hypothesised that the marked downward trend in the Australian dollar in 1985 and 1986 was sufficient to create a speculative bubble about the value of the Australian dollar, which temporarily extended the downward trend beyond the point considered appropriate on the basis of market fundamentals. Unfortunately, the theory provides little guidance as to the length of

time over which a speculative bubble may persist. It is interesting to note, however, that in the particular case of the US dollar, Frankel and Froot suggest that the bubble may have existed for around 15 months, from early 1984 to March 1985.

The 'market sentiment' present in foreign exchange markets refers to a much broader range of factors than simply the expected movement in the exchange rate itself as captured, for example, in the speculative bubble concept. It also encompasses the degree of certainty with which that exchange rate expectation is held, as well as the more nebulous concepts of optimism or pessimism about the future prospects of the economy and the likely path to be followed by economic policy. Broadly speaking, the emergence of adverse (or favourable) sentiment about the Australian economy is likely to lead foreign investors to demand a premium (or accept a discount) on the return on their Australian assets, relative to the returns available overseas.

During periods when market sentiment becomes adverse and hence foreign investors demand a risk premium, the monetary authorities can react in one of two ways, or in some combination of the two. First, they can tighten monetary policy sufficiently to ensure that the risk premium is rapidly incorporated into the domestic interest rate structure. This strategy would prevent or limit any downward movement of the nominal exchange rate. However, to the extent that the higher real interest rates reduce domestic absorption by encouraging saving and discouraging investment, the strategy would tend to place downward pressure on the real exchange rate. This strategy was largely adopted by the monetary authorities during the 'crisis of confidence' which occurred toward the end of 1985.

The alternative strategy is to leave monetary policy alone and allow the nominal exchange rate to weaken. This will not prevent the risk premium from eventually being incorporated into the domestic interest rate structure. It simply means that the required reduction in the real money stock is brought about through an increase in the price level rather than, as under the first strategy, a reduction in the nominal money stock. However, it may delay the process, given that prices tend to adjust more sluggishly than the exchange rate. On the other hand, as the adjustment process is likely to be associated with greater volatility of the exchange rate than under the first strategy above, it may well serve to increase the size of the risk premium eventually demanded. Perhaps more importantly in the present context, this more sluggish adjustment of prices than of the nominal exchange rate implies that the adjustment period is likely to be characterised by a fall in the real exchange rate over and above that which would be expected under the first strategy. For example, in the context of the model developed by Dornbusch (1976), the present situation could be likened to an increase in the world interest rate, which would generate a short-run overshoot of the nominal and real exchange rates. Greater weight seems to have been given to this second strategy during the crisis of confidence which emerged around the middle of 1986.

The Treasury seems to attach considerable importance to the role played by adverse sentiment and the associated risk premiums in explaining recent developments on the interest rate and exchange rate fronts:

> The economy's stability, and the prospects for a return to stronger growth, also depend importantly on the orderly financing of the current account deficit ... unless international investors see some prospect of a reduction in external imbalances over a reasonable horizon, they are likely to demand increasingly high premiums to commit funds. Those premiums, whether in the form of a lower exchange rate or higher interest rates, would in turn make more difficult the adjustment problems for the domestic economy (Commonwealth of Australia 1986, p. 62).

Potential implications for the farm sector

Identifying the relative contributions made to the real devaluation by the various potential causes outlined above is crucial in making an assessment of the medium-term outlook facing the farm sector. In particular, if all or most of the real devaluation can be attributed to the deterioration in the terms of trade and the current account, then it may be reasonable to conclude that little recovery will occur in the real exchange rate until the terms of trade improve. In other words, from the viewpoint of the farm sector, any marked appreciation of the real exchange rate over the medium term would be likely to arise partly in response to, and be accompanied by, a significant recovery in farm commodity prices on world markets. Such a combination of events may not impose any significant amount of pressure on the farm sector and, indeed, could produce some net benefit for that sector.

On the other hand, if any or each of the other possible causes outlined above (a monetary shock, a speculative bubble or adverse sentiment) made a significant contribution to the real devaluation, then the implication for the farm sector is quite different. As stressed above, each of these possible causes tends, by nature, to be a shorter term phenomenon. As such, they could be expected to be subservient to market fundamentals (as represented by the terms of trade and the current account) over the medium to longer term. In other words, in this case, the real exchange rate could appreciate significantly over the medium term as these shorter term influences are dissipated and the real exchange rate returns to a level more consistent with market fundamentals. From the viewpoint of the farm sector, this would raise the prospect of a real appreciation occurring in the absence of a recovery in the terms of trade in general or in world farm commodity prices in particular. However, some decline in real interest rates could also be expected as sentiment improves and as the appreciating real exchange rate is reflected in market expectations. The rise in the real exchange rate and the sharp fall in interest rates over the year to the September quarter 1987, occurring at a time when Australia's terms of trade had, at best, merely stabilised at a low level, provides some prima facie evidence in favour of this latter scenario.

Theoretical Analysis

Ideally, it would be desirable to use a model structure sufficiently rich to enable each of the various possible causes of the real devaluation discussed above to be captured and assessed. However, given the inherent complexity involved in attempting to model such concepts as

speculative bubbles and market sentiment, it was decided, for simplicity, to adopt a more indirect approach. In particular, the theoretical and empirical analysis focuses on the impact which a deterioration in the terms of trade and the current account could be expected to have on the real exchange rate. In other words, the direct modelling work concentrates on the market fundamentals. The combined contribution (if any) made to the real devaluation by the various shorter term influences discussed above can then be measured as the difference between the actual change in the real exchange rate and the change which can be attributed to developments on the current account.

The theoretical model structure used is a much abbreviated version of the model developed by O'Mara (1985). In the model, emphasis is given to the distinction between traded and non-traded goods. In the case of the non-traded goods sector, consideration is given to two alternative assumptions about the degree of price flexibility — the neo-classical assumption of perfect price flexibility and the popular Keynesian assumption of price rigidity (Corden 1978). The latter assumption opens up the possibility of the non-traded goods sector facing an effective demand constraint, an issue addressed extensively by, for example, Clower (1965), Barro and Grossman (1971, 1976), Malinvaud (1977), Muellbauer and Portes (1978) and Neary (1980).

The theoretical model and some associated analysis were presented in O'Mara, Wallace and Meshios (1987) and hence will not be repeated in detail here. In that analysis, the potential impact of a deterioration in the terms of trade and the current account on the real exchange rate was examined in the context of several alternative cases. These cases differed in terms of the change in the level of absorption that was assumed to be induced by, or to otherwise accompany, the change in the terms of trade or in the adoption of neo-classical versus popular Keynesian assumptions for the operation of the non-traded goods sector of the economy, or both.

The major theoretical results reported by O'Mara, Wallace and Meshios (1987) can be summarised in five parts, as follows. First, the major role of the real exchange rate is to maintain equilibrium in the non-traded goods sector in the presence of shifts in aggregate demand or absorption.

Second, the impact of an adverse movement in the terms of trade on the real exchange rate hinges crucially on the change in real absorption which accompanies the change in the terms of trade. The maximum decline in the real exchange rate would occur in the special case where real absorption fell by the same amount as the decline in real effective incomes. Smaller declines in the real exchange rate would occur if, as seems likely in the absence of any fiscal policy initiative, real absorption were to fall by less than the fall in real effective income.

Third, a deterioration in the current account balance caused by an exogenous increase in absorption would tend to be associated with a real appreciation.

Fourth, if a real devaluation is engineered (for example, by judicious use of monetary policy) at a time when the non-traded goods sector faces an effective demand constraint, there is scope for that real devaluation to be sustained and the current account to be improved, without

necessarily reducing real absorption.

Finally, the direction of the impact of a real devaluation on the market clearing real wage is ambiguous.

Empirical Results

Measuring the deterioration in the current account

In the ensuing analysis, three alternative measures will be used for the deterioration in the current account in recent times, in assessing the required or appropriate size of the change in the real exchange rate. These are the 'unexpected' deterioration in the current account in 1984–85, the sum of the 'unexpected' deteriorations in the current account in 1984–85 and 1985–86 and, lastly, the improvement in the current account that would have been required in 1985–86 to bring it down to the long-term average of around 2 per cent of gross domestic product. Each of these three measures is discussed briefly below.

In quantifying the first measure, the unexpected deterioration in the current account in 1984–85, it is assumed that the current account forecast announced in the budget of 1984–85, a deficit of $8.2b, represents a reasonable measure of the expected outcome in currency and financial markets. Certainly, the expectation of a current account deficit of this magnitude sparked little immediate reaction in financial markets, with the marked decline in the nominal and real exchange rate not commencing until well into the second half of the financial year. As the actual current account deficit in 1984–85 was around $10.5b, the unexpected deterioration in the current account in 1984–85 would seem to be around $2.3b.

Following a similar line of reasoning to that outlined above, a further unexpected deterioration in the current deficit of about $3b occurred in 1985–86. In other words, by 1985–86, the annual current account deficit had deteriorated by about $5.3b (or a little less in constant 1984–85 prices) relative to the size of the annual deficits that are likely to have been factored into market expectations in the months just prior to the onset of the dramatic fall in the exchange rate in March 1985. Hence, $5.3b will be used as the second measure of the deterioration in the current account.

Finally, in order to quantify the third measure, it is assumed that, following Lim and Parmenter (1985), the long-term average ratio of the current account deficit to GDP in Australia is about 2 per cent. For such an outcome to have been recorded in 1985–86, the current account deficit would have needed to have been about $4.6b, or around $9b less than the actual outcome of $13.7b. Hence, $9b will be used as the third measure of the deterioration in the current account. It should be noted, of course, that Australia's current account deficit significantly exceeded 2 per cent of GDP throughout the 1980s (see, for example, Economic Planning Advisory Council 1986, p. 5). Therefore, this third measure represents a considerable overstatement of the actual deterioration in the current account deficit which occurred in 1984–85 and 1985–86, around the time of the devaluation. In that sense, the results obtained using this measure provide some indication of the changes which may be required in order to reduce the current account deficit to its long-run average level, rather than simply to accommodate the shock which

occurred in 1984–85 and 1985–86 (see also Lim and Parmenter 1985; Fallon and Thompson 1986). It is also noteworthy that a current account deficit of around 2 per cent of GDP would, with other factors unchanged, be broadly consistent with stabilising Australia's debt to GDP ratio at around 30–40 per cent, provided that some reasonable proportion of the capital inflow took the form of equity rather than debt (Economic Planning Advisory Council 1986).

The change in absorption

In addition to obtaining measures of the deterioration in the current account, it is also necessary to make some assumptions about the extent of the change in absorption which is induced by, or which otherwise accompanies, the deterioration in the current account. (This follows from the second of the results emphasised by O'Mara, Wallace and Meshios 1987, as outlined above.) As with the measure of the deterioration in the current account itself, several alternative assumptions are made.

One assumption considered is that the deterioration in the current account is due entirely to a fall in the terms of trade, that this is reflected in an equivalent fall in real household incomes and that this, in turn, induces a decline in real consumption expenditure of the same magnitude. In reality, to the extent that the marginal propensity to consume by households is less than unity, the fall in real absorption may be less than the fall in real effective income. However, the present assumption might be justified on the grounds that the fall in income induces a decline in *both* consumption and investment expenditure, or that the government increases its savings (reduces its dissavings) in response to the fall in household savings.

An alternative assumption is that, following the decline in the terms of trade, real absorption falls by less than the fall in real effective incomes, the latter again measured by the deterioration in the current account. As noted above, this could be rationalised readily in terms of a marginal propensity to consume by households less than unity, with no change in investment expenditure or in government expenditure.

A further alternative assumption is that real absorption is unchanged following the decline in the terms of trade and the associated fall in real effective incomes. It might be supposed, for example, that the government adopts a Keynesian approach to fiscal policy, increasing government expenditure to compensate for any induced decline in private consumption or investment expenditure.

The empirical framework used

Two alternative empirical frameworks, ORANI and the model developed by Crowley, O'Mara and Campbell (1983), are used to attempt to place some calibration on the decline in the real exchange rate that would be expected in response to the shocks described above. It is considered by the authors that ORANI, being a large and detailed

general equilibrium model, provides a more appropriate empirical framework than the various Australian macroeconometric models for quantifying the relative price effects associated with such shocks. Further, ORANI has the advantage of being able to be simulated in either the default neo-classical mode or in its less well known but potentially very valuable neo-Keynesian mode (see, for example, Wright and Cowan 1979, 1980). The neo-Keynesian mode allows for a degree of price rigidity in the short run. Finally, changes in absorption can be imposed exogenously in ORANI simulations. This feature is highly relevant to the present analysis, given the central role played by the change in absorption which is assumed to be induced by or to otherwise accompany the shock to the terms of trade.

Crowley, O'Mara and Campbell (1983) used various combinations of elasticities for the effect of a real devaluation on imports and exports in Australia, and these combinations of elasticities can be applied readily in the present context. (These combinations also encompass much of the range of elasticities used by Gregory 1976.) The combinations of elasticities and the technique used are set out briefly in Appendix Table A.1. It should be stressed that there is no presumption that this model and ORANI are necessarily similar in terms of their underlying assumptions or the elasticities used. Rather, the objective is simply to provide, where possible, some additional evidence from another source.

The results

The empirical results are summarised in Table 1, for each of three cases or scenarios defined in detail in the table. These cases differ either in terms of the change in absorption which is assumed to accompany the deterioration in the current account, the degree of rigidity of non-traded goods prices or, in Case 3, in the existence of an excess supply of non-traded goods prior to the shock. Results for each case were obtained from ORANI, with the Crowley, O'Mara and Campbell (1983) model being used only to obtain some additional results for Case 3.

In Case 1A, real absorption is assumed to decline by an amount equal to the deterioration in the current account. With real wages fixed, the decline in the real exchange rate ranges from 2·25 per cent to 8·8 per cent. Given the particular structure and assumptions underlying ORANI, a real devaluation implies a decline in the market clearing real wage. With the real wage fixed by assumption, output and employment fall following the real devaluation, thus preventing the fall in real absorption from being reflected fully in the current account. Alternatively, if the real wage is assumed to fall sufficiently to hold output fixed in the presence of a real devaluation, then the estimated real devaluation ranges from 4·3 per cent to 16·5 per cent and the fall in absorption is reflected fully in the current account balance.

Case 1B differs from Case 1A only in that real absorption is assumed to fall by less than the deterioration in the current account — in other words, by less than the decline in real effective incomes. It follows immediately that, relative to Case 1A, the decline in the real exchange rate is less and therefore a smaller proportion of the initial deterioration

TABLE 1

Real Exchange Rate and Current Account Outcome under Alternative Cases

Cases examined		Decline in real exchange rate[a] per cent	Estimated current account deterioration remaining after the decline in absorption and the real devaluation $b
Case 1A			
Model: ORANI — short-run neo-classical mode			
Real wages: Fixed (Results in brackets are for real wages flexible[b])			
Real absorption: Exogenously determined and 'shocked' as described below			
Balance of trade: Endogenous			
Measured deterioration in current account	Assumed decline in real absorption		
$2.3b	$2.3b	2·25 (4·3)	1·1 (0)
$5.3b	$5.3b	5·2 (9·7)	2·4 (0)
$9.0b	$9.0b	8·8 (16·5)	4·1 (0)
Case 1B			
Model: ORANI — short-run neo-classical mode			
Real wages: Fixed (Results in brackets are for real wages flexible[b])			
Real absorption: Exogenously determined and 'shocked' as described below			
Balance of trade: Endogenous			
Measured deterioration in current account	Assumed decline in real absorption		
$2.3b	<$2.3b	<2·25 (<4·3)	>1·1 (>0)
$5.3b	<$5.3b	<5·2 (<9·7)	>2·4 (>0)
$9.0b	<$9.0b	<8·8 (<16·5)	>4·1 (>0)
Case 1C			
Model: ORANI — short-run neo-classical mode			
Real wages: Fixed (Results in brackets are for real wages flexible[b])			
Real absorption: Exogenously determined and 'shocked' as described below			
Balance of trade: Endogenous			
Measured deterioration in current account	Assumed decline in real absorption		
$2.3b	0	0 (0)	2·3 (2·3)
$5.3b	0	0 (0)	5·3 (5·3)
$9.0b	0	0 (0)	9·0 (9·0)

TABLE 1 (*continued*)

Cases examined		Decline in real exchange rate[a] per cent	Estimated current account deterioration remaining after the decline in absorption and the real devaluation $b
Case 2A			
Model: ORANI — short-run neo-Keynesian mode			
Real wages: Fixed			
Real absorption: Exogenously determined and 'shocked' as described below			
Balance of trade: Endogenous			
Measured deterioration in current account	Assumed decline in real absorption		
$2.3b	$2.3b	negligible	2·0
$5.3b	$5.3b	negligible	4·7
$9.0b	$9.0b	negligible	7·9
Case 2B			
Model: ORANI — short-run neo-Keynesian mode			
Real wages: Fixed			
Real absorption: Exogenously determined and 'shocked' as described below			
Balance of trade: Endogenous			
Measured deterioration in current account	Assumed decline in real absorption		
$2.3b	<$2.3b	negligible	>2·0
$5.3b	<$5.3b	negligible	>4·7
$9.0b	<$9.0b	negligible	>7·9
Case 2C			
Model: ORANI — short-run neo-Keynesian mode			
Real wages: Fixed			
Real absorption: Exogenously determined and 'shocked' as described below			
Balance of trade: Endogenous			
Measured deterioration in current account	Assumed decline in real absorption		
$2.3b	0	0	2·3
$5.3b	0	0	5·3
$9.0b	0	0	9·0

TABLE 1 (*continued*)

Cases examined		Decline in real exchange rate[a] per cent	Estimated current account deterioration remaining after the decline in absorption and the real devaluation $b
Case 3A			
Model: ORANI — results derived by comparing results from short-run neo-classical mode and short-run neo-Keynesian mode, as described in text			
Real wages: Fixed			
Real absorption: Exogenous and fixed			
Balance of trade: Constrained to improve sufficiently to offset the measured deterioration in the current account			
Measured deterioration in current account	Assumed decline in real absorption		
$2.3b	0	5·0	0
$5.3b	0	11·5	0
$9.0b	0	19·5	0
Case 3B			
Model: Crowley, O'Mara and Campbell (1983)			
Real wages: Not explicitly identified in model			
Real absorption: Exogenous and fixed			
Balance of trade: Constrained to improve sufficiently to offset the measured deterioration in the current account			
Measured deterioration in current account	Assumed decline in real absorption		
$2.3b	0	0·7– 3·2	0
$5.3b	0	1·5– 7·4	0
$9.0b	0	2·6–12·6	0

[a] The ABARE real effective exchange rate declined by 17·0 per cent between June quarter 1984 and June quarter 1985, and by 25·2 per cent between June quarter 1984 and June quarter 1986.

[b] It is assumed that real wages are sufficiently flexible to ensure that GDP is unchanged following the specified decline in absorption and hence that the balance of trade improves by the same amount as the decline in absorption.

in the current account is offset. (The actual outcome depends on the precise magnitude of the decline in real absorption.) Case 1C captures the extreme assumption of no change in real absorption, under which there is no change in the real exchange rate and no improvement in the current account following its initial deterioration.

The major difference between Case 2 and Case 1 is that, in Case 2, the non-traded goods sector is assumed to operate along popular Keynesian rather than neo-classical lines. In other words, non-traded goods prices are assumed to be largely inflexible in response to changes in the level of

demand for non-traded goods. In that sense, Case 2 might be regarded as the outcome that would be expected in the very short term, with the Case 1 results emerging gradually as the economy progressively adjusts. Hence, even in Case 2A where real absorption is assumed to fall by the full amount of the decline in real effective income, the decline in the real exchange rate is negligible. Further, much less of the initial deterioration in the current account is offset in Case 2A than in Case 1A. Rather, without the benefit of the expenditure and production substitution effects engendered by a significant decline in the real exchange rate, most of the decline in absorption serves only to reduce GDP rather than the current account deficit. As it is principally a decline in effective demand for non-traded goods rather than an excessive real wage which causes GDP to fall in this case, a flexible real wage is not considered explicitly in the analysis. However, a fall in the real wage, to the extent that it would stimulate output in the exporting and import competing sectors, would result in some additional improvement in the current account balance relative to that listed in the table.

In Case 2B, where real absorption is assumed to fall by less than the decline in real effective income, the decline in the real exchange rate is again negligible, and even less of the initial deterioration in the current account is offset than in Case 2A. Finally, in Case 2C, where real absorption is assumed to be unchanged, there is no change in the real exchange rate and none of the deterioration in the current account is offset. Hence, the outcome in Case 2C is identical to that in Case 1C, which reflects the fact that, in the absence of any change in absorption and hence in the demand for non-traded goods, the degree of flexibility in the prices of non-traded goods is inconsequential to the outcome.

The experiment embodied in Case 3 might be described as follows. The non-traded goods sector is assumed to operate along popular Keynesian lines, as described above, and, at the time of the shock, faces a major effective demand constraint. There is assumed to be no change in real absorption following the deterioration in the current account, either because the decline in real effective income induces no change in real expenditure by the affected industries and households or because government expenditure increases to compensate for any induced decline in expenditure. It is assumed that a real devaluation is brought about by an unexpected increase in the money supply in the presence of a flexible nominal exchange rate, in order to correct the deterioration in the current account without resort to any reduction in real absorption. In other words, the current account is improved simply by switching demand away from traded goods and by channelling resources into the production of traded goods. The resulting increase in demand for non-traded goods and the reduction in non-traded goods production does not generate excess demand for non-traded goods because of the assumed prior existence of a popular Keynesian effective demand constraint in the non-traded goods sector.

The results for Case 3 obtained using ORANI are listed under 3A. The results were obtained by simulating both neo-classical and neo-Keynesian ORANI for an equivalent change in absorption. The difference between the impact on the current account in the two simulations was assumed to represent a measure of the role played by the pure substitution effects associated with the change in the real

exchange rate under the neo-classical mode. This outcome was then extrapolated to obtain the results listed under 3A. The results obtained using the combinations of elasticities suggested by Crowley, O'Mara and Campbell (1983) are listed under 3B.

It is evident that the ORANI results for the decline in the real exchange rate in Case 3A are larger than the corresponding ranges of results implied by the Crowley, O'Mara and Campbell elasticities reported under Case 3B. This reflects the fact that the latter model uses elasticities considered appropriate for the longer term, and are thus somewhat larger than those incorporated into ORANI in its short-run mode.

As in Case 2, the Keynesian flavour of the experiment embodied in Case 3 does not lend itself readily to an explicit consideration of movements in the real wage. However, it is clear that, if real wages had been assumed to fall in this case, output would be stimulated in exporting and import competing industries and hence the desired current account outcome could be achieved without resort to such large demand and production switching effects. Thus, the required real devaluation would be less than the estimates presented in Case 3.

Some implications

The major conclusion to emerge from the empirical results is that it is very difficult to rationalise all of the fall in the real exchange rate which occurred during 1984–85 and 1985–86 in terms of fundamental influences stemming from the deterioration in the current account and the need to arrest the growth in Australia's foreign debt. At most, about 20 percentage points of the 37 per cent decline between the end of 1984 and the September quarter 1986 could be rationalised in that way. This implies that one or more of the other factors noted earlier (for example, the short-term effects of the rapid growth in the money supply during 1985, or the possible emergence of a speculative bubble affecting the Australian exchange rate) could have made an important contribution to the outcome. To the extent that these alternative influences tend to be shorter term in nature and subservient to market fundamentals over the medium to longer term, it was to be expected that the real exchange rate would appreciate significantly from the level ruling in the September quarter 1986 *without* any recovery in Australia's terms of trade. The significant increase in the real exchange rate which occurred during the year to the September quarter 1987 is perfectly consistent with that prognosis, but was not sufficient to offset completely the overshoot which seems to have occurred by the September quarter 1986. For example, by the September quarter 1987, the real exchange rate was still around 29 per cent below its level at the end of 1984 (see Figure 1). Hence, there remains scope for further upward correction of the real exchange rate.

Some orders of magnitude can be given for the potential impact on the farm sector of a correction of the apparent overshoot in the real exchange rate. It has been estimated that, in constant 1985–86 dollars, a 1 per cent real appreciation could reduce the net value of rural production by about $50m to $100m (Stoeckel 1986). Assuming that a 1 per cent real appreciation would reduce the net value of farm

production by about $50m, then with all other factors unchanged, a correction of (say) a 15 per cent overshoot over the medium term could reduce the real net value of farm production by at least $750m or about 23 per cent from the 1985–86 level. Assuming all other factors remain unchanged, such a correction would leave the real net value of farm production only marginally above the record low levels established in the drought year of 1982–83 (Figure 6).

Some qualifications to the empirical results

The above conclusions need to be qualified in several respects. First, it was assumed in the analysis that Australia's terms of trade would remain relatively stable at the level ruling in mid-1986. While the impact of the large worldwide decline in share prices in October 1987 remains highly uncertain at the time of writing, it is possible that it could lead to at least a temporary decline in world economic growth rates and a fall in commodity prices. By adversely affecting Australia's export income, a decline in world commodity prices would reduce the need for any further upward movement of the real exchange rate relative to the level in the September quarter 1987. A sufficiently severe decline in the terms of trade could, in fact, justify a decline in the real exchange rate.

It is also important to recall that there is likely to be a direct link between the impact which 'adverse sentiment' may have on the real exchange rate in the short run and the impact which it may have on real interest rates. In particular, adverse sentiment tends to place both downward pressure on the real exchange rate and upward pressure on real interest rates. To the extent that adverse sentiment may have contributed substantially to the recent decline in the real exchange rate, any gradual dissipation of that adverse sentiment over the medium term could lead not only to some appreciation of the real exchange rate but also to a reduction in real interest rates. Further, if the real appreciation

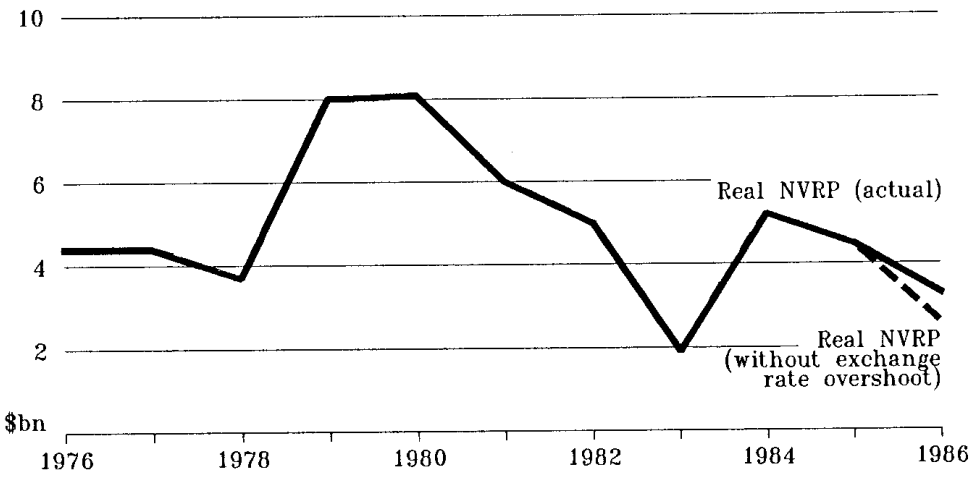

FIGURE 6—Real Net Value of Rural Production.

were to occur gradually and was reflected in market expectations, the interest rate parity condition would also imply downward pressure on real interest rates in Australia, at least during the adjustment period. Lower real interest rates would be of benefit to those farmers who are net debtors and would give some support to the market value of farm assets. With farm debt estimated to be in excess of $8b as of mid-1986 (BAE 1986), it is clear that each percentage point decline in the real interest rate could reduce real interest payments by farmers by at least $80m a year.

On the other hand, there are also several respects in which the estimated real devaluations listed in Table 1 may be overstated. First, it is likely that some part of the various measures of the deterioration in the current account used in the empirical analysis could be attributed to increases in absorption, rather than to an exogenous deterioration in the terms of trade. As demonstrated by O'Mara, Wallace and Meshios (1987), a deterioration in the current account in response to an increase in absorption would tend to be associated with a real appreciation.

Second, the extent of the deterioration in the current account in 1984–85, and more particularly in 1985–86, as used in the empirical analysis, has been inflated by the pure 'valuation effects' of the devaluation itself. In other words, measured in terms of foreign currency, the deterioration in the current account during this period has been much less marked than when measured in terms of the Australian dollar. This issue takes on particular significance if it is considered that the valuation effects have been exaggerated by an element of overshooting in the exchange rate. Arndt (1986) provides some further discussion of valuation effects and their potential significance.

The third qualification relates specifically to the results reported under Case 3. In particular, those results are dependent on an assumption that an effective demand constraint exists in the non-traded goods sector, of sufficient magnitude to allow the reported real devaluations to be accommodated *without* resort to a decline in absorption. While there would appear to have been an element of excess capacity in the Australian economy in this period, particularly in 1984–85, there must be some doubt as to whether that excess capacity was sufficiently great to allow at least the larger of the real devaluations reported in Case 3 to be accommodated without creating excess demand.

Fourth, it should be noted that the results reported in Table 1, particularly those derived from ORANI, should be interpreted as the outcomes that might be expected in the relatively short term (around two years). However, as emphasised by Lim and Parmenter (1985), the impact of a real devaluation on production and expenditure patterns tends to be greater over the longer term (say five years), so that the size of the real devaluation required would tend to become smaller.

Finally, while the basic conclusion that the real exchange rate has 'overshot' on market fundamentals may remain intact in the absence of a further sharp fall in the terms of trade, the analysis provides little guidance as to the precise timing of the commencement of the correction or, once under way, how rapidly it may proceed. However, the sharp rise in the real exchange rate and the fall in real interest rates

during the year to the September quarter 1987 certainly point to the correction process being under way during that period.

Concluding Comments

The focus of this article has been on the possible causes of the sharp real devaluation of the Australian dollar between the end of 1984 and the September quarter 1986, the partial recovery evident during the subsequent twelve months and the prospects for that recovery continuing over the medium term.

Several possible reasons for the real devaluation were identified: the deterioration in the terms of trade and the current account; rapid growth of the money supply during 1985; and the emergence of a speculative bubble surrounding the value of the Australian dollar or, in more general terms, adverse sentiment about the Australian economy. Some theoretical and empirical analysis was undertaken to assess the likely contribution to the real devaluation made by market fundamentals associated with the deterioration in the terms of trade and the current account and the rise in Australia's foreign debt. It was concluded that, at most, about 20 percentage points of the 37 per cent real devaluation between the end of 1984 and the September quarter 1986 could be explained in that way. This leaves considerable room for one or more of the other possible explanations to have made an important contribution to the outcome. Further, it was argued that each of these latter influences is likely to be a shorter term phenomenon, subservient, over the medium to longer term, to market fundamentals associated with the terms of trade and the current account.

The major implication of the analysis is that over the medium term, Australia's real exchange rate would be expected to appreciate significantly from its level at the end of 1986 before, and quite independently of, any significant recovery in the terms of trade in general, and in world prices of farm commodities in particular. However, such an outcome is likely to be associated with a sharp drop in real interest rates relative to the levels ruling in 1986.

Movements in the real exchange rate and real interest rates during the year to the September quarter of 1987 are consistent with that prognosis. Nevertheless, the rise in the real exchange rate over that period, while substantial, was not sufficient to offset completely the downward overshoot which was estimated to have occurred in 1985 and 1986. Therefore, with other factors unchanged, there remains scope for a further increase in the real exchange rate from its level in the September quarter of 1987. However, it remains to be seen to what extent this outlook may need to be modified in the light of the dramatic decline in prices on world share markets in October 1987.

APPENDIX

Elasticities Used by Crowley, O'Mara and Campbell

Crowley, O'Mara and Campbell (1983) used the combinations of elasticities shown in Table A.1. These elasticities were applied to the relevant export and import data for 1984–85 in order to solve for the real exchange rate movements listed under Case 3B in Table 1.

TABLE A.1

Range of Elasticities Used by Crowley, O'Mara and Campbell

Item	Elasticity combinations			
	I	II	III	IV
Rural exports with respect to the real exchange rate	0·5	1·0	1·5	3·0
Other primary exports with respect to the real exchange rate	0·5	1·5	3·0	6·0
Total imports with respect to the real exchange rate	−1·0	−2·0	−3·0	−3·0

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