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7 August 2002

The Inquiry Secretary
House of Representatives Standing Committee on Science and Innovation

On the Economic Benefits for Australia of Private Sector Investment in R&D

Research conducted by foreseechange, copy enclosed, indicates that there is a strong relationship between expenditure on R&D and the value of the currency. This means that our standard of living is influenced indirectly by our investment in R&D. In particular, most of the fall in the value of the $A since 1990 can be related to the climate for R&D investment.

Business contributes nearly half of all R&D funding and arguably is the sector that can most lift its investment. Thus, a climate that encourages greater private sector investment in R&D would benefit our economy in at least two ways:

1. it would tend to increase economic growth; and
2. it would boost our standard of living, relative to other countries, by lifting the value of the $A.

Of course, it would be important to ensure that any increase in private sector investment is not accompanied by a corresponding decrease in public sector investment.

Regards

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The Explanation for Recent Currency Movements

Charlie Nelson
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Postscript 25 February 2002

Recent revelations that the Australian Treasury has sustained unrealized losses of over $2 billion on cross-currency interest rate swaps due to a plunge in the Australian dollar highlights the irony of this paper's findings. The Australian dollar has depreciated since 1996 as a result of a change in government policy on R&D tax concessions in 1996. Furthermore, an aggressive clawback of tax concessions by an agency of Treasury, the Australian Taxation Office, has most likely resulted in a net outflow of investment funds since 1999 causing a sudden depreciation when market economists expected an appreciation.

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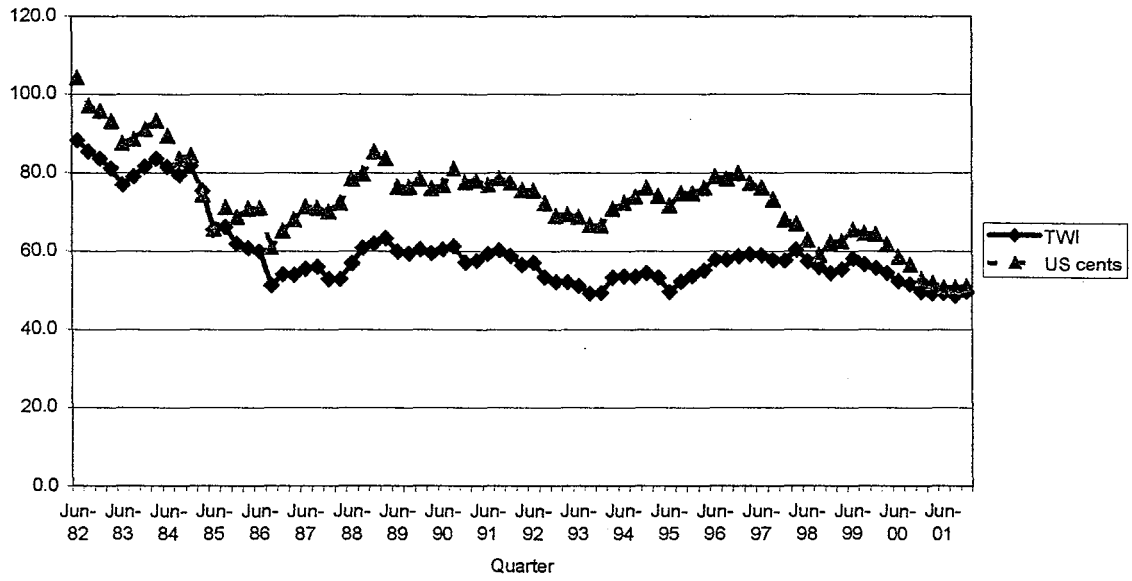
1. Introduction

If a man write a better book, preach a better sermon, or make a better mousetrap than his neighbour, though he build his house in the woods, the world will make a beaten path to his door
Ralph Waldo Emerson (1803-1882)

Unfortunately, Australia is not perceived to be a maker of better mousetraps. And this is the reason for the recent woes of the Australian dollar.

The value of the Australian dollar fell rapidly during the early 1980's in both $US and trade-weighted index (TWI) terms. After a recovery in the late 1980's and relative stability through the 1990's, it has recently hit a record low.

Value of the Australian Dollar
Source: Reserve Bank of Australia



Economists have been criticised recently for failing to predict the fall in the value of the Australian dollar ($A) since late 1999. In a survey of 17 economists by the Australian Financial Review (AFR) in December 1999, **not one** predicted a drop in the value of the dollar at December 2000. The range of forecasts was from US66c to US75c (average US71c). But the Australian dollar did drop – from US65c to US55c.

The economists forecasts did not adapt much as time went on. In forecast updates throughout 2000, the value of the Australian dollar was predicted to rise in six months but instead it continued to fall.

In the last 18 months, the actual level of the $A hasn't even fallen in the range of their high and low point forecasts.
Barrie Dunstan, Australian Financial Review, 8 June 2001, writing about economists surveyed by the Australian Financial Review.

The two most cited reasons by these economists for the surprising fall in the $A are:

- The strength of the $US – although the $A has fallen against other major currencies and this explanation doesn't answer the question why has the $US been so strong.
- Australia's rising net foreign debt.

More recently, the RBA Economic Research Department's David Gruen presented an analysis of long-term influences on the $A. He concluded that the $A fell during the 1970's and 1980's because Australia's rate of price inflation was high relative to other countries. Other factors examined included terms of trade, productivity, and the foreign asset position. His overall assessment was:

Ultimately, however, the influences that I have been discussing in this talk should be thought of as broad forces that tend to push the exchange rate in one direction or another over extended periods of time. But the puzzling behaviour of the Australian dollar over the past couple of years – not to mention the US dollar over much the same time – serves as a reminder that there is no close relationship between exchange rates and these longer-run economic fundamentals over these sorts of periods of time.

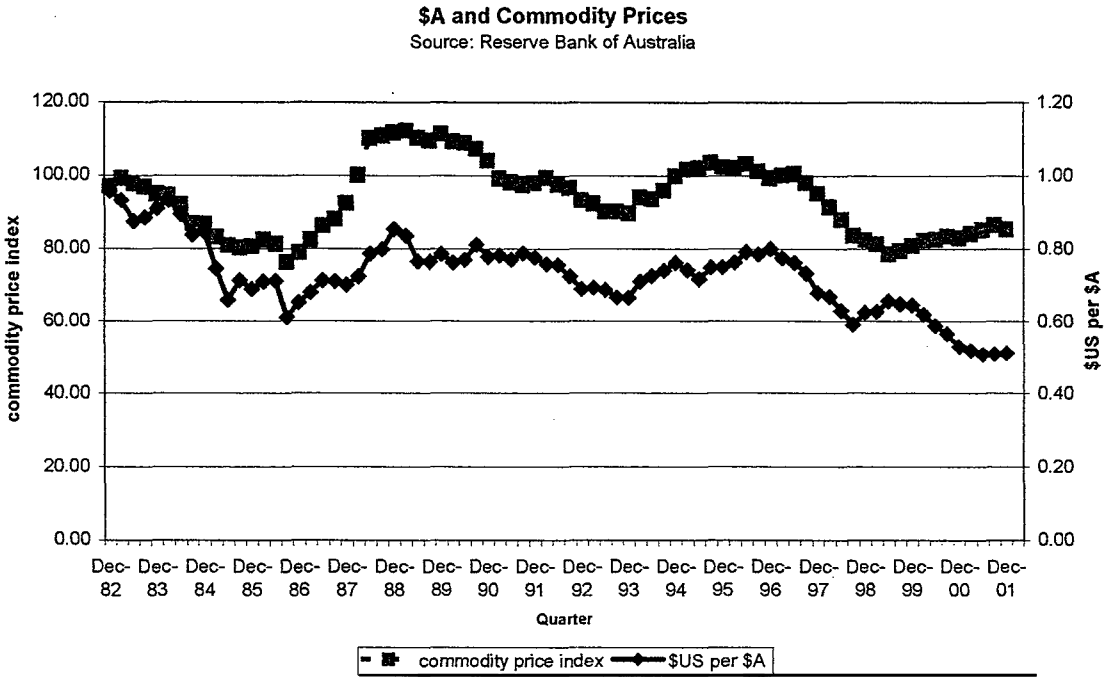
The economists surveyed by AFR were disappointed in the failure to explain "the puzzling behaviour of the Australian dollar over the past couple of years".

The economists were concerned that, despite Dr Gruen's confidence in a brighter long-term future for the $A, there was still no adequate explanation for the $A's recent woes.
Cherelle Murphy, Australian Financial Review, 29 November 2001.

This paper identifies the reason for this "puzzling behaviour". Our findings not only explain the recent weakness of the Australian dollar but also the strength of the $US.

2. Commodity Prices

The $A has in the past been closely correlated with the value of commodity prices, although this correlation has not been evident since 1999.

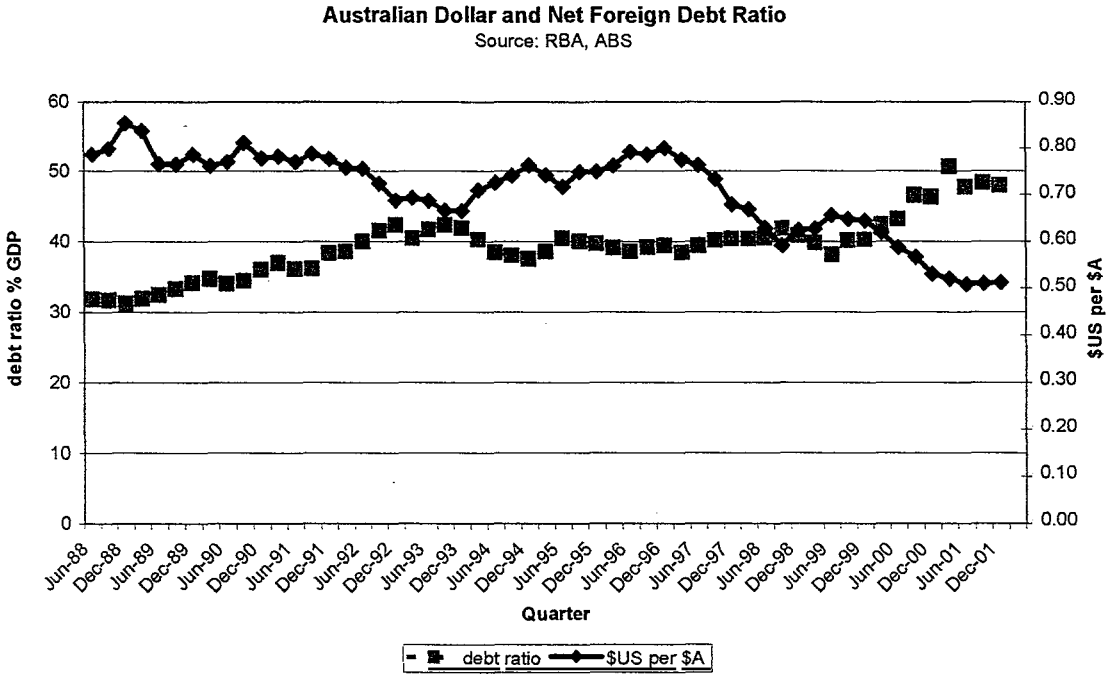


It appears that investors no longer view commodities as a valuable source of future growth. But why the sudden change? The following chapters evaluate some possible causes.

[redacted]

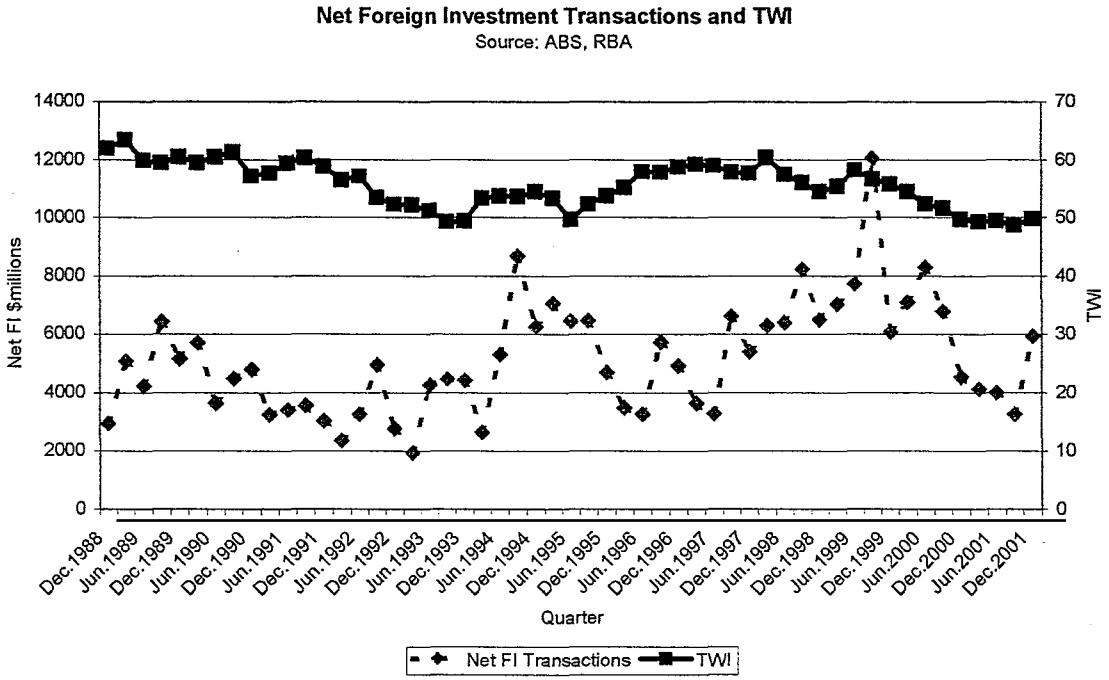
3. Foreign Debt

Australia's foreign debt as a proportion of GDP has certainly increased significantly over the past two years. The chart shows that there is indeed a negative correlation between the value of the $A and the net foreign debt ratio to GDP. But correlation does not imply causation! The correlation is contemporaneous – that is, no lag. While the net foreign debt ratio may influence the markets perception of the $A, given the lag in publishing data there ought to be a lagged relationship. **But as most of the debt is denominated in currencies other than $A then a fall in the value of the $A should boost foreign debt immediately!** It is unlikely that this is the missing factor.



4. Investment Outflows

Changes in investment flows could affect the value of the $A. Indeed, net inflow of investment transactions has fallen since mid-1999, and especially since mid-2000. This factor is not correlated with the $A over a long time period (they moved in different directions in 1996 and 1997). Indeed, we have to be careful with this factor, since a lower $A makes investment in Australia more attractive if all other factors are equal. Likewise, the current lower $A means that it is not as attractive for Australians to invest overseas – if all other factors are equal.



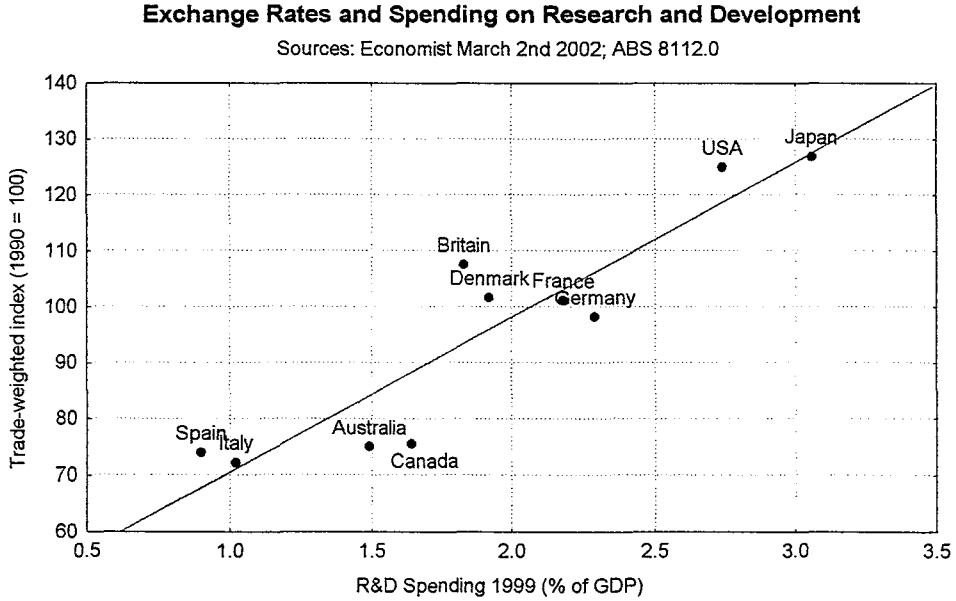
The recent decline in net foreign investment transactions, despite the lower $A, suggests that not all things are equal. But what is it that is not equal?

5. R&D Spending

Research by **foreseechange** has explained the reasons for exchange rate movements since 1990. This research explains both the recent weakness of the Australian Dollar and the strength of the US Dollar.

After screening several possible influencing factors, we have concluded that Research and Development spending (as a percentage of GDP) has been the primary driver of exchange rate movements of developed countries over recent years.

The chart shows this relationship. Countries that spend about 2% of GDP on R&D have had little change in their exchange rates (trade-weighted index) since 1990. Countries that spend more, notably USA and Japan, have experienced an appreciation in their currency. Countries that spend less, particularly Australia, have experienced a decline in their exchange rates. This chart uses 1990 as a base for trade-weighted indexes.



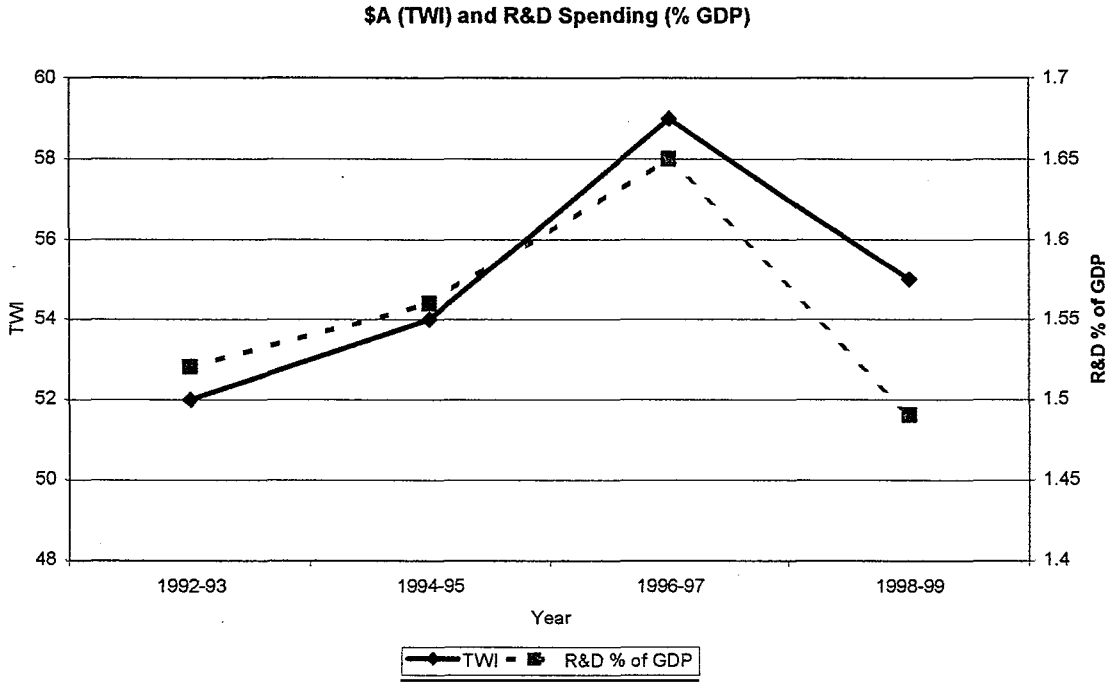
The relationship is statistically highly significant and strong – 84% of the variance in exchange rates is explained by R&D spending.

It seems that there are now enough investors chasing investment opportunities with high potential payoff, but with high risk, to influence exchange rates. According to ABS data (5302.0) Australia's net foreign investment transactions fell from $32.9 billion in 1999 to $26.7 billion in 2000 and to $17.3 billion in 2001.

For Australia's exchange rate to rise back to 1990 levels, we need to increase R&D spending by one-third: from 1.5% of GDP to 2%.

Such an increase in R&D spending would not only help the Australian Treasury to recover unrealized losses on cross-currency interest rate swaps, but would also provide future export opportunities and attract investment inflows.

There is also a confirmatory time series correlation between the $A and Australian spending on R&D. This chart uses the Reserve Bank Trade-weighted index (1970 = 100)



This analysis suggests that changes in government policy in 1996 regarding the tax deduction for R&D and the R&D syndication system have resulted in currency devaluation.

But why has the impact been so severe over the past two years?

6. Prospects

We have presented evidence that currency movements in developed countries have recently been influenced by R&D spending.

This evidence indicates that since the election of the Howard government in 1996, and the implementation of their R&D policies, the $A has collapsed as a direct result. But why has the situation worsened since 1999?

In June 1999, the R&D companies were worried by comments by tax commissioner Michael Carmody. The ATO's taskforce looking at high-wealth individuals had been cracking down on aggressive tax planning, and Carmody was said it was targeting the substantial losses claimed by some R&D companies.

Two years ago, the ATO began to challenge the valuations of core technologies, using ATO-appointed independent valuers. It is believed that the ATO is using complex discounted cashflow methods of valuation and, in some cases, property valuers with little or no experience in valuing technology and intellectual property. Anecdotal evidence suggests that the ATO has taken a blanket approach to the valuations: that the core technology is worthless.

In 2000, the ATO began issuing the syndicate investors with orders to repay the deductions claimed for core technologies, plus interest and fines.

James Thomson, BRW December 6-12 2001

Clearly, investors chasing risky but high growth potential innovation have had good reason for taking their money out of Australia over the past two years.

The future of the $A is in the hands of the government. If the current policies are kept in place, then there is little prospect of a significant recovery in the $A. On the other hand, an effective R&D policy – without potential for tax avoidance and guaranteed to be free from tax office clawback – is likely to lift the $A. Such a policy would be good for Australia in many other ways too.