INTERVENTION IN FOREIGN CURRENCY MARKETS: A TASK FOR SISYPHUS?

D.J. Jüttner and Roger Tonkin

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(a) RBA Foreign Exchange Transactions: Net Market Purchases
(b) Cumulative sum of Net Market Purchases
(c) RBA Foreign Exchange Transactions: Sales to Commonwealth Government
(d) Cumulative sum of Sales to Commonwealth Government

Source: Econdata Pty Ltd
If intervention purchases of foreign currencies/sales of $A which are subsequently handed over to the government, are sterilised, the overseas expenditures raise our domestic debt. Sterilisation implies, as we know, domestic sales of Treasury notes and bonds. What difference would complete sterilisation have made for the retirement of official foreign debt? The repurchase of our own foreign currency securities and the simultaneous issue of domestic bonds and notes would have brought foreign dollar onshore and converted foreign currency into domestic currency debt, leaving the total indebtedness of the government unchanged. This case differs from an ordinary sterilised intervention operation in that the RBA acquires US dollar bonds issued in previous years by the Australian government rather than US government securities. However, the sales of government securities at home would also have increased interest rates, though not through increased inflationary expectations, and resulted in an appreciation of the currency, the opposite of the desired outcome.

Would intervention have been different without the subsequent sales to government? Presumably the RBA would have been under less pressure to buy foreign currency (sell $A) and thus also less concerned with a lower value of the dollar. As for the government it would have been forced to earn foreign currency or issue foreign currency debt securities. In both cases the costs of foreign currency revenue are more apparent and we would have in all likelihood been more careful in our spending on government overseas.

**INTERVENTION - AN INDEPENDENT MONETARY POLICY TOOL?**

Governments frequently regard intervention as a tool that can be wielded independently from fiscal and monetary policies to influence macroeconomic objectives. Two issues arise.

First, intervention is used as a technical instrument to manage the liquidity of the economy. Apart from spot sales/purchases with their immediate impact on the cash base, the RBA has operated in the forward market, effectively separating the impact of intervention on the exchange rate from the later influence on money market cash. For instance, during the June 1988 quarter the RBA offset the cash siphoned off by tax payments through the settlement of forward sales of Australian dollars which were carried out earlier in the year, rather than through purchases of bonds and notes (annual Report 1988, p. 19). As already mentioned, the Bank has also used foreign currency swaps as a liquidity management tool. In order to relieve a temporary liquidity shortage, the RBA buys foreign currency (sell Australian dollar) spot and simultaneous sells (repurchases) them forward. They are very similar to repurchase agreements, except that they have an intervention effect. In fact, such swaps resemble closely the intervention mechanisms of the European Exchange Rate Mechanism where, as we already pointed out, an obligation exists to reverse any intervention sales (purchases).

Second, in a more fundamental sense intervention is sometimes regarded as an independent policy tool, separate from monetary and fiscal policies. The period 1988/89 provides a telling story. The Bank attempted through massive intervention sales of the domestic currency which totalled $16.6 billion for the two years, to suppress a rise in the dollar and secure a competitive

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10. The role of the currency denomination and the issuer of the securities that are used for intervention purposes has received scant attention in the literature (for an exception, see Backus and Kehoe, 1988). The US dollar is mentioned for illustrative purposes only; our foreign debt is denominated in several currencies.

11. Implicitly we are assuming imperfectly substitutable assets; without this assumption interest rates would not rise because the sum total of outstanding securities does not change. Its composition though varies. Domestic securities in the hands of the world public rise while the stock of foreign currency securities outstanding commensurately falls.
advantage for Australian industry. 12At the same time the RBA increased interest rates, believing erroneously that it was tightening monetary policy to rein in domestic demand and combat inflation. Nowhere else was the failure of this approach more apparent than with the steep rise in the real exchange rate. It appears that intervention is not an additional tool of economic policy.

VI. INTERVENTION AND EXCHANGE RATES - THE CHANNELS OF INFLUENCE

The question, "Can intervention permanently 13 influence the exchange rate in the desired direction?" remains subject to considerable disagreement. The intractability of this issue stems mainly from the following three features. First, since the literature does not provide a universally agreed exchange rate model, we lack an unambiguous benchmark with which to measure intervention success. Second, intervention operations, as already mentioned, commonly involve flanking monetary policy actions. For instance, the value of the home currency is not only shored up by intervention purchases, but usually accompanied by restrictive monetary policy measures which invariably lead to higher domestic interest rates. Third, intervention purchases or sales of the domestic currency affect directly, if at all, only the nominal exchange rate while it is the real rate that matters for business decisions. Worse, intervention-induced changes in the nominal rate may cause offsetting adjustments of the real rate, frustrating the policy maker.

In the literature, four main transmission mechanisms are distinguished. (1) Nonsterilised intervention influences the exchange rate through the monetary channel. (2) According to the portfolio balance approach, intervention disturbs the portfolio equilibrium of the public. The resulting changes in risk premia lead to portfolio shifts which affect interest and exchange rates. (3) Intervention forces the private sector to again evaluate actual and equilibrium exchange rates. The authorities possess superior information and know better than the market where the new equilibrium exchange rate is going to be. (4) Intervention signals to the market a new course of monetary policy. The channels of influence are discussed by Dominguez and Frankel (1990) and Humpage (1991). Edison (1990) provides an annotated bibliography of empirical studies into the effectiveness of intervention. We now turn to a discussion of these four channels and examine the available empirical evidence.

THE MONETARY INFLUENCE

Nonsterilised intervention changes the domestic, relative to the foreign, money supply. Economists, to varying degrees believe in the existence of a relationship between changes in relative money supplies and exchange rates. The monetary approach to exchange rate determination represents the extreme position. Nonsterilised intervention sales of the domestic currency by the central bank raise the money supply; this leads to inflation and via PPP to a depreciation of the domestic nominal exchange rate. However, few countries would be prepared to embark on a course of deliberately increasing the money supply in order to devalue the nominal exchange rate, because the resulting inflation would revalue the currency in real terms. Clearly, such a course of action would presumably lead, at best, to a temporary gain in international competitiveness, if at all, and hardly improve the balance of payments. The

12. "...a combination of relatively high interest rates and a sharply strengthening exchange rate, while imparting a restraining emphasis on the economy ... unwind some of the gains in international competitiveness in recent years ...". (Annual Report 1988, p.14).

13. There does not exist any disagreement about the ability of central banks to influence the exchange rate through interventions while they occur. The issue is whether the domestic currency remains permanently at a lower or higher level as a consequence of interventions or whether it returns to its pre-intervention level, all else remaining the same. Obviously, no central bank can go on indefinitely selling or buying its own currency.
country ends up with the same exchange rate in real terms but is plagued by inflation, high interest rates and the prospect of restrictive monetary and fiscal policies. In addition, firms might be deceived by frequent official talk of lowering the exchange rate through intervention and fail to become more cost-efficient and lift the quality of their products to world levels. Reliance on a low value of the dollar impedes the development of an export culture.

At the analytical level we would be looking to monetary models for an assessment of such an imprudent exchange rate policy. Indeed, they are only suited for the study of nonsterilised intervention because they do not allow for the role of relative bond supplies. While the relevance of the pure monetary approach to the problem at hand is severely limited (note, it only performs well for situations of galloping inflation and concomitant exchange rate adjustments) Dornbusch's sticky price model and Frankel's view regarding real interest rate differentials (Frankel, 1979) provide implicit, though loose, support for the futility of nonsterilised intervention.

Just how tenuous the relationship between changes in the money supply and real exchange rates can become when central banks try to exploit it, is shown by Belongia and Hermann (1989). They examine the attempt by the Swiss central bank in 1978/79 to depress the real value of the franc through monetary expansion. The authors assess the outcome of this policy experiment as having had a "weak, short-lived and unpredictable effect on the exchange rate".

During 1985 and 1991 the Australian economy was subjected to a similar policy experience. After the precipitous fall of the dollar in 1985/1986 which initially prompted support purchases by the Reserve Bank, the exchange rate rebounded in the second half of 1986. In an attempt to preserve the competitive advantage gained -- the real trade weighted index (JP Morgan) fell from 105.2 in 1984 to a low of 71.4 in September 1986 -- the RBA sold the domestic dollar in subsequent years. To no avail, however; by June 1990 the index had returned to 97.1 that is, close to the purchasing power parity value of 100. In Fig. 2 the plots of the nominal and real trade weighted indices, TWI and RTWI respectively, tell a similar story. They are based on Jones and Wilkinson (1990; updated with own estimates). The purchasing power parity line (PPP) is defined in relationship to the real trade weighted index.

In view of the blatant failure to hold down the real value of the domestic currency, one might ask why the RBA intervened and, in the light of this experience, continues to do so. Furthermore, how did we squander such a substantial competitive advantage? While this episode still awaits a thorough analytical assessment, some tentative conclusion can be drawn. First, the RBA might have actually believed in the success of the intervention operations. The nominal trade weighted index indeed rose by only 2.5% between the beginning of 1987 and the end of 1990 (using again JP Morgan's index). However, in real terms the dollar appreciated by 15.1% over the same period. Second, and this is the most likely reason for the failure to keep the real exchange rate down, the substantial intervention sales of the domestic currency augmented an already ample supply of liquidity in the economy, fuelled consumption and investment spending and contributed significantly to the entrenchment of inflation. Third, the


15. The RBA, surprisingly, does not publish data on real trade weighted exchange rates. The only official source of such data is the Treasury (Economic Round-Up). However, the Treasury's CPI, GDP-deflator and unit-labour-cost-based real exchange rates are compiled quarterly for exchange rates with our four major trading partners. The semi-official ABARE real exchange rate index encompasses several more countries, though it is also released only quarterly. Monthly data for trade weighted real exchange rates for our dollar are computed by JP Morgan (World Financial Markets). The speed with which financial markets react contrasts sharply with the lumbering pace with which the policy maker receives this vital piece of information. Intervention operations which are undertaken with our international competitiveness in mind, might lead us in the wrong direction if timely price information is unavailable. For this reason, CPI data should be constructed and published monthly.
question of the extent to which intervention was sterilised is difficult to answer. As we know, monetary policy from 1985 onwards was guided by a misconceived checklist. Fourth, with inflation rates significantly above those of our main trading partners during those years, the exchange rate appreciated in real terms. Fifth, would the rest of the world have been prepared to concede to us a competitive advantage of more than 30 per cent for long assuming we would have been able to keep the inflation genie in the bottle? Hardly. However, if the market believed that the government would take decisive measures to rein in spending, the currency would not have devalued to begin with. This intervention period appears to be inextricably intertwined with easy monetary policy and was thus doomed to failure.

Fig. 2: Nominal and Real Exchange Rates, 1960 - 1990

PORTFOLIO ADJUSTMENTS AND INTERVENTIONS

Utility maximising risk averse portfolio investors diversify across securities denominated in different currencies. Domestic investors regard foreign securities as imperfect substitutes for home securities, because they are subject to exchange rate risk; they contain greater default risk than domestic securities, investors often obtain only limited information about the liquidity and marketability of foreign assets. Furthermore, there is enhanced uncertainty about the foreign government’s attitude towards capital controls, taxes and regulations. Foreigners express a similar attitude regarding our securities. Consequently, investors in each country prefer securities denominated in their own currency, given the risk, return and other characteristics of these securities.

However, only nominal exchange rate risk under these circumstances may be completely eliminated through appropriate forward transactions. Risk averse investors in both countries will hedge. Australian holders of private US securities sell US dollars (buy Australian dollars) forward in order to eliminate the exchange rate risk which is associated with the repatriation of funds at maturity of the securities. Likewise, US holders of our private sector securities sell
Australian dollars (buy US dollars) in the forward market. Clearly, both parties cannot at
the same time pay and receive a risk premium when they transact with each other in the
forward market. If a country is a net foreign debtor this hedging balance between domestic and
foreign investors cannot be achieved, giving rise to a risk premium in the forward rate. A
broader approach requires that we also take account of default and political risk. Tests of the
portfolio balance model attempt to establish whether domestic and foreign assets are imperfect
substitutes. Less than perfect substitutability follows, as was established previously, when both
types of assets have different risk characteristics. Thus, the risk premium is at the core of the
portfolio balance model.

Consider the case where the central bank attempts to depress the value of the exchange rate.
As we know, the RBA ends up with more US$ bonds and less domestic bonds and the same
money supply. The public's portfolio includes more $A and less US$ bonds. When the RBA
buys foreign bonds in intervention operations from world investors and sells $A bonds to those
investors, an additional exchange rate hedging demand is created in the private sector. The
central bank usually does not hedge its portfolio of foreign currency securities but the private
investor does. This implies that the foreign holders of domestic securities sell the Australian
dollars to be received at maturity in the forward market to hedge exchange rate risk. However,
the investors' forward sales of Australian dollars are not matched by forward purchases,
because the RBA does not hedge. If it did, it would sell forward the US dollars to be received
when the foreign bonds mature, and buy Australian dollars forward. Thus, the foreign
investors' forward sales would be matched by forward purchases by the central bank.
However, this is not the case and it is this intervention-induced imbalance in the forward
market which tends to raise the forward risk premium.

We assume, as is currently the case, that Australia is a net international debtor. As we just
explained, the forward rate contains under these circumstances a risk premium, so that the
forward rate deviates from the expected future spot rate. In equilibrium the expected nominal
returns on domestic and foreign assets are equal. Covered interest parity obtains if we
disregard default/political risk. Covered interest parity, when domestic and foreign bonds are
imperfect substitutes, implies that the forward rate contains a risk premium

\[
F = \frac{E(S_{t+k})}{P_t}
\]

or

\[
\frac{S_t}{E(S_{t+k})/P_t} = \frac{1 + r}{1 + r^*}
\]

For \(r = 0.12, r^* = 0.06, F = US$0.76/US$, \(S = US$0.803/$A, \) a risk premium of 1.32% \(P = 1.0132\) is payable and an expected spot rate of \(E[S_{t+k}]/P_t\) is US$0.77/$A is entertained by
the market.

Sterilised intervention alters the outstanding stock of securities which investors hold. Above we
argued that the size of the risk premium is positively linked with a country's debt relative to
the debt of the rest of the world. As the privately held Australian dollar debt has increased
relative to that of foreigners, the risk premium in the forward rate should rise. Assuming that
the domestic and foreign interest rates as well as the expected spot rates remain unaffected by
the intervention, the risk premium rises and the forward rate falls. As a result the spot
exchange rate has to depreciate in order that both covered and uncovered interest parity hold.
Intervention has successfully lowered the exchange rate. The process also works in reverse.
Proppping up the value of the domestic dollar leaves investors with less $A-bonds and more
foreign securities. This reduces the risk premium, pushing up the forward rate. Interest rate
parity requires a revaluation of the spot rate.

Intervention is therefore linked to a changing risk premium. Clearly, given our assumptions,
intervention can have no permanent effect on the spot rate when there is no risk premium. But
are the premises realistic? Consider first the assumption of constant domestic and foreign interest rates. As sterilised intervention operations change neither the monetary liabilities (and thus the money stocks) of the home nor of the foreign central banks, there is no reason to expect interest rates to be affected. This Keynesian view of interest determination however, is not entirely consistent with portfolio balance models. We return to this point later.

From our discussion so far it has become clear that the effectiveness of intervention hinges on the assumption of imperfect asset substitutability. Why is intervention futile when domestic and foreign securities are perfect substitutes? Intervention changes the currency composition, but not the total amount of the securities in investors' portfolios. Since investors in the perfect substitutability case are indifferent to the kind of securities they are holding, changing the structure of outstanding assets has no impact on interest rates. Furthermore, when domestic and foreign securities are essentially identical, a risk premium cannot exist.

The main thrust of empirical investigations centres on the search for a risk premium. The most comprehensive assessment of this issue is provided by Hodrick (1987). Ambiguous results, using survey expectations which allow direct estimates of the risk premium, are presented by Froot and Frankel (1989). Many researchers regard this search as a statistical exercise. No attempt is made to explain the risk premium, let alone relate it to intervention induced portfolio shifts. A notable exception is Tryon (1983) who used a structural portfolio balance model to derive a reduced form equation which relates the risk premium to relative domestic and foreign bond supplies. Equation (3) provides an avenue to test for the efficacy of interventions. Solve this equation for \( P \) gives

\[
P_t = E(S_{t+k}) - S_t + (r - r^*)
\]

where the variables are expressed in logs and the logarithm of \((1 + r)\) is approximately equal to \(r\). Provided survey exchange rate expectations and intervention data are available, the right hand side of (4) may be regressed on intervention purchases/sales of the domestic currency. The lack of expectations data may be overcome by assuming rational expectations, that is, by setting

\[
E(S_{t+k}) = S_{t+k}
\]

and substituting (5) into (4) which gives

\[
P_t = S_{t+k} - S_t + (r - r^*)
\]

Regressing the risk premium, as defined by the terms on the right hand side of (6), on net intervention purchases, would allow us to assess the efficacy of such operations. We would expect the risk premium to rise as a result of sterilised foreign currency purchases/sales of domestic currency because they raise (lower) the stock of domestic (foreign) bonds in the hands of the public. The increase in the risk premium according to (6) may be caused by a drop in the sport rate and/or a rise in the domestic interest rate. We assume the foreign rate to be unchanged as we are dealing with unilateral intervention. The risk premium may include nominal exchange rate risk and default/political risk.\(^\text{16}\)

Relating intervention operations to the risk premium has turned out to be an elusive affair. While Loopesko (1984), using daily intervention data for a number of countries, finds a statistically significant relationship between the risk premium and intervention, she does not, unfortunately, publish information which would indicate the direction of this relationship. Similarly, Humpage and Obstfeld (1990) confirm the existence of a portfolio balance effect,

\[\text{16. As we have realistically to consider default and also political risk, covered as well as uncovered interest rate parity may not hold.}\]
though with a wrong sign; an increased asset supply decreases, rather than increases, the risk premium. Only Dominguez and Frankel (1989) and Dominguez (1990) have been able to successfully link intervention to the risk premium, although they stress that this may have little to do with the portfolio balance effect but rather is due to an expectations-altering-announcement effect associated with publicly known interventions.

**WHY IS THE RISK PREMIUM APPROACH SO ELUSIVE?**

The meagre results achieved with portfolio balance models require a critical evaluation. Several arguments as to the irrelevance of portfolio effects for the intervention issue can be advanced.

First, financial analysts have repeatedly stressed the small scale of intervention sales and purchases when compared to the huge daily flows of foreign currency transactions (a daily volume of about $A30 billions for the domestic currency alone) and the immense stock of public and private sector securities outstanding. Bordo and Schwartz (1990) add their doubts to the chorus of those who believe that the limited scale of interventions merely adds noise to foreign currency markets rather than exerts a systematic influence on exchange rates. Thus, the relevance of interventions on portfolio balance grounds may well be questioned as a generally valid proposition.

Second, most researches work with very short-term data; Dominguez and Frankel (1989), for instance, use daily intervention observations. The determination of spot, short-term forward and expected future spot rates, however, may be dominated by risk neutral or even risk preferring speculators. The sheer size of daily foreign exchange market turnover (for details see the BIS survey, 1990) appears to dwarf the hedging needs of international trade and longer term international investments.

Third, in our discussion we assumed throughout that the risk premium is mainly reflected in the forward rate; consequently it pushes down the spot rate by the full amount of the risk premium. While this assumption is made universally, it is not plausible. It is more likely that an emerging exchange rate risk element devalues the expected future spot rate and the spot exchange rate. The search for the nominal exchange rate risk premium in the forward discount or in the differential between the forward rate and the expected future spot rate may therefore lead us to only half of the truth.

Fourth, if private sector agents take full account of any future tax liabilities associated with increases or decreases in government bonds, intervention operations fail to affect the size of the net claims on government that the public holds. Similarly, if the private sector regards the holdings of the government as its own, no portfolio balance effect materialises; the composition of privately held securities remains unaffected. While this Ricardian equivalence argument features as a theoretical possibility in many studies, empirical support for this argument is completely absent as far as intervention is concerned.

**FLEXIBLE INTEREST RATES**

In contrast to our initial analysis of the risk premium with Keynesian money and bond markets, we now relax the assumption of a constant domestic interest rate. Sterilised intervention purchases (sales) of the domestic currency require that the RBA offsets the withdrawal (injection) of cash through purchases (sales) of domestic bonds. Focusing only on the case where the domestic dollar is supported, the reduction in the domestic stock of privately bonds

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17. Note, the sum of domestic and foreign bonds in the hands of the world public remains unchanged because the RBA
outcome. As a result, the domestic currency would tend to weaken. In contrast, nonsterilised intervention results in a withdrawal of cash while the stock of privately held bonds remains unchanged, causing interest rates to rise. The upward movement of interest rates tends to reinforce the effects of intervention purchases of the domestic currency.

What happens to the risk premium when interest rates are flexible? In the case of sterilised intervention purchases of the currency, the Australian dollar risk premium falls but by less than if the domestic interest rate remained unchanged. It is interesting to note that if we allow the domestic interest rate to adjust to changing relative bond supplies, the eventual impact of the intervention on the spot exchange rate is indeterminate. Even if we realistically assume constancy of the foreign interest rate, the picture does not become clearer. In the portfolio framework, the fall in the domestic interest rate creates an excess demand for money. This excess demand is satisfied by curtailing domestic bond holdings, mitigating the fall in the domestic interest rate. It is conceivable that the spot rate remains unchanged or even depreciates in the wake of intervention operations that are aimed at raising the exchange rate. While this explanation is plausible, a definitive answer as to the effectiveness of intervention operations can only be obtained from estimating a complete portfolio model (see Tryon, 1983). This theoretically complex relationship between the risk premium, exchange rates and interest rates may explain the inconclusive test results of Loopesko (1984) and Humpage and Osterfeld (1990) we mentioned earlier.

THE JANUARY 1992 INTERVENTION OPERATION

The portfolio balance framework provides the background for the assessment of the second episode of massive intervention which occurred during December 1991 and the beginning of 1992. The dollar depreciated rapidly without good apparent reason. True, some political instability existed and uncertainty about the forthcoming economic statement emerged but given the sensitivity of our politicians to the reactions of financial markets the fall in the dollar appeared unusually severe. The Reserve Banks intervened heavily in support of the dollar. During December 1991 and January of 1992 a total of $5.2 billion was purchased. The January figure of $4.3 billion was by far the highest on record since the float.

This intervention episode does not easily fit the established pattern. However, an explanation is not difficult to find. The pressure on the dollar emanated from structural changes in the Australian dollar segment of the euro-bond market and in our foreign indebtedness. During the 1980s shorter term, high yielding bonds by Australian issuers met with strong demand from European investors (including the proverbial Belgian dentist). With the drop in Australian shorter term interest rates this demand diminished significantly. European and other overseas investors could obtain higher yields by moving out to longer maturities where Australian bonds were no longer yield-competitive. Lowenstein (April 1992) estimates that about $A7.5 of bonds mature this year, the bulk in the first eight months (see Appendix B). With their diminished appeal, these bonds are difficult to roll over in eurocapital markets. Overseas investors at maturity thus obtain unwanted $A-funds. In all likelihood these funds flooded the

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has sold foreign-currency bonds (and other securities) out of its reserves in order to purchase the domestic currency in the spot market. However, we assume that such sales do not raise foreign interest rates. Such a premise would be inappropriate for coordinated intervention operations of the major economic powers.

18. Laura Tingle (2.3.1992), Ross Gittins (21.3.1992) and subsequently the RBA (April Bulletin, p. 5) gave this reason for the dollar’s fall. The first two ignore the ongoing rearrangement of portfolios.

19. The RBA mentions in its annual Report 1988 (p. 7) the demand for securities of “high yielding” economies and again in the May 1990 Bulletin. Observers with an understanding of interest rate parity referred to these high yields as creating a coupon illusion. Clearly, high yields are offered for a reason, viz the expected devaluation of the currency.
foreign exchange market and caused the dollar's initial fall. While only a relatively small proportion of bonds actually matured in January, investors could have sold $A-funds from bonds maturing later in the forward market. This in fact appears to have happened as the RBA's own foreign exchange transaction figures for January and February 1992 indicate. (Bulletin April 1992, p.64) These figures reflect the date on which transactions are settled (value date). Even in Australia, where we are somewhat removed from developments in eurocapital markets, some observers gave a graphic description of the ongoing portfolio restructuring. Ellis's article "Banks to Move $A4bn Debt Onshore" (SMH, 13. 1. 1992) provides a detailed analysis. 21


Who bought the bonds after overseas investors deserted this segment of the market? The RBA. "From the second week of January, the Bank was a heavy buyer of Australian dollars and long-term bonds." (Bulletin, April 1992, p.6). Of course, the RBA did not buy these private sector securities, it hardly ever does so. However, by purchasing government bonds in the market it made room in domestic investors' balance sheets for the up-take of additional corporate bonds. Thus, indirectly the RBA converted private sector foreign debt into a net increase in public sector foreign liabilities because its holdings of official reserve assets fell. To the extent that the initial $A-purchases were sterilised, the RBA replaced foreign with domestic securities in its balance sheet. Gittins (SMH, 21.3.1992) emphasised this point and the RBA Governor subsequently adopted Gittins' position (Boyd, 1.6.1992). However, this interpretation overlooks the vital fact that our net foreign debt has been increased substantially as a result of this extraordinary intervention operation. 22

It would be wrong to conclude from our inability to roll over part of the foreign placed $A-bond issues that our foreign debt has not really risen. When banks and others reissue these bonds at home, saving is absorbed and someone else has to borrow overseas.

The dumping of Australian dollar bonds without heavy losses which was initiated by overseas investment houses had only a chance of success if one could reasonably expect that the RBA emerge as a willing buyer. However, the Bank's conversion from a high-credit-Saulus

20. Of the $4.3 billion $As purchased in January only $2 billion were settled in this months, reflecting spot and intra-month forward transactions; $1.2 billion were settled in February (Bulletin April 1992, p.64). We also looked at turnover data in foreign exchange markets which did not exhibit any unusual features during the two months. Experienced foreign exchange operators expressed the view that market participants not directly involved in the portfolio reshuffle would tend to confront the RBA on one side of the market.

21. Ex post facto the RBA acknowledges this portfolio transfer when it complains that "The uncertainty in financial markets was not helped by some reckless (sic) predictions about the exchange rate emanating from overseas investment houses and accompanied by advice to clients to liquidate Australian dollar investments." (Bulletin, April 1992, p. 6). This emotive language contrasts somewhat with its acquiescence prevailing in the past when presumably the same investment houses strongly recommended $A-bonds at a time when there was some well-founded doubt about the Australian currency and borrowers.

22. Uncertainty about the direction of domestic economic policy might also have contributed to the incipient rise in domestic bond rates around that time. However, as mentioned before financial markets appear to keep policy makers in check without even actually having to throw punches.

23. A $5.3 increase in our foreign debt over two months should not at all be taken lightly. The official net foreign debt figure appears to suggest that privately owned foreign assets provide a kind of collateral in case of a major crisis. As Max Walsh pointed out we can expect that the bulk of our foreign assets will disappear in an ensuing capital flight at a time when they are needed most.
to a low-inflation-Paulus provided the insurance that the dollar would be vigorously defended. Too low a value of our currency could, in the view of the RBA, threaten the gains made on the inflation front. The concern about the inflationary consequences of a lower dollar at a time when fighting inflation came first, made the intervention reaction of the RBA somewhat predictable and the Bank vulnerable to concerted actions by larger institutional investors.

FOREIGN DEBT REQUIRES LOWER DOLLAR

The element of predictability of intervention is important for the subsequent movement of the exchange rate. Without the Reserve Bank as an expected buyer, investors would only have been able to liquidate their SA positions gradually as the bonds matured. Consequently, without intervention, the dollar would have taken on a lower value. There are good reasons to believe that a lower dollar would have reflected fundamental exchange rate determinants more accurately. The determinants of a benchmark exchange rate that are predominantly mentioned include purchasing power parity, the current account and relative (domestic/foreign) bond supplies. While the first two receive attention in RBA policies, our foreign debt appears to be overlooked as a factor that requires a lower exchange rate. The Bank for International Settlements in its last Annual Report (1991, pp.183-86) clearly spells out this linkage when it says that countries with a history of current account deficits and large stocks of outstanding foreign liabilities have to have a lower equilibrium exchange rates than otherwise. Accumulated foreign liabilities exert their influence on equilibrium exchange rates in a variety of ways. Using Tryon's (1983) portfolio balance model we can distinguish two channels that are relevant for the issue at hand. First, an increase in foreign debt, given the demand for it, depresses the exchange rate through a larger risk premium. Second, a decrease in the demand for a debtor's country securities, given the stock of foreign debt, devalues the exchange rate. The BIS (1991, p.186) also mentions that adverse portfolio diversification trends may affect the value of currencies. However, the impact of international portfolio shift on the Australian dollar was not allowed to occur because the RBA increased commensurately its demand for Australian dollars and the demand for Australian dollar securities. The available evidence appears to suggest that in this instance the RBA inappropriately defended an overvalued dollar.

24. The RBA appears to have turned onto the road to Damascus around May 1990. While the governor (Fraser, May 1990) still lambastes the Bundesbank for its almost obsessive (sic) concern about inflation, he acknowledged for the first time that actions had to be taken to bring inflation out of the system. Of course, the Bank's past leniency towards inflation required a scorched earth policy to actually bring down the rate of price increases.

25. Without wanting to imply that the investment houses have acted in any way improperly, there is no denying the existence of price-makers in financial markets, even in those for foreign currencies. The winks, nods, collusion and outright fraudulent activities pervading financial markets are analysed in Steward (1991), Lowenstein (1991) and Greising and Morse (1991). Apart from making absorbing reading, these books also tend to arouse a healthy dose of scepticism regarding the view that markets are always efficient.

26. Some of the dangers of an announced target for the exchange rate were highlighted by a comment by a Goldman Sachs merchant banker on the governor's invitation to the market to devalue the dollar by 5 per cent, "which is quite honestly an outrageous opening for a central bank governor to give the exchange markets - a one-way bet." (AFR, 31. 5. 1991).

27. We mentioned above the weak evidence in favour of the portfolio effect of intervention which appears to be seemingly at odds with our position here. However, it is plausible to argue that Australia's heavy foreign debt burden magnifies the effects of portfolio shifts on the exchange rate.

28. There is more than a grain of truth in the frequently voiced claim that the RBA spent tax-payers' money to defend the dollar. As it turned out it bought bonds at a time when overseas investors abandoned the SA-bonds, making the
SUPERIOR INFORMATION CHANNEL

Intervention by the authorities may be interpreted by the market that they possess superior information about the future course of the economy and economic policy. For example, the Jurgensen Report (1983) states:

The authorities in each of the summit countries at times undertook large-scale intervention when they judged that market participants had not taken full account of fundamental factors, [or] had only reacted slowly to the changes in fundamentals...(p.21)

However, the Reserve Bank (Bulletin, November 1990), while not claiming to be in possession of superior wisdom, leaves no doubt that it knows a lot more than the market:

The aim [of intervention] has been to provide a benchmark for exchange rate expectations. This is not meant to imply superior judgment about what the 'proper' rate should be, although we believe we are perhaps better placed on occasions to pay more heed to longer-term influences than traders responding to 'here and now' pressures. We will continue to back our judgment about such influences when we consider it appropriate to do so (p. 4).

When the central bank intervenes on the basis of perceived deeper understanding of the exchange rate mechanism, its market actions are still confined to the usual composition effects of outstanding securities. To achieve the desired results beyond these portfolio influences the central bank's intervention must succeed in altering the market's expectations of the expected exchange rate. Expectation revisions work their way through equation (2) into the forward rate and from there, given domestic and foreign interest rates, they influence the spot rate. Market participants, however, change their perception of future exchange rates only when the central bank’s actions convey to them new information. This may include, for example, a gross, and hitherto overlooked, violation of PPP, a reversal of the balance of payments situation or an impending improvement in the terms of trade. However, only on the rare occasion will the market ignore such basic facts.

The value of intervention might lie in the improvement of temporal informational inefficiencies in foreign currency markets. So-called noise traders which we mentioned above, may create band-wagon effects (see Frankel and Froot, 1987) or exchange rate expectations may be biased in other ways (Ito, 1990, observed wishful thinking in forecasts of exporters and importers). Hung (1991a, 1991b) addresses this question and her results do not show unambiguously that interventions lower exchange rate volatility. Anyhow, it would be foolish to regard central banks as repositories of wisdom about economic fundamentals. They may know even less than markets. During periods of uncertainty about the direction of exchange rates, intervention is often used as a means to gain insight into unobservable undercurrents of exchange rates. By "testing the market" the authorities learn whether emerging exchange rate movements are ephemeral in nature that can be aborted through intervention or whether they reflect the market's fundamental reassessment of exchange rates which the authorities would be ill advised

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task of refinancing the debt domestically easier for banks. The RBA rejects the claim that public money has been lost and alleges that in actual fact a hefty profit of $500 million has been made on intervention since the float (Boyd, 1992). Apart from the fact that this amount translates into a minuscule rate of return when it is related to $28 billion cumulated net worth of intervention over a time period of nine years, there are other costs (perhaps even benefits) of intervention which cannot be ignored. Studies assessing the profitability of intervention (for example, Leahy, 1989) assume constancy of interest and exchange rates and compare the official reserve position before with that after intervention. This approach appears to be appropriate for 'smoothing and testing' but not when the central bank aims at a particular exchange rate level. When the RBA, for example, artificially props up the domestic dollar, export revenues are lost, imports rise and employment falls. None of the profitability studies takes these secondary effects into account.
to prevent because of the eventual futility of their actions. Too frequent intelligence gathering through such exploratory intervention, though, would tend to weaken the central bank's authority in the eyes of the market.

**MONETARY POLICY SIGNALS**

One line of research, clutching at straws to establish a link between intervention and exchange rates, attributes to intervention operations a monetary policy signalling effect. Dominguez (1990) and Klein and Rosengren (1991) investigate this channel, with mixed results. However, why should central banks signal policy changes in such a cumbersome and sometimes devious way when a simple announcement would do? It has been argued that intervention forces the authorities to put their money were their mouth is. For instance, intervention purchases of the domestic dollar which subsequently devalues due to a failure to follow through with restrictive monetary policy measures, causes opportunity losses on the reserves sold.

While the link between intervention and flanking monetary/fiscal policy measures is enshrined in the European Exchange Rate Mechanism, it is in general absent in unilateral and even coordinated interventions. Central banks attempt to use intervention as an independent tool and frequently fall back on appropriate monetary policy measure only when it becomes blunt. In fact, the very ineffectiveness of intervention operations may force governments to adopt suitable, though unpalatable, corrective economic policy measures. Therefore, far from sending signals to the market, the market frequently sends back messages to the policy maker. This appeared to have occurred during the second half of the 1980s when the economy reacted to intervention sales of Australian dollars by pushing up prices; eventually this message could not be ignored. In fact, policy proposals are often floated for no other purpose than to test market reactions.

**VII. LESSONS TO BE LEARNED**

Our critical assessment of the Reserve Bank's intervention operations and the review of the literature reveal that central banks appear to be getting little joy out of their intervention operations.

First, sales of the domestic currency through nonsterilised intervention provide at best only a temporary international competitive advantage. Even when they successfully lower the value of the dollar they commonly create or fuel inflationary pressures which result in an overvaluation of the domestic currency. The holding down of nominal rates through intervention sales creates the illusion of intervention success while the real exchange rate is inevitably driven up.

Second, on average, intervention by the RBA since the float has been asymmetrical. It has been a net buyer of foreign currency (seller of domestic dollars). The foreign currency receipts were passed on to the government. This seemingly painless financing of overseas government expenditures appears to blunt the perception of their costs.  

Third, there is no convincing evidence here or overseas to suggest that the RBA has, or could have, achieved any of its other declared aims of intervention, namely to prevent imported inflation, ensure international competitiveness and reduce exchange rate volatility. Worse, the RBA appears to have formulated its aims on the basis of a misunderstanding of relevant economic theories. *Prima facie* the available evidence regarding imported inflation is compatible with the opposite outcome: domestic inflation devalued the nominal exchange rate. The frequent reference to a promised lower value of the dollar might have been detrimental to

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29. It would be interesting to compare several countries' methods of financing overseas expenditures. As a government usually does not earn foreign currencies through exports of commercial goods and services, some form of debt financing will always be involved.
the development of an export culture. As such a promise cannot be kept, the Bank should refrain from making it.

Fourth, the available empirical evidence rules out nonsterilised intervention as an appropriate policy strategy, except where it is deployed for liquidity management purposes. The results regarding sterilised intervention are so tenuous as to offer in general no basis for its use to influence the exchange rate permanently.

Fifth, the large-scale purchases of the domestic dollar by the RBA in January 1992 appear to have assisted the restructuring of bond portfolios of private international investors and aided the ongoing refinancing of domestic borrowers. We doubt whether the costs in terms of loss of foreign currency reserves justified the defence of the dollar. There are valid reasons to believe that the 'equilibrium' exchange rate would have been lower without intervention.

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Appendix A

INTERVENTION - THE OFFICIAL STORY

The Reserve Bank's views on intervention as reflected in its Annual Reports 1984-1991 and Bulletin.

1. REPORT 1984 (July 1983 - June 1984)

The RBA declared it would not generally intervene, but retained discretion to do so. It would enter the market to test market trends* and smooth large movements, but would not be aiming at a particular exchange rate outcome.

**Intervention actions:** Dec 1983 sales of $A.

2. REPORT 1985 (July 1984 - June 1985)

Substantial dealing in foreign exchange, testing the strength of market forces and seeking to moderate the volatility of exchange rates in periods of high uncertainty.

The fall of the $A in February and April was regarded as beneficial to Australia's international competitiveness. However, the RBA expressed doubt whether exchange rate movements alone will be sufficient to restore an acceptable degree of balance in the current account.

**Intervention actions:** $A purchases

3. REPORT 1986 (July 1985-June 1986)

The drop in the $A was expected to stimulate exports, reduce imports and shift demand from imports to domestically produced goods. Smoothing and testing. "There was, nevertheless, a significant net improvement in competitiveness, offering the prospect of a longer-run in Australia's external accounts.

**Inflationary impact of devaluation regarded as inevitable.**

**Intervention actions:** despite sharp fall in $A only moderate $A purchases.

4. REPORT 1987 (July 1986 - June 1987)

The RBA was involved in heavy market intervention to reduce volatility of the exchange rate. Reasonable stability in exchange rate had a high priority, meaning that a sharp appreciation can erode competitiveness and a fall can be inflationary.

**Intervention actions:** Substantial sales of $A (excepting July and January) to retain low level of TWI. The RBA appears to target a specific level of the TWI for the first time.

* Italics characterise intervention motives
5. REPORT 1988 (July 1987 - June 1988)

RBA sold $A in order to improve international competitiveness, the exception was the period following the share market crash of October 1987.

RBA refers for the first time to sterilisation and the use of interventions as a liquidity management tool.

**Intervention actions:** Substantial sales of $A (exception Oct.) in order to keep the TWI down.


RBA mentions for the first time that resisting an appreciation through intervention sales of the domestic currency secures international competitiveness only in the short term. In the longer term the inflationary consequences result in an erosion of international competitiveness.

Sales of $A (purchases of foreign exchange) to finance the government overseas expenditures and to repay official foreign debt. Forward intervention used for liquidity management purposes.

**Intervention actions** substantial net seller of $A.

7. REPORT 1990 (July 1989 - June 1990)

Testing of upward pressures on the exchange rate. The RBA appears to target a certain range of the TWI. Receipts are used to repay debt and finance overseas expenditures.

**Intervention actions:** Net purchases of foreign currency (sales of $A) of $6 billion appear to reflect more than 'testing'.

8. REPORT 1991 (July 1990 - June 1991)

Intervention sales of $A to reduce the value of the TWI in order to provide short-term help in moving towards a lower current account deficit. No danger for inflation is seen in intervention sales.

The RBA appears to be targeting a range for the TWI as indicated in the Bulletin "Since the end of September, however, the $A has depreciated, in an orderly way, by about 10 per cent against the TWI. This fall in the value of the $A will also lend some support to demand, through encouragement of exports and import replacement." (December 1990, p.3).

**Intervention actions:** Substantial Net seller of $As.
Appendix B

EURO-AUSTRALIAN DOLLAR BONDS MATURING IN 1992

Source: Euromoney April 1992