

Discussion

1. Hashem Pesaran

Michael Artis has provided us with an interesting and readable account of two important episodes of exchange rate intervention by major industrialised economies over the past decade, namely the Plaza Accord and the exchange rate mechanism (ERM). The first episode is associated with targeting the *real* exchange rate, while the second is associated with targeting the *nominal* exchange rate. The two episodes also differ in their short-term and long-term objectives. The Plaza Accord was primarily intended as a ‘one-off’ exercise to bring about a real depreciation of the US dollar (\$US), while the ERM was intended as a more permanent arrangement.

There is a great deal that can be learnt from a close examination of these two episodes and Artis’ paper presents a careful and a sound discussion of some of the main issues. In the case of the Plaza Accord, Artis focuses on two closely related questions. Was the intervention necessary, particularly considering that the \$US had already begun to depreciate well before the Plaza meeting in September 1985, and was it effective? Artis’ answer to the first question is a qualified ‘yes’, and as far as the second question is concerned, his answer is in the affirmative if the primary aim of the intervention is taken to be the reduction in the US balance of payments deficit without a hard landing or a ‘dollar crash’.

The evidence on the balance of payments adjustment mechanism (again focusing on the US case) suggested that the basic theory of international adjustments has been working, but perhaps not as swiftly as the G5 Governments and some market participants would have liked. Therefore, it could be argued that the adjustments would have taken place even in the absence of the Plaza Accord and the policy coordinations that ensued, and the Accord’s effectiveness was confined primarily to enhancing and amplifying market signals rather than to direct foreign exchange and money market interventions. This is the traditional view which needs to be contrasted with the conclusion of the studies by Catte cited by Artis that attributes special importance for the Accord’s effectiveness to the foreign exchange interventions carried out under the Accord process.

Whether exchange rate intervention is needed and whether it is likely to prove successful depends largely on how exchange rates are determined, and whether fads and bubbles have important effects on short-term exchange rate movements. Williamson’s proposal discussed by Artis attempts to address the issue. The idea is that by identifying (and then estimating) the ‘fundamental equilibrium exchange rate’ (FEER), it would be possible to establish whether or not intervention was needed, by comparing the prevailing exchange rate with the exchange rate implicit

in the FEER. This approach, however, presupposes that the government is more likely to be capable of identifying and estimating the FEER than the market. FEER targeting is also subject to an assignment problem which is not easily resolved. The main difficulty with the FEER is that it leaves the issue of the desired choice of the nominal exchange rate open. The estimation of the FEER is also fraught with conceptual and practical difficulties. Estimates of the FEER are likely to be highly sensitive to the underlying model specification and will inevitably be subject to wide margins of uncertainty. Furthermore, before they can be used in policy analysis they need to be adjusted for the expected inflation at home relative to the levels of inflation abroad, a variable itself dependent on the choice of exchange rate. In short, I am much more sceptical of the value of the FEER in the development of a viable exchange rate intervention policy than Artis seems to be.

Turning to attempts at targeting of the nominal exchange rate, Artis distinguishes between 'strong' and 'weak form' exchange rate targeting. By 'weak form' Artis refers to situations where monetary policy responses are conditioned on the exchange rate without there necessarily being publicly announced targets. Unquestionably, from time to time this type of targeting has been followed in Europe; the prominent example being Chancellor of the Exchequer, Nigel Lawson's policy of setting the rate for the pound by shadowing the deutschemark (DM) exchange rate. However, in practice, the episodes of nominal exchange rate targeting are often difficult to identify, let alone analyse in a satisfactory manner, using publicly available information. The problem is further accentuated by the fact that the durations of such episodes of exchange rate targeting have been relatively short, and therefore difficult to evaluate empirically.

As Artis points out, the rationale behind nominal exchange rate targeting is to bypass the uncertain and 'fuzzy' link that is thought to exist between money (m) and the exchange rate (e), and thus directly link variations in money to real income and prices. In order to investigate the issue of whether the exchange rate is an important part of the transmission process, Artis employs linear feedback measures originally proposed by Geweke for multivariate stationary processes. Although in his analysis Artis is careful to account for the non-stationarity of the various time series under consideration (namely interest rate, i_t , exchange rate, e_t , real income, y_t , money supply, m_t , and prices, p_t), the causality tests reported in Appendix A of the paper are still subject to important statistical problems and the results are often difficult to interpret. The analysis is based on the assumption that i_t , y_t , m_t , p_t and e_t are first difference stationary with no long-run relations existing between them. This does not seem very plausible. It, for example, rules out the long-run existence of money demand equations, for all the five countries under consideration (the United States, the United Kingdom, France, Germany and Italy). The policy regime changes over the period of the study also make the results of the causality tests rather difficult to interpret.

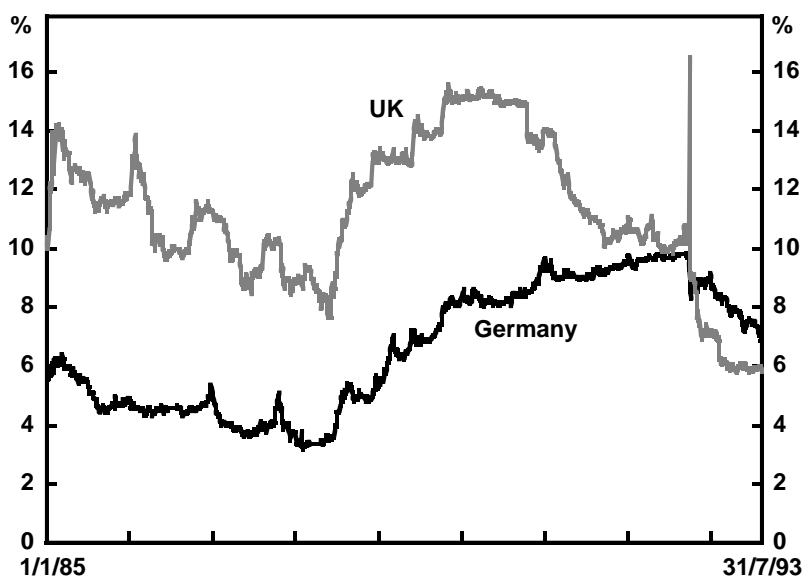
The ‘strong form’ of nominal exchange rate targeting involves an ‘outright commitment’ to peg the exchange rate to a single currency or a basket of currencies and lends itself more readily to empirical evaluation than does the ‘weak form’. The most prominent example of this type of exchange rate targeting is the exchange rate mechanism of the European Monetary System (EMS). Among the various motivations for the ERM, Artis focuses on the ‘credibility model’, and the belief in the counter-inflationary effect of pegging the European currencies to the DM. While this has clearly been an important consideration behind the decision of some of the countries to join the ERM, in particular the United Kingdom’s decision to join in October 1990, it is important that we do not lose sight of other more basic motivations behind the mechanisms: namely, paving the way for formation of a unified currency block in Europe. The appropriateness of such a system rests on the degree of labour mobility across the different member countries and the extent to which coordination of fiscal policies across the European countries is politically feasible or even desirable. For the monetary union to be successful, some form of regional policy to provide economic aid for regions that are likely to be more adversely affected by unfavourable macroeconomic shocks may also be needed. Without some general political agreements on these important policy issues it does not seem very likely that any unified exchange rate mechanism can survive the speculative attacks that the weak currencies will inevitably be subject to.

Artis goes into some detail discussing the reasons behind the United Kingdom’s unceremonial exit from the ERM. He focuses on three main reasons behind the sterling crisis, namely: the overvaluation of the pound sterling; the lack of synchronised policy cycles across the European economies; and the domino effect. While I agree with the general thrust of Artis’ reasoning, I found his discussion of the UK interest rate policy in relation to the crisis not altogether satisfactory. He argues that UK interest rates were maintained within the ‘credibility’ band, until the edge of the crisis was reached. However, the way Artis calculates the credibility band for the United Kingdom relative to German rates ignores the large and persistent interest rate differentials that have prevailed historically between the two currencies. Over the five-year period from 2 January 1985 to 9 October 1990 (just before the United Kingdom’s entry to the ERM), three-month UK interest rates were on average about 6.5 per cent higher than the three-month Eurodollar rate on the DM, and this large gap was maintained for much of the period (see Figure 1). The interest rate gap, however, started to decline quite steadily with entry of the United Kingdom into the ERM and for all practical purposes, the gap had disappeared on the eve of the sterling crisis. While some of this decline in the interest rate differential can be attributed to the effect of German unification, and the UK economic downturn, there are still important reasons for expecting interest rates in the United Kingdom to exceed those in Germany over

the long run. Bearing this in mind, it is interesting to see how long the current negative interest rate differential (in favour of the United Kingdom) can be sustained (see Figure 1 which shows a lower rate in the United Kingdom than in Germany since the United Kingdom's exit from the ERM). The sterling crisis was more a consequence of the trend decline in the interest rate differential, than the level of interest rates at the time of the crisis.

Figure 1: Three-Month Interest Rates in the United Kingdom and in Germany

(daily observations: 2/1/85 to 28/7/93)



For the ERM or other similar exchange rate arrangements to succeed, a number of important conditions must prevail. Among them I would like to emphasise the following:

- more frequent realignments;
- fiscal policy coordination;
- greater labour mobility;
- making the adjustment mechanisms more symmetric; and
- more reliance on *intra-marginal* interventions.

The 'new' ERM that emerged in the aftermath of the *Maastricht Treaty*, with its emphasis on currency unification, had become too rigid and inflexible to be a viable exchange rate mechanism in a volatile world.

2. Philip Lowe

I found Mike Artis' paper to be a very interesting review and analysis of the Plaza Accord and the European Monetary System (EMS). The paper also provides a useful discussion of the benefits of some form of exchange rate targeting and the monetary policy coordination problems that exchange rate targets can sometimes cause. In my comments this morning I do not want to take issue with the institutional discussion or the review of history presented in the paper - I am sure that others in this room are more qualified than I to do so. Instead, I would like to emphasise a very simple but important point, and one that, at least to my taste, the paper does not make strongly enough - that is, in using the exchange rate as either a 'weak' or 'strong' form target, it is crucial to be able to distinguish between real and nominal shocks. In an economy subject to real shocks, relying on a simple and consistent relationship between the exchange rate and inflation is fraught with danger. This is a lesson that Europe is now learning to its considerable cost, but one that I think has been appreciated, at least for some time, in this part of the world.

With this distinction between real and nominal shocks in mind I would like to touch briefly on three issues: the evolution of the EMS as an anti-inflationary tool, the model that is sketched in the paper and policy implications for Australia.

As Artis points out, the EMS has evolved basically as a mechanism for controlling inflation. Looking at Figure 7 in his paper, this goal seems to have met with mixed success. It shows that French, Irish and Belgian price levels have not diverged from the German level. The Netherlands could also be added to this list of countries. Other countries have fared less well. In Italy, Spain and Portugal, higher rates of inflation than in Germany have led to real appreciation of their currencies. While it is probable that these countries would have had even higher rates of inflation had it not been for the discipline imposed by their exchange rate arrangements, I think that it is correct to conclude that the EMS has met with only qualified success in its goal of controlling inflation in Europe.

This focus on what were supposed to be the monetary benefits of the EMS led certain countries to discount the need for real exchange rate adjustment. In a way, this is understandable, as the central problem facing many nations at the end of the 1970s and into the 1980s was seen to be control of inflation and not the need for real exchange rate flexibility of one European country against another. In addition, many policy makers 'bought', almost unqualified, the conclusions from the theoretical literature on policy credibility. While no doubt life is easier if the public views government policy as credible, I think that policy makers should ask for a considerable refund on their purchase of the credibility story.

The idea was that by fixing the exchange rate, policy makers would guarantee low inflation. In turn, agents would understand this, moderating their wage and

price demands. The end result was supposed to be a considerable improvement in the sacrifice ratio - that is, lower output and employment costs for a given reduction in inflation. While the idea was a neat one, it appears to have largely failed to deliver. While this failure reflects many factors, I would briefly like to mention two of these. Firstly, in periods of low to moderate inflation, the most important factor determining the sacrifice ratio is not credibility, but the flexibility of goods and labour markets. European labour markets are not well integrated and they are characterised by significant rigidities. As a result, it is not surprising that their sacrifice ratios remain unpleasantly high. Secondly, in the end, fixing the exchange rate does not guarantee importing low inflation from the anchor country. This can be seen in the experience of southern Europe and also in the experiences of a number of Latin American countries.

While there was nothing inherent in the nature of the system that prevented it adjusting to real shocks, this single focus on monetary factors meant that the system was not able to adjust as it should have to German reunification. To achieve the necessary appreciation of the real value of the deutschemark (DM), other countries have had to experience lower inflation than in Germany. This means running tighter monetary policy than the already tight German monetary policy. With relatively inflexible labour and product markets, this tight monetary policy has probably entailed larger output costs than would have been experienced had the real appreciation of the DM been achieved by nominal appreciation. In some countries, the market believed that governments were unwilling to bear these high costs. As a result, the system cracked. In particular, those countries whose currencies had experienced real appreciation through relatively high inflation found the pressure intolerable.

I would now like to briefly turn to the model of 'weak form' nominal exchange rate targeting. The emphasis on monetary factors that underlies the EMS is reflected in the model that Artis presents in the paper. As a vehicle for analysing monetary policy responses to exogenous changes in the exchange rate, I like the model. If exchange rate changes are driven by fads or market dynamics, then it is indeed appropriate to think of the changes as exogenous. However, in many cases, exchange rate changes are endogenous and I would argue that the model is inappropriate and the application of its advice could lead to undesirable consequences.

Artis argues that if the exchange rate depreciates, then the interest rate must be raised to preserve the same counter-inflationary stance of policy. This leads to an upward sloping \dot{p} locus in Figure 5. The logic of this is that higher import prices put upward pressure on the domestic price index that must be offset with tighter monetary policy. If the exchange rate depreciation is exogenous or is in response to expected future looser monetary policy, then this is the correct response.

However, and I think that this is a big ‘however’, if the exchange rate falls for other reasons, this may well be exactly the *wrong* response. In previous papers we have heard that, for Australia, investment and terms of trade shocks have been important in driving the exchange rate. Suppose investment falls and, as a result, the exchange rate depreciates. Should monetary policy be tightened? The answer is no, it should not. The fall in investment that caused the exchange rate to depreciate, itself puts deflationary pressure into the economy. If the monetary authorities wish to run counter-cyclical monetary policy they should *lower* interest rates, not *increase* them. In Artis’s paper this would mean that the \dot{p} locus would be downward sloping, not upward sloping. In this case, simply keying monetary policy off the exchange rate would be inappropriate.

There is, however, a potentially important ‘wrinkle’ in this story. The fall in the exchange rate for real reasons puts direct and immediate upward pressure on the prices of tradeables. At the same time, the deflationary consequences of the shock that caused the exchange rate to decline are also at work. However, these deflationary forces take considerable time to work themselves through to non-traded goods prices. As a result, the adverse shock is likely to put immediate upward pressure on price indexes, followed later by downward pressure as the negative income effects start to work their way through.

If the country has wage indexation and/or uncompetitive labour markets, the initial inflation impulse from tradeables prices may be fed through into higher wages that could trigger wage-price dynamics that lead to higher inflation. In this case, monetary policy may well need to be tightened when the exchange rate falls. However, if labour markets are deregulated and work reasonably well, this type of situation is unlikely to emerge.

All this is not to say that the exchange rate has no role in the formulation of monetary policy. The question is how the exchange rate gets incorporated into the monetary policy decision-making process. Here, I think that the experience of two countries that are not discussed in the paper is instructive - those countries are New Zealand and Canada. While neither country has an explicit exchange rate target, changes in the exchange rate clearly have a significant impact on monetary policy decisions in both countries. This relationship was evident in Canada late last year and in New Zealand earlier this year. In both cases, downward pressure on the exchange rate was met with significant upward movements in interest rates.

I don’t wish to evaluate those episodes, but instead I would like to touch on a couple of potential problems that arise when the market understands that to achieve its inflation objective the central bank is relying heavily on the exchange rate.

In theory, if the market knows that the central bank has a lower bound for the exchange rate, the exchange rate should smoothly bounce off this level. Theory

and practice may, however, be a long way apart. It is possible that the market believes that the central bank has not adjusted its target rate in response to some adverse shock. In this case, the central bank may be forced into very large increases in interest rates to prevent continuing downward pressure on the exchange rate. These higher interest rates have adverse effects on the economy. The market knows that the central bank knows this. At this point we have entered a potentially damaging speculative game between the central bank and the market.

The other danger is that if the central bank changes its target rate in response to some adverse shock, the market may be unsure of whether this is a legitimate adjustment, based on fundamentals, or simply an acceptance by the bank of a little more inflation. This uncertainty may make the central bank reluctant to change its target and, if it does change the target, it may damage market expectations.

Where does all this leave us? I think that last year's Conference has some answers for us here. The exchange rate should be used as an indicator of inflationary pressure in the economy along with a whole range of other indicators - these other indicators should provide information on what is happening on the real side of the economy. If the real side is ignored, inappropriate monetary policy can easily be the result. The experience of the European countries is a good example of this. Given that we argue that movements in the exchange rate are a critical part of the adjustment process to real shocks, it would seem inappropriate to establish - either in our own minds, or in the minds of the market - too strong a connection between the exchange rate and monetary policy.

3. General Discussion

The discussion that followed Artis' paper concentrated on the nature and effectiveness of targeting the exchange rate. A number of speakers noted that the effectiveness of an exchange rate target depends crucially on setting it at the 'right' rate. This, in turn, implies an ability to measure the fundamental equilibrium exchange rate (FEER). This is a very difficult exercise, as illustrated by the strong qualifications that accompany the FEER model, and means that exchange rate targeting becomes a very inexact science. However, it was also noted that defining money supply targets was just as difficult.

A number of speakers noted that the issue of whether to target a domestic inflation/money supply variable or the exchange rate needs to be considered in terms of the type of shocks that the economy is likely to experience in practice. Real shocks call for greater exchange rate flexibility. In the end, it was suggested that policy should not irrevocably target a specific variable, but should be flexible enough to respond appropriately, depending on the nature of the shock.

A number of participants suggested what while the EMS was less easily defended on economic grounds, there were strong political factors that provided the main justification for the system. It was also noted that while the EMS may not have improved European countries' sacrifice ratios,¹ it may have delivered them lower inflation that would have otherwise been achievable. This is because most European countries had been forced to adopt policies consistent with the low inflation objective of the German Bundesbank.

One speaker suggested that an exchange rate system could be evaluated on three criteria:

- its ability to adjust to shocks;
- its competence to deal with speculative runs; and
- its ability to allow capital market transactions to proceed in an efficient way.

Historically, exchange rate systems seem to have been unable to deliver all three simultaneously. The Bretton Woods system combined fixed exchange rates with capital controls. This system failed to generate sufficient liquidity in the 1960s and did not cope well with the international shocks of the 1970s. As a consequence, capital markets were opened and major currencies were floated. Subsequently, some countries have tried to fix their exchange rates in this environment because of concerns about exchange rate volatility. The currencies of these countries have been subject to periodic speculative attacks. This has renewed calls for capital controls within the EMS in recent months. The speaker observed that calls for changes to exchange rate regimes appeared to go in broad historical 'circles'.

Another issue that concerned many of the participants was that the savings-investment relationship had not been explicitly considered in the paper. Numbers were quoted which indicated that current account balances seemed to be driven more by the savings-investment relationship than by exchange rate movements. Others stressed that the savings-investment relationship and fiscal policy were key in making the FEER model operational. There needed to be greater coordination of both monetary and fiscal policy if fixed exchange rate systems were to work.

The final area of discussion centred on the 'excess credibility' issue, whereby the removal of capital controls in the second half of the 1980s might have generated nominal interest rate convergence, causing high-inflation EMS countries to have too low real interest rates. This would be a perverse ranking, in the sense that high-inflation countries need higher real interest rates, leading Alan Walters to describe the system as 'half-baked'. Artis' finding that this ranking was not

1. Sacrifice ratios measure the output or unemployment cost of getting inflation down. If the EMS improved monetary policy credibility, it might have been possible to reduce the output costs of getting inflation down. This apparently has not been the case.

observed in the data was argued by some to be beside the point. The freeing up of the financial system was a regime change from one where the inverted Fisher hypothesis held, to one in which the actual Fisher hypothesis held.² It should not be surprising that higher inflation countries experienced relatively higher real interest rates in this latter period. The author's conclusion that the Walters critique, notwithstanding the general ranking results, had some relevance for Italy and Spain was also debated by some participants. Countries with high productivity can have relatively low real interest rates, without contributing to accelerating inflation.

It was also pointed out that clear macroeconomic policy conclusions could not be drawn from the Walters critique because the monetary/exchange rate transmission mechanism differed between countries. Thus, for example, UK interest rates on loans are generally floating, while those in Europe are fixed. The United Kingdom also stands apart as a country whose business cycle has been a few quarters ahead of continental Europe's. As such it has been necessary for them to suffer a prolonged recession in order to 'wait for' the European cycle to 'catch up'.

In response to the point that the EMS was flawed in the presence of real shocks, the author made two related observations. Firstly, the EMS countries did not attempt to fix the trade-weighted index, so that the float of the ECU against other major currencies gave the system some insulating properties against common external real shocks. Secondly, real shocks between EMS countries were not common. While German unification had been a very major exception in this regard, it was unlikely to recur.

2. The inverted Fisher hypothesis asserts that real interest rates move inversely with inflation when nominal interest rates are constrained by regulation. The Fisher hypothesis asserts that inflation is neutral with respect to real interest rates, because inflationary expectations are fully reflected in nominal rates.