

Discussion

1. Michael Mussa

It is a pleasure once again to comment on an interesting and insightful paper by Paul Krugman. Based on the disappointing results of numerous empirical tests of models of exchange rate behaviour, Paul Krugman reaches a rather gloomy assessment of recent developments in exchange rate theory - which might be paraphrased by the old line, 'We have both new and good models of exchange rate behaviour, but unfortunately what is new is not good and what is good is not new'. More specifically, in terms of practical implications for economic policy, Krugman finds that there has been little relevant theoretical advance from the Mundell-Fleming model of three decades ago.

I agree with much, but not quite all, of what Krugman says in his paper. To begin, let me note that there should be no embarrassment from the fact that the Mundell-Fleming model continues to exert significant influence over our thinking about macroeconomic policy in open economies. I say this not only because my former thesis adviser Bob Mundell remains a good friend, or even because the work of Mundell and Fleming was done three decades ago in the Research Department of the International Monetary Fund. Rather, I see it as a mark of the maturity of macroeconomics as a practical discipline relevant to real world policy issues that the main outlines of our thinking about how the macroeconomy works do not shift with every intellectual fad that happens to grab hold of the academic journals. Nevertheless, there are I believe a few things that we have learned from the past 20 years of intellectual efforts that are relevant to a practical understanding of open economy macroeconomic policies in a world of floating exchange rates and a high degree of international capital mobility. I shall endeavour to make this point while commenting on the main subjects discussed in Krugman's paper.

1.1 Foreign Exchange Market Efficiency

As Paul Krugman properly emphasises, extensive empirical research utilising data of the past 20 years has revealed two anomalies that represent considerable embarrassments to most theoretical models of exchange rate behaviour. Firstly, it is difficult to find any economic model that consistently performs better than a naive random walk in predicting the behaviour of exchange rates. Secondly, contrary to the assumption in most modern models of exchange rate behaviour, the forward premium on a currency is not an unbiased predictor of the change in the spot value of the currency. Indeed, for exchange rates against the US dollar, the

forward premium does help to predict the change in the spot exchange rate, but with the wrong sign.¹

These empirical results clearly raise important questions and doubts about most recent models of exchange rate behaviour. Nevertheless, I would assert that recent theorising about the behaviour of exchange rates has made at least one important advance in extending the theoretical framework of Mundell and Fleming. This is the general idea that exchange rates need to be viewed as ‘asset prices’, in the sense that today’s exchange rate reflects the market’s current expectations of some discounted sum of economic fundamentals that will influence the foreign exchange market in the present and in future periods.² As with the prices of other assets traded in highly organised markets (such as common stocks), when something happens that changes market expectations about present and future economic fundamentals thought to be important for the exchange rate, the exchange rate reacts immediately to this ‘news’.

The theory of the exchange rate as an ‘asset price’ is most easily developed and is usually expounded in the context of a model that assumes that economic agents are fully rational, have a complete and common understanding of the structure of the economic system and the stochastic behaviour of its fundamentals, and operate in fully efficient financial markets. However, as I discussed at some length in my Graham Lecture, Mussa (1990), these theoretical assumptions are not essential either to the general idea of the exchange rate as an ‘asset price’ or to at least three of the key implications of this general idea:

- the largely random character of exchange rate fluctuations under floating exchange rate regimes is explained by the prevalence of ‘news’ in inducing most exchange rate changes;
- the tendency for nominal and real exchange rates to move together under a floating rate regime is explained by the contrast between the behaviour of nominal exchange rates as randomly fluctuating asset prices and the behaviour of national price levels as relatively sluggishly adjusting variables; and
- with respect to the influence of economic policies on exchange rates, what matters is not simply what policies governments pursue today, but also to an important extent, the policies they are expected to pursue in the future.

1. I first saw this result in a working paper written by John Bilson which was later published in the *Journal of Business* and was written at about the same time as the more widely cited and excellent paper by Hansen and Hodrick (1980). Much subsequent research, see Froot and Thaler (1990), has confirmed the basic result and shown that it is not dependent on a particular time period.

2. For a concise exposition of the concept of the exchange rate as an ‘asset price’, see Frenkel and Mussa (1980); for a more extended discussion, see Frenkel (1981), Frenkel and Mussa (1985), or Mussa (1982).

This last implication of the ‘asset price’ approach is, in my judgement, absolutely vital for understanding the influence of economic policies on exchange rates. However, it is not an insight that may be gleaned from the Mundell-Fleming model or most other earlier theoretical work on exchange rates; and its importance is not limited to floating exchange rate regimes. For example, in European exchange market crises of the past year, markets were clearly reacting not only to increases in interest rates used to defend existing parities, but also to assessments of whether these interest rate increases were durable and credible for economies experiencing recessions and, in many cases, significant problems in their financial sectors. In formal empirical analyses of exchange rate behaviour, it is difficult to isolate and estimate these effects of expectations about future economic policies, but there is no doubt of their powerful influences in the markets in which foreign exchange rates are actually determined.

1.2 Nominal and Real Exchange Rates

As noted earlier, I agree with Krugman that shorter-term movements in nominal exchange rates tend to induce similar movements in real exchange rates. Indeed, this phenomenon has been a major theme in my research since the mid-1970s. Nevertheless, I would still assert that ‘the exchange rate is the relative price of two monies, not the relative price of two goods’. This definitionally true proposition does not mean - and in my thinking has never meant - that movements in nominal exchange rates exert no influence on the relative price of national outputs. Quite the contrary, understanding that the nominal exchange rate is the relative price of two monies is the key to understanding why and in what circumstances nominal exchange rates will exert an important influence on real exchange rates (i.e., on the relative prices of the national outputs of different countries).

Specifically, for countries with low to moderate inflation rates, the nominal price of domestic output in terms of national money is a relatively slow-moving variable under both pegged and floating exchange rate regimes. Under a pegged exchange rate regime, when the relative price of two national monies is changed by an official parity adjustment, there tends to be a roughly equivalent immediate effect on the real exchange rate. Under a floating exchange rate regime, as previously noted, the relative price of two national monies is an ‘asset price’ that tends to react randomly and often quite significantly to new information. With national price levels adjusting relatively sluggishly, fluctuations in the nominal exchange rate tend to produce sympathetic fluctuations in the real exchange rate.

This being said, it is relevant to emphasise two important caveats to the proposition that nominal exchange rate changes tend to induce roughly equivalent changes in real exchange rates. Firstly, the theory of purchasing power parity

should not be carelessly discarded as at least *part* of the explanation of the behaviour of nominal exchange rates. In the long run, the cumulative differential movement in national price levels between two countries can be substantial even for countries that typically maintain relatively low annual inflation rates. In the long run for such countries, there is a general tendency for changes in nominal exchange rates to offset differential movements in national price levels. Also, for two countries with wide disparities in their national inflation rates, purchasing power parity can be relevant in the relatively short run. In particular, for a hyperinflating country (in comparison with a country that maintains relative price stability), even when there are significant changes in the real exchange rate, the depreciation of the nominal exchange rate tends to parallel the upsurge in the domestic nominal price level.

Secondly, changes in real economic conditions can exert an important influence on equilibrium levels of real exchange rates which may or may not be reflected in nominal exchange rates. Some of the papers at this Conference remind us of this point in the case of Australia, where changes in the world market prices of important export commodities appear to exert a measurable influence on the real exchange rate. Another example is the persistent real appreciation of the Japanese yen *vis-à-vis* the US dollar during the past four decades. During the 1950s and 1960s, this real appreciation was accomplished through the inflation differential between Japan and the United States, without any change in the nominal exchange rate. During the floating rate period, the real exchange rate has fluctuated more erratically, along with short-term movements in the nominal exchange rate, but the long-term trend toward real appreciation of the yen has been sustained. Thus, the real economic forces that underlie the trend real appreciation of the yen are able to exert themselves, through one mechanism or another, regardless of the nature of the nominal exchange rate regime.

1.3 Exchange Rate and Trade Flows

On the substantive issue of whether real exchange rates influence trade flows, again, I am in broad agreement with Krugman that, when ‘other things’ are held constant, real appreciation of a country’s currency tends to worsen its trade balance. As he emphasises, this is what happened to the United States during the 1980s, when the strong real appreciation of the US dollar during the first half of the decade was clearly an important factor contributing (with a lag) to the deterioration of the United States’ trade and current accounts.³ Subsequently, the downward correction in the real foreign exchange value of the US dollar contributed importantly to the improvement in the United States’ trade and current accounts.

3. See Feldman (1982) for an assessment of the US dollar’s impact on the United States’ foreign trade.

It should be emphasised, however, that the relationship between the trade balance and the real exchange rate is not always this simple, especially when ‘other things’ are not being held constant. Recall that during the 1950s and 1960s, when the United States typically ran a current account surplus, the US dollar was relatively strong in real terms. In contrast, for most of the 1970s and 1980s, the US dollar was relatively weak in real terms, but the United States was, on average, running a current account deficit. Thus, the long-term relationship between the real strength of the US dollar and the United States’ current account over the past decade looks quite different from the shorter-term experience of the 1980s.

To rationalise this apparent inconsistency, it is essential to recognise that forces other than relative international cost competitiveness influenced the trade balance. During the 1950s and 1960s, the United States generally had a desired excess of national saving over national investment, and this was presumably reflected both in the relatively strong currency and in the United States’ current account surplus. During the past two decades, desired national saving has declined relative to desired investment in the United States, and this appears to have contributed to the combination of a weak US dollar and a current account deficit.

1.4 Exchange Rate Theory and Policy

As Krugman emphasises, ‘It is notoriously difficult to translate exchange rate models into policy prescriptions’. Nevertheless, there are some issues on which modern theories of exchange rate behaviour are useful and relevant. In particular, as he argues, ‘There is ... a major problem with ... an adjustable peg system in a world of capital mobility: it is subject to speculative attacks whenever the market suspects that a realignment is in prospect’. As noted before, the modern theory of exchange rates as ‘asset prices’ is essential to a proper analytical understanding of this very important problem. Specifically, we need a theory that links the exchange rate that markets are prepared to endorse today to expectations of the policies that governments will be able to sustain in the future. In my judgement, the development of such theoretical models of exchange rates, whatever their empirical limitations, has been a critically important intellectual advance that we have made during the past two decades.

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2. General Discussion

The general discussion of Krugman's paper focused on three issues:

- the relationship between real and nominal exchange rate movements;
- the links between the current account and the exchange rate in Japan; and
- proposals to reintroduce capital controls.

With regard to the first issue, there were several objections to the proposition that nominal exchange rate changes were the primary source of real exchange rate changes. Any shock that affected the nominal exchange rate would initially show up as a real exchange rate change, as goods prices are sticky in the short run. Over a period long enough to incorporate the lagged impact of the exchange rate on prices, however, this correlation might disappear.

The extent to which nominal exchange rate changes would be reflected in sustained effects on real exchange rates depends primarily on whether shocks are real or nominal in origin. It also depends on the structure of economies (the share of imported goods in consumption), and the price elasticities of supply and demand for traded and non-traded goods. The correlation between the nominal

and real exchange rate would be higher for real shocks associated with substantial induced changes in the nominal exchange rate, as has often been the case for terms of trade changes in Australia. The correlation should ultimately be lower for nominal shocks, particularly in the presence of high and variable inflation. In this context, it was noted that the countries with a high nominal-real exchange rate correlation have typically been industrial countries with relatively low inflation rates.

It was also observed that the 'peso problem' phenomenon could influence the observed correlation between nominal and real exchange rates. Expected future changes in policy, for example, could influence the current exchange rate. There were, however, some cautionary comments about blaming everything on the peso problem.

The second area of discussion centred on Japan and whether its exchange rate played the usual role in external adjustment. Some participants pointed out that, in real terms, there was a structural upward trend in both the yen and Japan's external performance. Exchange rate movements affected outcomes around this trend. However, whether or not the latest rise in the yen and the current account surplus reflects a continuation of this structural trend depends very much on how one views the current business cycle in Japan. A major recession would improve the current account temporarily, but not in a structural sense. Here it was noted that problems arise in interpreting the available Japanese data. Recently, the unemployment rate has hardly changed, which indicates that there is no recession. However, if the output gap is considered, the recession in Japan looks deeper than it is in the United States. Relative expenditure levels in Japan compared with the rest of the world should also be considered in any analysis of this issue.

There was a general feeling that it would be best to examine the current account-exchange rate issue for Japan in a medium to long-term framework. Short-term movements in the yen do not appear to affect trade, but medium to long-term movements do alter current account outcomes. It was also suggested that there may be non-linearities and/or discontinuities in the relationship between exchange rates and the trade balance with the sharp rise of the yen in the mid-1980s, which did not eliminate Japan's current account surplus. This might have happened if the structural component of Japan's current account surplus rose at the time.

Finally, the possibility of reintroducing capital controls and transactions taxes to reduce excessive exchange rate volatility in the world economy was raised. However, this 'sand in the wheels' suggestion received little support. It was argued that it was difficult to distinguish between current and capital transactions and that capital controls could easily get 'sand' into the wheels of commerce, thus creating more problems and inefficiencies than the controls were originally meant to solve.