

# THE ECONOMIC BACKGROUND

## THE INTERNATIONAL ENVIRONMENT

### Explaining Exchange Rate Behaviour

In our last review of the World Economy we focused on the implications of the continued volatility of floating exchange rates, and in particular the behaviour of the US dollar, for the reform of the International Monetary System. This topic proved to be one of the main talking points at the recent G7 meetings in Halifax, Canada. In this review we attempt to explain why when nominal exchange rates are left free to float they are generally very volatile and impart a similar degree of volatility into real exchange rates. In particular, we ask the question: can economic fundamentals explain the exchange rate behaviour we observe in foreign exchange markets, or is the behaviour simply a reflection of ill-informed speculation (what used to be referred to in the UK as the 'gnomes of Zurich' effect)? The answer to this question is clearly important since it will have a bearing on the type of policies adopted by governments wishing to attenuate exchange rate movements (assuming this is desirable) and also for individuals and companies who may wish to forecast the future path of exchange rate movements.

The current majority view in the economics profession would seem to be that economic fundamentals are of little or no use in explaining exchange rate movements at forecast horizons of less than three years. This was the conclusion, of what has now become a seminal paper, of Meese and Rogoff,<sup>1</sup> and their findings have been reiterated over the years by a number of other researchers. Meese and Rogoff demonstrated for the leading currencies (dollar-yen, dollar-mark, and dollar-sterling) that a wide range of fundamentals-based models were unable to outperform a naïve no-change prediction; that is, the best prediction of the exchange rate in the next period (or periods up to 36 months) is simply the

---

<sup>1</sup>R Meese and K Rogoff (1983), "Empirical Exchange Rate Models of the Seventies: Do they Fit Out of Sample?", *Journal of International Economics*, 14, 3-24.

current exchange rate (i.e. a simple random walk). The apparent failure of fundamentals-based models has led to a resurgence of interest in non-fundamentals-based models such as, chartism, speculative bubbles and market microstructure. Before outlining these non-fundamental explanations we give an overview of the main fundamentals-based explanations.

### Fundamentals-based explanations of exchange rate volatility

Perhaps the best known fundamentals model of exchange rate determination is the view which asserts that volatile exchange rate movements are the outcome of asymmetrical adjustment speeds in goods and asset markets. For example, we know that contractual agreements impart a degree of inertia into wage and consumer price movements, whereas asset prices, such as exchange rates and stock prices, are free to move on a second-by-second basis. A change in the money supply, which ultimately has implications for commodity prices, cannot affect such prices in the short term, and therefore will have all of its impact on asset prices; exchange rates tend to 'overshoot' their long-run equilibrium value. This overshooting phenomenon was first noted by Rudiger Dornbusch in 1976. The behaviour of the pound sterling in the period 1979 to 1980 and part of the US dollar appreciation from 1980 through to 1985 is often attributed to the overshooting effect.

Such overshooting inspired volatility is paralleled, and perhaps reinforced, by the 'magnification' effect that current changes on fundamentals can have on the current exchange rate. Since this effect can occur even when consumer prices are completely flexible, it should be viewed as distinct from the overshooting effect. The magnification effect occurs when a current change in fundamentals signals to agents that, say, today's increase in the money supply is going to produce further increases in the future. These expected future increases in the money supply will have implications for the path of the exchange rate in the future which must, in turn, have implications for the current exchange rate; if they do not, some investors will be holding a currency which is expected to depreciate - an

extremely unattractive option. Of course, if the money supply is not expected to change in the future, the current exchange rate will not bear a magnified relationship to the current money supply. The magnification story can be applied, with suitable modification, to a whole range of different fundamentals such as fiscal deficits and the current account position.

The other fundamentals-based stories (which are usually given less emphasis in the academic literature) are: portfolio effects which stem from the imperfect substitutability of different countries government debt - asymmetries within asset markets, as opposed to between goods and asset markets, can also produce an overshooting result; the ability of speculators and multinational companies to substitute between currencies, something which has been greatly facilitated by the liberalisation of financial markets, can also impart excess volatility into currencies.

One feature of the above fundamentals-based stories is that although they offer explanations of excessive exchange rate volatility, they are nevertheless consistent with foreign exchange market operators who are rational and well-informed. However, the magnitude of exchange rate volatility that has been observed for many currencies during the recent float, and the apparently dismal performance of the fundamentals-based models, has led many to interpret the volatility as the outcome of ill-informed and irrational behaviour.

#### **Non Fundamentals-based explanations of exchange rate volatility**

One of the best known non-fundamental explanations for exchange rate behaviour is that of a speculative bubble. This concept has a long history in both the economics and psychology literatures, and has been used to explain the so-called tulipmania in Holland in the seventeenth century and also the behaviour of the shares of the South Sea company in the eighteenth century - the so called South Sea bubble. Put simply, a speculative bubble is a factor which is important for the determination of an asset price because everyone involved in trading the asset believes it to be important. It may be the existence of sunspots or the weather pattern in Indonesia. Just as long as agents en masse believe it to be important then it will be important. However, the empirical work that has been conducted on speculative bubbles suggests that although they do indeed exist, and

may be used, for example, to explain particularly long swings in exchange rates (such as the massive appreciation of the US dollar in the early 1980s) they are not sufficient to explain the general behaviour of exchange rates that we observe on a day-to-day basis.

Technical analysis is a second non-fundamental explanation for the behaviour of exchange rates. The best known element of this approach is chartism which, as the title suggests, relies on plotting trends in exchange rates calculated in a variety of ways such as moving averages methods. It may be argued that since asset prices should have all relevant information discounted into them, chartist techniques are a perfectly rational way of forecasting currencies (that is, an investor need only concern herself with the behaviour of the price and not a complex array of fundamentals). However, the problem is that often there are fashions and fads regarding key technical indicators and these fads, unrelated to fundamentals, tend to dominate the behaviour of exchange rates. For example, it may become fashionable to believe that once a currency breaks through a particular resistance level it will appreciate (or depreciate depending on the resistance point) dramatically; yet this appreciation bears no relationship to market fundamentals.

Perhaps the currently most fashionable non-fundamentals explanation of exchange rate behaviour is market microstructure. This view has become especially popular of late in the academic literature because of the seeming failure of economists to explain the fact that on each trading day there is a total of approximately \$1 trillion of foreign exchange dealings on the global foreign exchange market. In essence, the market microstructure view posits that the key explanation for this volume is the interaction of foreign exchange dealers. The factor which evidently generates this interaction is the heterogeneity of expectations amongst dealers. In order to understand the high gross and net volumes we observe in exchange markets we therefore have to understand the causes of this heterogeneity. Is it due to idiosyncratic interpretations of common information or does it, rather, reflect the existence of important informational asymmetries between dealers.<sup>2</sup>

---

<sup>2</sup>Answers to these types of question are contained in R MacDonald and I W Marsh (1985), "Foreign Exchange Market Forecasters are Heterogeneous: Confirmation and Consequences", mimeo, University of Strathclyde.

## Concluding Comments

How then do we answer the question posed at the beginning of this article? First, we believe that there are good fundamentals-based stories to explain exchange rate volatility, particularly those which take as their starting point the exchange rate as a forward looking asset price. Although there is, as we have noted, pessimism amongst the profession as to the usefulness of these models in forecasting exchange rates, recent work we have been involved in does in fact suggest that fundamentals can be used to explain exchange rate behaviour down to forecast horizons as short as three months.<sup>3</sup> Explaining exchange rates at horizons of less than three months seems to be the current challenge for exchange rate researchers. Without doubt the key to understanding the behaviour of exchange rates at these kinds of horizons is the interaction of foreign exchange dealers as suggested by the market microstructure literature. An amalgamation of a market microstructure approach, which captures the short term behaviour of exchange rates, with a fundamentals-based approach, which captures the longer term behaviour, should greatly assist those who need to forecast currencies and also the policy maker concerned about the causes and consequences of exchange rate volatility.

## UK MACROECONOMIC TRENDS

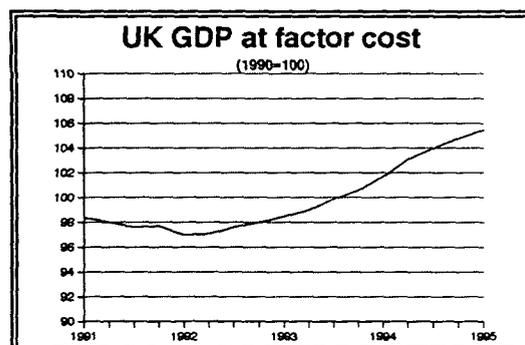
In the first quarter of 1995, the provisional estimate of **GDP at market prices** - 'money' GDP - rose by 0.9%. After allowing for inflation and adjusting for factor costs, GDP grew by 0.7% during the quarter, compared with the 0.8% increase recorded in the fourth quarter of 1994. Over the year to the first quarter, 'real' GDP is estimated to have risen by 3.7%. When oil and gas extraction are excluded 'real' GDP is estimated to have risen by 0.6% in the fourth quarter and by 3.5% over the same period a year ago.

### Output of the production industries in the first

---

<sup>3</sup>See, for example, R MacDonald and M P Taylor (1993), "The Monetary Approach to the Exchange Rate: Rational Expectations, Long-Run Equilibrium, and Forecasting", Staff Papers of the International Monetary Fund, 40, 89-107, and R MacDonald and I W Marsh (1995), "On Casselian PPP, Cointegration and Exchange Rate Forecasting", mimeo, University of Strathclyde.

quarter is provisionally estimated to have risen by 0.1%, with output rising by 4.2% compared with the same period a year ago. Within production, **manufacturing** experienced a *decrease* in output of 0.1%, output of the other energy and water supply industries fell by 1.8%, and production of oil and gas rose by 3.1%. Manufacturing output in the first quarter was 3.4% above the same period a year ago. The output of the **service sector** is provisionally estimated to have risen by 0.9% in the first quarter and by 3.7% over the first quarter 1995.



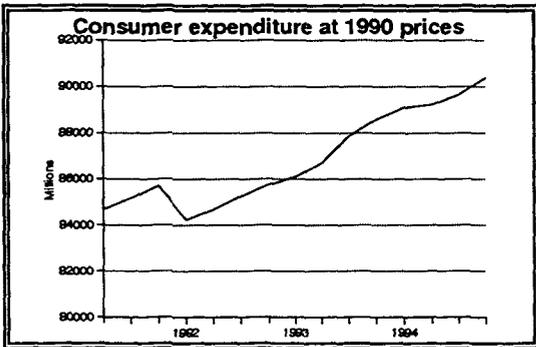
The CSO's coincident cyclical indicator for April 1995, which attempts to show current turning points around the long-term trend, continued to rise. The index has been steadily rising since July 1992, suggesting an upturn in the spring/summer of that year. The **shorter leading index**, which attempts to indicate turning points about six months in advance, fell in April 1994 and has been generally falling since October 1994. The **longer leading index**, which purports to indicate turning points about one year in advance, fell again in April continuing the decline since June of last year.

In the first quarter of 1995, **real consumers' expenditure** fell by 0.1% after rising in successive quarters in 1994. Spending during the first quarter rose by 1.3% on the same period a year earlier.

The provisional official **retail sales volume** figures seasonally adjusted for May 1995, were 0.2% above the April figure. Over the year to May, the volume of sales rose by 1.1%. Taking the three months to May, the volume of retail sales rose by 0.2% and by 1.3% over the same period a year earlier.

The underlying determinants of consumers' spending appear broadly unchanged. There appear to be no consumer credit figures after the December data discussed in the March Commentary. The **saving ratio** fell in the fourth quarter 1994 to

10.3% from 10.6% in the third quarter. The underlying increase in average weekly earnings in the year to April 1995 is provisionally estimated to have been 3.5%, unchanged from March and February, and down from the 3.75% recorded consecutively in the 8 preceding months. Real personal disposable income is estimated to have risen by 0.5% in the fourth quarter 1994 to a level 1.0% higher than in the same period in 1993.



General government final consumption rose by 0.6% in the first quarter 1995. Government consumption in the first quarter was 1.6% higher than in the corresponding quarter of 1994.

Real gross fixed investment or Gross domestic fixed capital formation rose by 1.8% in the first quarter to a level 2.4% higher than in the first quarter 1994.

Turning to the balance of payments, the current account for the fourth quarter 1994 was, after seasonal adjustment, in surplus to the tune of £0.6bn, compared to revised estimates of a surplus of £1.4bn in the third quarter and deficits of £0.7bn, and £1.4bn in the second and first quarters, respectively. The surplus on invisible trade stood at £3.6bn, an increase over the £3.2bn recorded in the third quarter, the £1.7bn surplus in the second quarter, and the £1.9bn surplus in the first quarter. On visible trade, the fourth quarter deficit stood at £2.9bn compared with £1.8bn in the third quarter, £2.4bn in the second quarter and £3.3bn in the first quarter. The surplus on the oil account rose from £952m in the third quarter to £1068m in the fourth quarter.

**UK LABOUR MARKET**

**Employment and Unemployment**

UK claimant unemployment fell by 48,900 in the

quarter to May 1995. Total unemployment is now 2,317,800, giving an overall unemployment rate of 8.3%, with a male and female rate of 11.2% and 4.5% respectively. UK unemployment has now been falling for 21 months in succession. However, the rate of decline in the first five months of 1995 is lower than was registered in the last quarter of 1994, and the fall in May was only 10,000. The reduction in unemployment has been accompanied by rather erratic movements in the number of unfilled vacancies which actually declined in the month of May, though they did increase by 3.7% in the quarter to May. The figure for total UK employment in March 1995 is 25,586,000, a reduction of 14,000 (0.1%) in the quarter from December 1994, though an increase of 75,000 (0.3%) in the six months from September. UK employment in manufacturing showed an increase of 0.4% in the three months to March however in all other sectors of the economy employment fell. Also the more up to date figures for British manufacturing employment show a 0.2% fall in April. While the strong employment performance in the second half of 1994 seemed to indicate a clear recovery in the UK labour market, the latest employment and unemployment figures cast doubt on this.

**Earnings and Productivity**

In April, overall underlying annual wage inflation stood at 3.5%. For the last two years the annual wage inflation figure has remained very stable, lying within the 3-4% band. There continues to be a large differential between the manufacturing and service sectors wage increases. In the quarter to April 1995 the underlying year-on-year increase in wages in services was 2.75%, whilst the same figure for manufacturing was 5%. The rate of growth of labour productivity in the whole economy continues to be high. In the fourth quarter of 1994 productivity was 3.5% up on the level for the same quarter of 1993. However, whilst productivity growth in manufacturing was particularly marked in 1994, the figures for the first quarter of 1995 show a fall in productivity for that quarter, although it is still 3.3% higher than for the first quarter of 1994. The result is that manufacturing experienced an increase in unit labour costs, compared to the previous year, and in April was 2.4% higher than for the same month in 1994. For the whole economy, the most up to date figures are for the fourth quarter of 1994 where unit labour costs showed a very slight decline from their value of the previous year.

## UK OUTLOOK

The recently published minutes of the May meeting between the Chancellor and the Governor of the Bank of England illustrate the general uncertainty about the strength of domestic activity and the prospects for inflation. The Governor took the view that the whole economy was continuing to grow above trend, although less rapidly than in the first half of 1994. Cost pressures remained, but, apart from manufacturing labour costs, had not deteriorated much in first quarter of the year. Moreover, the Governor noted that there were indications that the pressure to pass on cost increases, particularly in tradeable goods sectors, remained strong and was perhaps intensifying. In addition, the continuing weakness of sterling would add to that pressure exacerbating retail price inflation. The Bank considered that against this background the inflationary risk was substantial warranting a further 0.5% point increase in base rates.

The Chancellor took a more relaxed view. There was clear evidence that growth was slowing down to a more sustainable rate. Manufacturing output had shown little growth since September. Retail sales growth had been very restrained over the previous six months. The apparent stronger growth of the service sector overall was not supported by anecdotal evidence and the introduction of the National Lottery may have been responsible for a one-off increase in quarterly growth by about 0.1% points (without changing the level of spare capacity in the country). Moreover, the housing market remained subdued. In the Treasury's view, the data indicated little sign of demand-led inflationary pressures. The Treasury acknowledged that there were "some worrying signs" of continued cost pressures, particularly on the input side, and the effect of a weaker exchange rate had to be taken into account. But, on a broad assessment of all the economic data, and given that interest rates had been raised three times since September 1994 and that further tax increases had taken effect in April, the Chancellor was not convinced that interest rates should be raised in May.

The decision not to raise rates ran against market expectations. Nevertheless, as the Chancellor himself noted at the Monthly Meeting, the financial markets have tended to over-estimate the level of interest rates required to meet the Government's inflation target. Considerable uncertainty remains. The growth of manufacturing output appears to be weakening and there are fears that the contribution

of net trade to output growth may be slackening sharply. Both labour and housing markets remain subdued. The latest CBI Distributive Trades survey suggests that the high street was weaker in May than in April. And the two of the CSO's leading indicators are continuing to fall suggesting that the UK economy may be emulating the slowdown in the US. To be set against these data is the recent evidence that the underlying rate of factory-gate inflation in May was at a four-year high as manufacturers passed on earlier cost increases to their customers through higher prices. However, input prices - for fuel and raw materials - in May, remained fairly stable, rising by 0.2%. This was the smallest rise since October and much smaller than the increase of 1.5% recorded in May 1994.

So, against this mixed picture there would not appear to be a strong case for a further rise in rates in the immediate future, although pressures for higher rates are likely to remain.