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Directorate-General for Research

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EXCHANGE RATES AND MONETARY POLICY

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EXECUTIVE SUMMARY

The Single Currency was a logical consequence of the Single Market, and in particular of free capital movement. Monetary union has eliminated the danger of currency crises within the euro area. At the same time, the external exposure of the participating economies, in terms of trade outside the domestic currency area, has been reduced from about 30% of GDP to about 16%.

Does this mean that the area can now conduct a policy of "benign neglect" towards the euro's exchange rate? Should its recent depreciation affect internal monetary policy?

The ECB has consistently maintained that its sole concern, established by the Treaty, is with internal price stability, and that it does not have an exchange rate policy. Since coming into existence, however, the euro has fallen by nearly 25% against the dollar, with two results:

- Combined with the rise in world oil prices, the depreciation has created an apparent threat to internal price stability through direct, indirect and "second round" effects.
- Price stability as defined by the ECB – a rise in the Harmonised Index of Consumer Prices of under 2% p.a. – has been generally achieved, with core inflation even lower. Yet the euro has been perceived as "weak". This, in turn, has damaged the prestige of the ECB and reduced public support for the Single Currency itself.

Exchange rate theory

The external value of a currency can affect the internal economy in a number of ways.

- **Long-term misalignment** will affect relative international competitivity.
- **Depreciation/appreciation** may increase/reduce inflation and boost/dampen growth.
- Exchange rate **volatility** can raise costs, destabilise markets and misallocate capital.

Economic theory does not provide any single, simple explanation for exchange rate movements. Though, when floating, they "*may be viewed as being determined by the interplay of supply and demand in the foreign exchange markets*" (OECD), parity changes in those markets may equally well be explained by "random walk" models. A number of theoretical models exist.

- **Trade balance**. The currency of an economy with a trade deficit should depreciate, that of an economy with a trade surplus appreciate, so restoring equilibrium.
- **Uncovered Interest Parity.** Exchange rates will reflect differences in the interest rates paid on a range of securities denominated in different currencies, plus or minus risk premia: i.e. money will flow into economies paying higher nominal rates, *provided that* the currency is not expected to depreciate by more than the interest rate gap.
- **Capital flows.** Economies with higher rates of economic growth will attract long-term investment, offsetting any current account deficit, and leading to a currency appreciation.

Under *all* models a failure to conduct a prudent monetary policy is likely to result in depreciation. Inflation will make exports uncompetitive at the original parity; risk premia will rise; and markets will be unwilling to fund current deficits through capital inflows.

Since, throughout 1999, the euro area had a trade surplus, the US a huge and rising trade deficit, the first of these models does not provide an explanation for the fall in the euro's dollar parity. But changes in both the interest rate gap (see Charts 4 to 7) and the growth gap (see Chart 13) show some correlation with exchange rate movements.

Real Exchange Rates

Even at its parity of $1.17 at the beginning of 1999 the euro was widely considered "undervalued"; and even before the rate fell below $1, the ECB was maintaining that the euro had "scope for appreciation" to reflect economic fundamentals. This raises two questions:

- Do objectively "correct", "equilibrium" or "real" exchange rates exist?
- If so, why do markets not automatically produce these rates?

Equilibrium rates can be calculated in a number of ways.

The most common is **Purchasing Power Parity.** At PPP exchange rates a consumer would find the purchasing power of a particular sum identical, in no matter what currency it was denominated. However, different price indexes can give different results; and, though theory predicts that "*exchange rates tend to converge to their PPP values*" (Lipsey and Crystal) through arbitrage, reality can be very different. When Sterling dropped out of the EMS in 1992, its PPP rate was *above* its ERM central rate! In his paper of 1964, Paul Samuelson described PPP as "*a misleadingly pretentious doctrine*".

One modification of PPP developed by **Samuelson and Balassa** distinguishes between traded and non-traded sectors. Differences in productivity between them explain divergences of actual equilibrium rates from PPP rates. Alternative theories concentrate on **capital markets**: equilibrium exchange rates are those at which the real return on all assets is equal.

Finally, more elaborate calculations of real exchange rates can be made based on various econometric models, and concentrating on trends in economic growth, productivity, competitivity, fiscal policy, etc.: for example the **Fundamental Equilibrium Exchange Rates** (FEERS) concept developed by Williamson (1983) and others. As the OECD (1985) has observed, however, even sophisticated models are poor predictors of actual nominal rates.

Prices and Interest Rates

Since the euro came into existence there have been conflicting statements as to the importance of the exchange rate for ECB monetary policy. The euro's depreciation has led to a recent emphasis on **the effect of exchange rate movements on prices**.

Though it is often assumed, it is not necessarily the case that a fall in the exchange rate will lead to a rise in the *general* price level. Given stable, non-accommodating monetary conditions, rising import prices will be offset by falls in other prices. Within the euro area, indeed, recent higher import prices have been reflected in producer prices, but only marginally in consumer prices. Despite fears on the part of the ECB and the Commission, there have so far been no "second round" effects from wage settlements.

Both the Commission (Quest) and the OECD (Interlink) have developed models predicting the effects, and the time lags, of exchange rate changes on prices, growth and other variables. These assume no countervailing action by the monetary authorities; and, in the case of Quest, make different predictions depending upon how the exchange rate change comes about.

A further important issue is **the relationship between interest rates and the exchange rate.** Given that one determinant of exchange rates is the interest rate gap, monetary authorities can be faced with a conflict between the requirements of *internal* and *external* currency stability. The United Kingdom provides recent examples: in 1992 the need for high interest rates to keep

Sterling in the ERM conflicted with that for lower rates to stimulate the economy. In 1999/2000 relatively high rates to contain inflation pushed the exchange rate up, affecting competitivity.

Moreover, the effects of interest rate changes on the exchange rate are not straightforward, even when the intention is clear. The signal given by a rise may be read as a determination to defend a parity; or it may be read as a sign of panic and lead to further depreciation. Much also depends upon market perceptions of the *reason* for a currency's weakness. Recent rises in ECB interest rates, for example, have had practically no effect on the exchange rate. This is possibly because the euro's weakness against the dollar is widely attributed, not to the interest rate gap, but to the growth rate gap, the closing of which might be threatened by higher rates of interest.

The effects of exchange rate and interest rate movements can be combined in a **Monetary Conditions Index**, incorporating a calculation of how far interest rates must rise/fall to maintain a given monetary stance in the event of a fall/rise in the exchange rate. In the UK, for example, there has been an "old-four-to-one rule": a 4% fall in Sterling requires a 1% rise in base rates. This has been denounced as "not economics" (Buiter).

The euro and the ECB

The ECB has consistently maintained that, in setting interest rates, it has taken no account of the effect on the euro's exchange rate. Movements in the exchange rate nevertheless form one factor in the "second pillar" of the ECB's monetary strategy: the broad range of indicators as to possible future levels of inflation. So far the ECB has not published details of the model used for integrating the various indicators, the weighting of the exchange rate, and the relative importance of effects on the HICP and core rates of inflation.

Details are available, however, of how the ECB defines the euro's overall effective exchange rate: a narrow definition, based on the currencies of the euro area's 13 most important trading partners; and a broad definition, based on 39 trading partners. Other definitions are used by the OECD and the IMF. The weightings are based on a three-year average of trade in manufactureds. Calculations of the euro's external value vary depending on the definition and weighting used, and on whether nominal or real rates are used.

Using the OECD definition of 30 trading partners, the euro fell by only about 10% in 1999, as opposed to 14.2% against the dollar and 22.4% against the yen. Concentration on the dollar rate may be justified, however, by the importance of capital flows.

Should there be an exchange rate policy?

Exchange rate targeting for the euro area was specifically rejected by the ECB's precursor, the European Monetary Institute, in 1997. Various arguments, however, can be advanced for unilateral exchange rate targets, or for multilateral systems of fixed rates.

- Linking one's exchange rate to a "strong" currency can be an alternative to targeting monetary aggregates or a specific rate of inflation. When Sterling "shadowed" the D-Mark between 1990 and 1992, the rate of UK inflation fell from 10.9% to 3.6%.
- Alternatively, targeting the exchange rate at as low as possible a level commensurate with price stability and the avoidance of retaliation can stimulate economic growth. It has been asserted that this was the policy of the euro area, by accident or design, in 1999.

- Keeping exchange rates within "target zones" would reduce volatility and improve conditions for trade and investment. Robert Mundell has recently proposed, for this reason, that the euro and the dollar should be kept within a 2 cent margin either side of 1:1 parity.
- Were exchange rates to be maintained at a rate reflecting economic fundamentals – that is, at some definition of "equilibrium" rates – misalignments would be avoided, together with the distortions of monetary and economic policy to which they give rise.

Such policies, however, face a number of problems.

- **Picking the target rate.** No agreed definition of "equilibrium" exchange rates as yet exists; and the markets have a habit of falsifying the calculations of economists and model-builders. On the other hand, monetary authorities might pick a plausibly sustainable nominal rate and declare that it would be supported no matter what. Market forces would themselves ensure convergence on that rate.
- **Sustaining the rate.** For this to succeed, however, there would need to be full commitment by the central banks, administrations and political systems of all the countries involved. The burden of intervention would need to fall primarily on the monetary authorities of *appreciating* currencies.
- **The conflict with internal monetary policy.** Anything short of full monetary union, however, would produce problems such as those of setting interest rates. The EU has already experienced the inadequacy of "half-baked" systems, and drawn the conclusions.
- **Institutional problems.** Particular institutional obstacles to an exchange rate policy exist in the case of the euro area. The various responsibilities of the ECB, the EU's ECOFIN and the euro area's "Euro Group" are complex and unclear. One explanation advanced for the fall in the euro's exchange rate, indeed, has been that "no-one is in charge".

It is not necessary, however, to believe in World Monetary Union, or even exchange rate targeting, in order to argue for a more concrete exchange rate policy for the euro area. This might include the following elements:

- A solution to the institutional problems outlined above. Co-ordination, at the very least, is needed to ensure that all statements on the euro exchange rate are agreed; coherent; and supported, where necessary, by agreed and coherent action.
- Greater transparency. The European Parliament's Economic and Monetary Affairs Committee provides a public forum, in which the ECB, the Commission and the ECOFIN and Euro Group presidencies give evidence and answer questions.
- Publication by the ECB of the model outlining how it sees exchange rate movements affecting inflationary expectations, and the interaction of interest and exchange rates.
- A more general analysis of why the exchange rate of the euro has behaved as it has. A large number of explanations are on offer, some precise (e.g. the interest rate and growth rate gaps), some unquantifiable (uncertainty about ECB policy and the "Greenspan factor").

Finally, it may be that the difficulties experienced by the euro - and by the ECB in conducting euro area monetary policy - are in part due to the fact that there is widespread disregard for, ignorance of or disbelief in its existence. Only when national *specie* has been replaced by euro notes and coins at the end of February 2002 will accurate assessments be possible.

Introduction

Commentators gave the first year of the euro a mixed reception.

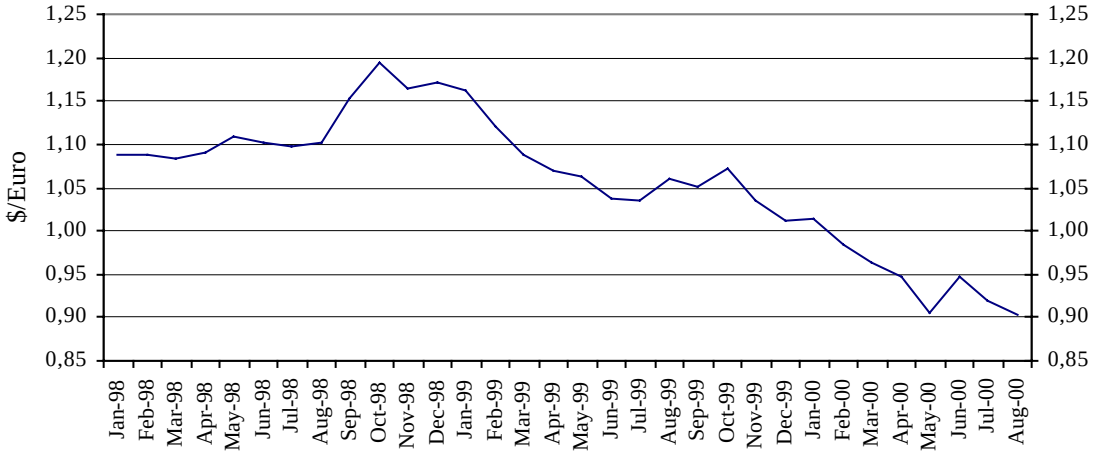
On the one hand, the European Central Bank (ECB) was justly praised for having entirely fulfilled its primary task of ensuring price stability. The headline rate of inflation in the euro area remained below 1.5% as 1999 ended, despite a substantial rise in the price of oil. This was comfortably below the ECB's own 2% definition of price stability. Core inflation – that is, with one-off factors like the oil-price rise stripped out – was lower still. More significantly, inflationary expectations, as measured by the yields on €-denominated bonds, also remained low. On the other hand, there were some doubts about the details of the ECB's "twin pillar" monetary policy strategy. One of these pillars is a "reference value" of 4.5% for the rate of growth of the monetary aggregate M3, confirmed by the ECB's Governing Council at its 2 December 1999 meeting. Yet M3 was growing at a rate above 6% in the closing months of that year.

However, the main source of doubt was the external value of the euro, in particular its parity against the dollar. In its first year of trading, the euro lost 14.6% of its value in dollar terms (though this figure was distorted by the "europhoric" anticipatory rise in value of the €-currencies during the second half of 1998). Despite a recovery in mid-1999, the euro ended the year almost exactly at 1:1 with the dollar.

Among officials, economists and commentators, there was a widespread feeling that the euro was undervalued at this level – that, in the words of ECB President Wim Duisenberg, it had "room for appreciation". With euro area growth picking up strongly, a trade surplus and low inflation, the currency's external value would soon begin to reflect its "fundamental strength".

But the markets thought otherwise. The euro continued to fall, going under $0.90 by the beginning of May 2000, a level almost 25% below its dollar value in January 1999.

Chart 1: US$/€ Exchange Rate[1] (January 1998-August 2000)



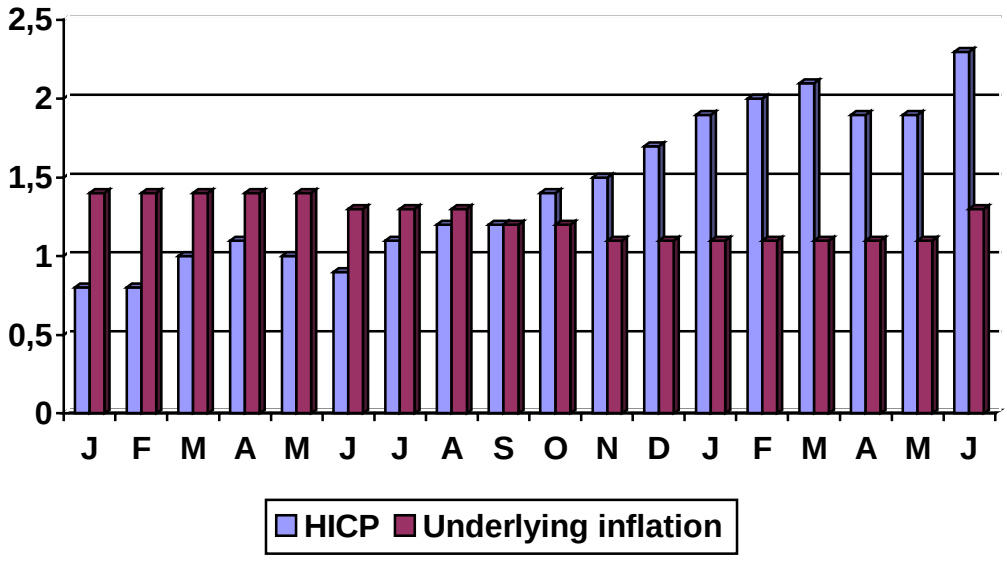
Sources: Eurostat and ECB.

[1] Monthly averages. Before December 1998, average of basket of the ten euro area currencies' exchange rate against the dollar.

The ECB itself repeatedly pointed out during in 1999 that it was concerned only with internal price stability, and that this was not being affected by the euro's depreciation. During early 2000, however, the ECB was obliged to modify its attitude. Combined with the sharp rise in oil prices, the falling parity of the euro was putting an "upward pressure on import and producer prices". This, in turn, threatened to trigger secondary effects, notably increased wage demands. Inflationary expectations might rise, leading to a rise in long-term interest rates.

By March 2000, indeed, the headline rate of inflation in the euro area, at 2.1%, exceeded for the first time the ECB's own 2% definition of price stability. In June 2000 it reached 2.4%. The ECB had already by the end of 1999 acted against the "upward risk" to price stability, raising its three main interest rates in November. Further rises were made in February 2000, and again in March, in April, in June and in August.

Chart 2: HICP and Underlying Inflation in the Euro Area, January 1999-June 2000



Source: ECB

The initial interest rate rises, however, had no apparent effect on the euro's exchange rate, which fell over 10% against the dollar in the first five months of 2000. Nor were they intended to. The ECB adhered strictly to the position that its concern was only with the euro's *internal* value. It was not until the widely-anticipated 0.5 percentage point rise in June that there was a demonstrable external effect.

These events have raised a number of theoretical and practical questions.

"Benign Neglect"

Two of these had by mid-2000 become of particular interest. First, was the ECB really following the model set by the US Federal Reserve Bank of "benign neglect" towards the euro's external parity? And secondly, was such a policy the correct one?

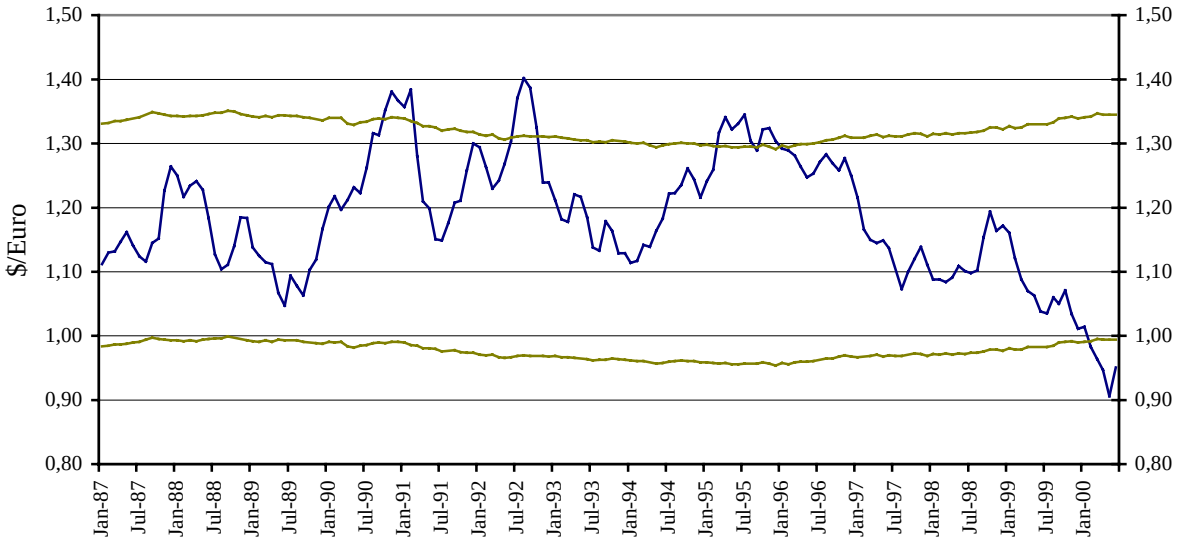
To the first, a somewhat Delphic reply had already been given to the European Parliament's Economic and Monetary Committee by Wim Duisenberg in April 1999.

> *"Not having an exchange rate policy – and we have no policy – does not mean that there is benign or malign neglect. For the time being there is neglect."*

On the second, a number of views are possible.

For example, in historical terms, the parity of the euro against the dollar during 1999 and early 2000 has not been significantly outside its (i.e. the pre-1999 "synthetic euro's") normal trading range over the last twelve years (see Chart 3). It has also been widely argued that a fall in the euro's parity was exactly what was needed to "kick start" economic activity in the euro area[2]. The lower exchange rate has clearly stimulated euro-area exports, playing a significant part, in particular, in German economic recovery.

Chart 3: Exchange Rate[3] and Fluctuation Band[4] US$ per € (1987-2000)



Sources: ECB, Eurostat, and US Department of Commerce: Bureau for Economic Analysis.

[2] The declining parity of the euro has been a source of great satisfaction to Eurosceptic opinion, particularly in the UK. It is perhaps forgotten that the sharp decline in the parity of Sterling after its exit from the ERM in September 1992 had the then Chancellor of the Exchequer, Norman Lamont (now a prominent Eurosceptic), "singing in his bath" – and with some justification, since the lower Sterling parity played a considerable part in the subsequent recovery of UK production.

[3] Monthly averages. Before December 1998, average of basket of the ten euro area currencies exchange rate against the dollar

[4] Index of purchasing power of the euro with respect to the dollar. Fluctuation band represents +/- 15% changes in PPP index.

On the other hand, there is no doubt that the steady and unanticipated fall in the euro's rate against the dollar has had a damaging psychological impact. The new currency is regularly described as "weak", no matter how often the ECB points to its internal stability.

> *"From birth, the euro's external value has been going downhill – not the way for a currency to build up a good reputation at home and abroad. And that before the notes and coins have even come into circulation."* (Deutsche Bank Research, 2000c)

Public support for the Single Currency has also fallen. The Commission's Eurobarometer opinion poll, for example, found support in Germany down to only 50% in April/May 2000[5]. The widening of the spread between German and Italian bonds (both, of course, denominated in euro) during those months was even taken as evidence that the markets were building in a "risk premium" that EMU would eventually disintegrate.

But it is also possible to see "benign neglect" as not so much a deliberate policy as the result of institutional faults – "*the euro-zone's problem is that nobody is in charge of exchange policy.*" (Munchau, 2000). The Treaty gives the ECB no mandate to conduct an exchange rate policy, even if it wished to; and the remit of the ECOFIN Council to do so is unclear.

The effects of exchange rate movements

Whether there is a policy of "benign neglect" or not, the questions still arise: what are the actual effects of exchange rate movements? And what are the implications for the conduct of economic and monetary policy? The answers provided by economic theory are anything but clear-cut, though a number of theoretical aspects can be identified.

- The **under-valuation or over-valuation** of a country's currency – though no agreed benchmark exists as to what a "correct" or "equilibrium" exchange rate might be (see section 1.5) – can boost or damage that economy's international competitive position. When a currency is under-valued, the demand for exports rises, and import-substitution is encouraged, stimulating economic growth and a trade surplus, but creating inflationary pressures. An over-valued currency makes imports cheaper and exporting more difficult, so curbing inflation but leading to a possible trade deficit and a reduced growth rate.

  So much is relatively uncontroversial. More interesting, but less answerable, is whether an under- or over-valued exchange rate can be sustained over long periods. Where a currency is under-valued, inflation may erode its value and return it to an equilibrium rate; or a rising trade surplus may cause it to appreciate to a higher equilibrium rate. Similarly, the stimulus to cost-saving may result in the over-valued parity of a currency eventually becoming its equilibrium rate – an experience widely attributed to the former West German economy; or rising balance of payments deficits may result in depreciation to a lower equilibrium rate.

  Unfortunately, experience does not always bear out such theoretical predictions. Despite a US current account deficit now equal to 4% of its GDP, the dollar has for some years defied all those analysts who have predicted that its "overvaluation" cannot last. Exchange rate misalignments considered unsustainable from the point of view of economic fundamentals have in the past continued for years, even decades.

[5] The overall EU decline was, however, only marginal, with support for the euro at 58%. Support in countries where the constituent national currencies had previously experienced devaluations was markedly higher (Italy 81%, Spain 75%), than those whose national currencies had been considered "hard" (e.g. Netherlands 48%).

- **Movements in a currency's exchange rate** can have certain immediate effects on an economy. Depreciation will raise the price of imports, which may then feed through into producer prices and the general rate of inflation through various secondary effects – for example, wage pressure. Indeed, it has been widely assumed for some time that "devaluation does not work", meaning that the competitive advantage to be gained from depreciation will rapidly be eroded through inflation. The experiences of the £ Sterling in the 1960s and the 1970s are often cited as evidence.

  However, it can also be argued – using the same example of the UK, this time in the 1990s – that devaluation *can* work, provided that the accompanying monetary policy is correct: i.e. that inflation is not accommodated. Likewise, an appreciating currency may act as a damper on inflationary pressures, and on "over-exuberant" growth, though this has clearly not been the case with the US economy.

  Nor is it certain that movements in the exchange rate are irrelevant to the conduct of monetary policy as long as inflation remains subdued. Movements in interest rates caused by events in foreign exchange markets provide one contrary possibility.

  More obviously, any measures taken to influence the exchange rate may have immediate effects on internal monetary policy. For example, a policy of bringing down the external value of a currency through the purchase of other currencies with Central Bank money will create internal inflationary pressures unless the transaction is "sterilised" though special deposits and other measures. Any system of exchange rate targeting, whether autonomously or as a result of international agreement, will have consequences for internal monetary policy. An exchange rate target, indeed, can be considered an alternative to the targeting of monetary aggregates or of inflation.

- Finally, and irrespective of the actual level of a currency's parity**, the volatility of exchange rates** can have important economic consequences. A high degree of volatility will raise the cost of hedging against currency fluctuations, so raising the costs of trade between currency areas. Paradoxically, as a recent IMF study (Mussa, Masson, Swoboda, Jadresic, Mauro and Berg, 2000) notes, such cost-raising volatility has recently increased as a result of "*dramatically lowered transaction costs in financial markets*", itself the result of the revolution in telecommunications and information technology.

  A high degree of exchange rate volatility also affects the domestic economy by influencing the behaviour of firms. Apparently profitable investment can suddenly become unprofitable, though no economic fundamental has changed (*vide* BMW's investment in Rover Cars). Financial markets will be destabilised and capital will be misallocated.

  Volatility also feeds on itself: small fluctuations can rapidly become larger as the result of "bandwagon" effects and the tendency of the foreign exchange markets to overshoot (see next section). Volatility is also "catching":

  > *"The simultaneous fluctuation of exchange rate volatilities around the world implies that exchange rates between currency pairs do not necessarily reflect current macroeconomic fundamentals in two countries, but are affected also by the broader conditions in the world economy over which policy makers might have little control."* (Brousseau and Sacciavillani, 1999)

Finally, the dislocating effects of overshoot are compounded by the often sudden, unpredictable and sharp nature of the turnarounds.

> *"The history of economic cycles suggests strongly that important financial trends usually go into reverse when a majority of investors least expect it."* (Kaletski , 2000)

This makes the conduct of monetary policy a great deal more difficult. The deflationary effects of a rising exchange rate, for example, can disguise inflationary tendencies in the domestic economy. A sudden collapse of the rate can then unleash inflationary pressures, falsifying the expectations on which the monetary stance is based.

It can also be argued, however, that the effects of exchange-rate volatility have been exaggerated; and, in particular, that short-term parity movements have no real consequences for the conduct of monetary policy.

Even the effect on trade is equivocal: a number of studies have shown little or no correlation between currency volatility and overall trade levels. This may be, as the OECD argues, because there now exists a wide and sophisticated range of financial instruments, enabling traders to hedge fully against exchange rate movements within the time-scale in which they generally operate.

The extent to which any of these effects impact upon an economy, and influence the conduct of monetary policy within it, is of course determined by the extent of its external exposure. In part this is a function of foreign trade: one important reason for the creation of the euro itself was to reduce the proportion of the participating countries' GDP traded between currency areas. The euro area's external exposure has in fact fallen from about 30% of GDP to about 16% (see Table 1).

Table 1: US and Euro Area Trade as a Proportion of GDP

	€ area (%)	***US (%)***
Exports	16.9	10.8
Imports	15.4	13.5

Source: ECB July Bulletin

In conditions of free capital movements and increasing globalisation, however, exposure to international financial flows is possibly of even greater significance. Until the first quarter of 2000, the euro area enjoyed a surplus on current account (see Table 2). But this was exceeded by the net outflow of capital as a result of direct and portfolio investment (see section 1.5.3).

*

This study, which has been requested by the European Parliament's Economic and Monetary Affairs Committee, sets out to examine some of these issues.

In Part 2, it looks at the extent to which exchange rate movements impact upon inflation and economic growth, and the consequences for monetary policy, as well as the definitions and models used by the ECB, the Commission and other bodies. It concludes by examining whether there should be a target exchange rate for the euro in terms of the dollar; and the problems of both achieving and maintaining one.

It starts, however, by looking in Part 1 at two important *questions préalables:*

- How are exchange rates determined? And
- Is there such a thing as a "correct" exchange rate?

1. The Determination of Exchange Rates

1.1. The rational and the irrational

Economic theory has a tendency to assume that exchange rates, like other prices, are rationally determined.

> *"Exchange rates are relative prices of national currencies, and under a floating rate regime they may naturally be viewed as being determined by the interplay of supply and demand in foreign exchange markets*." (OECD, 1985).

Economics textbooks, indeed, usually contain simple models of a Country A trading with a Country B. If B buys more from A than *vice versa*,

(i) A will have a trade surplus – and B, of course, a deficit; and

(ii) A's currency will be more in demand than that of B and will appreciate against it.

A's exports will then become more expensive, so B will buy fewer of them. B's exports will become cheaper, and A will buy more of them. Equilibrium will be restored. This equilibrium will be within parameters where the benefits of trade – achieved through the exploitation of comparative advantage – will accrue in some measure to both economies[6].

In the long run, and at the extreme, market exchange rates are certainly likely to reflect economic realities. A monetary authority which shamelessly funds public expenditure by printing bank-notes will find that its currency depreciates on the foreign exchange markets as traders become reluctant to accept it in payment. By contrast, a country can gear its economic and monetary policies towards a long-term reputation for having a "strong" currency, so attracting funds and ensuring that the objective is self-fulfilling.

However, in the short- to medium-term – that is, within the time-scale on which FOREX markets mostly operate – it is equally plausible to argue that exchange-rate movements are entirely random. Indeed, "random walk" models, based on probability theory alone, appear to have as good a predictive power as others.

The search for rationality is also bedevilled by the key role in exchange rate markets, as in other financial markets, of *expectations*. One result is the tendency of exchange-rate adjustments to "overshoot". For example: a fall in domestic interest rates leads to an outflow of capital, which in turn leads to a depreciation of the currency to *below* long-run equilibrium level. The depreciation continues until expectations of an appreciation back towards equilibrium offset the lower interest rate.

Moreover, expectations are not necessarily fulfilled. Though the forward markets may be based on predictions about future interest and exchange rates in a month's or a year's time, the *actual* rates when the time comes may be quite different. Indeed, research has repeatedly shown that the forward currency markets are bad predictors of future spot rates.

The apparently irrational nature of short- to medium-term exchange-rate movements is further illustrated by the unpredictable effects of policies designed to influence them. An increase in key Central Bank interest rates, or Central Bank intervention in the currency markets themselves, *may* have the intended, rational effect of supporting a currency's parity. Theory predicts that

[6] The analysis first developed by Ricardo.

such policies will work both through normal market mechanisms, and *via* the "signalling" channel through which the action provides the markets with information on the authorities' stance. But the actual effect may be exactly the opposite. The "signal" given out, for example, may be read as panic rather than a determination to support the existing parity (Fatum, 2000)[7]; or it may merely be misread by the media and markets (see Box 1).

Box 1: Signalling Problems

"The depreciation of the dollar in 1994 and early 1995 had little or no basis in fundamentals. In my view, it could only be attributed to a circular dialectic in which the traders sold dollars in the mistaken belief that the US Administration wanted the currency to depreciate, in confirmation of which they would cite newspaper reports. The journalists who wrote the stories about a weak-dollar policy ignored actual Administration statements and interventions in support of the dollar during this period, and instead tended simply to cite as evidence that the dollar was in fact depreciating. Ultimately the cycle was broken when central bank intervention – carried out in a coordinated and newsworthy manner – was able to convince observers of the Administration's intentions, and to help bring the market back to reality in mid-1995."

Professor Jeffrey A. Frankel, Harvard University, in *On the euro: the first 18 months* (Deutsche Bank Research, July 7, 2000).

Interest rate changes may likewise have perverse effects because exchange rate movements can have a number of different causes. A substantial rise in euro interest rates to close the interest rate gap with the dollar, for example, might have the effect of raising the €/$ parity. But if, as many have concluded, the cause of the euro's depreciation is the EU/US *growth* rate – and not the €/$ interest rate – differential, the effect might well be a further fall in the euro parity (see sections 2.4 and 2.8).

Exchange rates, moreover, need not reflect market forces at all. Given sufficiently rigorous exchange controls, and sufficiently draconian penalties against black markets, countries may well maintain arbitrary "official" rates for long periods. Since the State will be the monopoly supplier of the currency, and often the monopoly trader as well, foreigners may be obliged to accept such rates. If not, the economy can retreat into autarky.

On a less extreme level, market forces may also be tempered by political or institutional considerations. Systems like that established by Bretton Woods, or the pre-euro European Monetary System, aimed to eliminate market volatility by ensuring that parity changes only took place only in response to "fundamental" changes in the real economy.

At first sight, such systems appear highly rational. As the events of the early 1970s and 1990s showed, however, they are vulnerable when the unexpected occurs – i.e. events not taken into

[7] See, for example, Kaminsky and Lewis (1996) and Fatum and Hutchison (1999) in relation to sterilised intervention, quoted in *On the Effectiveness of Sterilized Foreign Exchange Intervention* by Rasmus Fatum, ECB Working Paper 10, February 2000.

account by the model used. A similar fate overtook the hedging strategy of the two Nobel Prize winners behind the Long Term Capital Trust.

Even bodies with access to considerable expertise and sophisticated econometric models achieve poor predictive results. The 1985 OECD paper already quoted tested three theoretical exchange rate models:

i) A "flexible price monetary (or 'monetarist') model";

ii) A "sticky-price monetary (or 'Dornbusch') model"; and

iii) A "portfolio-balance model with static or stable exchange rate expectations".[8]

The Appendix then describes how,

> *"…following initial results for all three models which seemed favourable, all three broke down under later scrutiny – in particular when they were confronted with the task of explaining important exchange rate developments after 1976."*[9]

BOX 2: Operating in the FOREX markets

"The euro was the bust of 1999, falling from a value of $1.19 on Jan. 1 to an even dollar at the close of business on Dec. 31. In the Sept. 6, 1999, issue of FORBES GLOBAL I recommended that readers purchase six-month euro put options with a strike price of 1.01 euros to the dollar. At the time these puts cost 0.6% of the face value of the contract (for example, an option premium of $6,000 for a $1 million contract). The euro has subsequently dropped to just below $1 and these put options are now worth 3% - five times their original cost late last summer…"

When the euro was launched a year ago, investors latched on to the theme of Europe's becoming a global economic powerhouse overnight. The reality of creating an integrated economy amid great cultural diversity is another matter. What started as exuberance has turned into disappointment. The euro will surely recover at some point, but the last vestiges of overoptimistic expectations have to be fully cleansed first. The recent drop in the euro smacks of such a washout. In sum: it's too risky to buy puts on the euro, but it's also too early to buy euro call options".

Andrew J.Krieger in Forbes GLOBAL, Capital Markets and Investing, January 24, 2000

http://www.forbes.com/forbesglobal/00/0124/0303065a.htm

Indeed, irritatingly for economists, mathematicians and similar specialists, the power to predict exchange rate movements – as measured by the ability to make money out of the predictions –

[8] These correspond roughly to the PPP, UIP and Portfolio Balance models outlined in following sections of this study.

[9] *op. cit.* p.128

seems to be as much a matter of *Fingerspitzengefühl*[10] as of systematic analysis (see Box 2). Most tipsters wisely hedge their bets:

> *"Since its current level cannot be explained by the fundamentals, the currency (€) could either fall or recover earlier and more steeply than expected."* (Deutsche Bank Research, 2000c)

1.2. Trade and the balance of payments

Theoretical models of exchange rate determination therefore have limitations. Nevertheless, they do point to relevant economic factors.

The simple two-country model outlined in the previous section, for example, has been the main working hypothesis behind most fixed exchange rate systems like that established at the Bretton Woods conference. Exchange rates were there viewed as policy-determined "pegs", which could be adjusted to correct lasting disequilibria in current account balances of payments.

The model can be elaborated to include the impact of monetary policy. For example, an excessive rise in the domestic money supply will lead to a rise in the price level as expressed in that currency. If exports are to be maintained, the exchange rate will then have to fall to the extent necessary to keep down their price to foreign buyers using less inflationary currencies. Conversely, if a country's domestic monetary policy maintains a stable internal price level (the primary objective of the European System of Central Banks), the prices of its exports will seem attractive to those living in more inflationary economies. The demand for its currency – to buy its exports – will rise, leading to a rise in the exchange rate.

How far does this model correspond to reality? At first sight, it appears almost comically perverse when applied to the current situation. In 1999, the euro area ran an external current account *surplus* amounting to about 1% of GDP (see Table 2). The United States meanwhile had a *deficit* in 1999 equal to 3.7% of GDP (a figure expected to rise to 4% for both 2000 and 2001). If exchange rates change to restore balance of payments equilibrium, why is it that the dollar *rose* against the euro, rather than the reverse?

One immediate explanation lies in the truism that "the balance of payments always balances". If a country runs a current account deficit, there must be an inflow of capital to finance it – imported goods are not generally supplied free. Provided external sources of finance are prepared to lend, a trade deficit can be run almost endlessly, as the United States has discovered.

A critical factor, however, is the expected stability of the currency. If lenders once begin to fear a depreciation, the capital will begin to flow out, leading to the kind of balance of payments crises experienced by the UK in the 1950s to 1970s. A prudent domestic monetary policy is a condition of financing a long-term current account deficit by a long-term capital account surplus.

The fact that the balance of payments must balance also implies that a surplus of capital transfers will lead to a deficit on current account. The money must go somewhere; and much of it is likely to be spent on imports. When an economy is growing rapidly, it will suck in capital, in part because interest rates will seem attractive, in part because there will be profitable investment opportunities. This has been the position of the United States for several years. High growth has both attracted investment capital and caused the Fed to maintain interest rates at prudent levels.

[10] Literally "feeling with the fingertips": a mixture of instinct and experience.

Table 2: Balance of payments of the euro area and US, 1998/1999

EURO AREA								**MIO €**
	1998				**1999**			
	1st q	2nd q	3rd q	4th q	1st q	2nd q	3rd q	4th q
GDP (Seasonally adjusted data)	1,446.4	1,459.8	1,474.1	1,490	1,505.6	1,515.5	1,535	1,551.6
Balance of Current account	2.9	15.8	12.7	11.8	6.4	8.6	4.5	4.9
as % of GDP	0.2	1.1	0.9	0.8	0.4	0.6	0.3	0.3
Balance of goods and services	20.7	30.5	31.6	29.9	18.2	25.1	25.2	24.4
as % of GDP	1.4	2.1	2.1	2.0	1.2	1.7	1.6	1.6
USA								**MIO $**
	1998				**1999**			
	1st q	2nd q	3rd q	4th q	1st q	2nd q	3rd q	4th q
GDP (Seasonally adjusted data)	2,152.7	2,170.9	2,199.5	2,236.9	2,268.2	2,286.6	2,323.8	2,365.0
Balance of Current account	-33.7	-51.4	-73.9	-61.6	-59.6	-80.9	-89.9	-99.8
as % of GDP	-1.6	-2.4	-3.4	-2.8	-2.6	-3.5	-3.9	-4.2
Balance of goods and services	-24.9	-41.0	-55.8	-42.5	-54.2	-65.2	-72.6	-75.5
as % of GDP	-1.2	-1.9	-2.5	-1.9	-2.4	-2.9	-3.1	-3.2

Sources: International Financial Statistics, January 2000, IMF; EUROSTAT: Stat in Focus No 37/1999, New Cronos; US Census Bureau.
Production: JDa/Parliamentary Documentation Centre/European Parliament

Indeed, one explanation which has been advanced for the behaviour of the €/$ exchange rate in 1999 is the deficit experienced by the euro area on the long-term capital account (see Chart 8). The outflow of investment in equity was 70% up on the same period in 1998, direct investment up 53%. The Bank for International Settlements has commented that this has in part been because "the newly created euro may have proved too successful".

> *"Larger and more liquid markets, along with relatively low interest rates, encouraged the issue of euro-denominated bonds whose proceeds could then be exchanged and used to finance investment elsewhere."* (Bank for International Settlements, Basle, 2000)

More critically, Tony Barber of the *Financial Times* concluded that

> *"Far from underlining the euro-zone's economic edge over the US, the region's current account surplus actually reflects a relative lack of attractive investment opportunities compared with across the Atlantic."* (Barber, 2000)

However, caution is necessary when examining only bilateral statistics. In a paper prepared for the European Parliament's Economic and Monetary Affairs Committee, Wyplosz (2000) asserts that "current views that emphasise capital flows from Europe to the US are unwarranted".

> *"…if Europe invests in the US but the rest of the world invests in Europe, there is no reason for the euro to be weak. Overall net capital movements in and out of Europe have not changed over the last years, so there is no reason to look at a particular subset of these flows."*

It can also be argued that the flows of capital are less important than the operation of the markets in assets. A recent ECB working paper by Detken and Hartmann (2000) indeed attributes part of the euro's fall against the dollar to the "excess supply" of €-denominated assets on world markets following the start of EMU Stage 3, compared to the demand for those assets by non-euro-area investors.

1.3. The interest rate gap

The simplest explanations are sometime the best; and it is possible to attribute movements in exchange rates entirely to comparative changes in short-term interest rates.

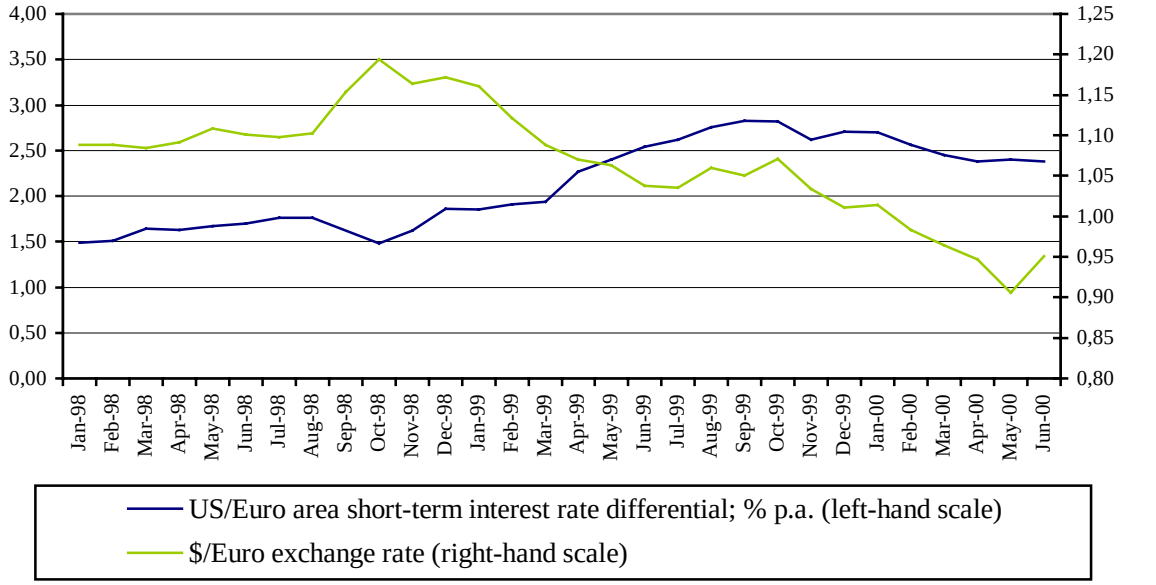
The value of international exchange transactions is generally estimated at between $1 and $1.5 *trillion each day*, only 5% of which is directly related to trade in goods and services. Movements of short-term capital in search of higher real interest rates can easily overwhelm any influence of the current account on exchange rates. Movements in the exchange rate of any two currencies will then reflect changes in the short-term interest rate gap between them.

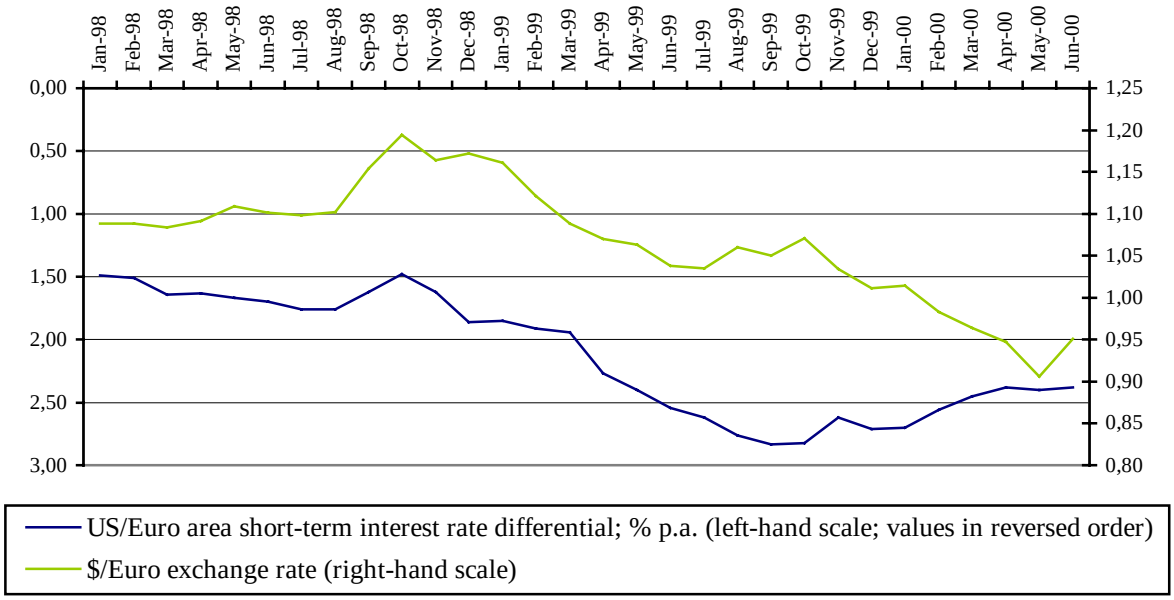
Changes in the interest rate gap do indeed go some way towards explaining the movement of the €/$ exchange rate during 1998-2000. Given that over the period US short-term rates were higher than those in the euro area, a narrowing of the gap coincided with a rise in the euro, a widening of the gap with a fall (see Chart 4). Only the period between November 1999 and May 2000, when both the gap and the exchange rate were falling, does not fit the simple pattern. Over the longer term, too, there is also correlation between changes in the short-term interest rate gap and changes in the rate of exchange (see Chart 5).

Short-term interest rates, however, cannot give a complete picture. It is true that new technologies are increasingly facilitating very short-term movements of funds; and those making short-term deposits need only consider the *nominal* rate gap.

In the case of longer-term investment, however, medium and long-term rates are of greater significance, particularly yields in the bond markets (see Chart 7). Moreover, in the medium and long-term it is the *real* interest rate gaps (see Chart 6) that are significant – or, to be precise, the risk that differing rates of inflation will lead to future changes in the exchange rate. The longer the term of the investment, the greater the risks.

Chart 4: US and Euro Area Short-term Interest Rate[11] Differentials and the Exchange Rate[12] (January 1998-June 2000).



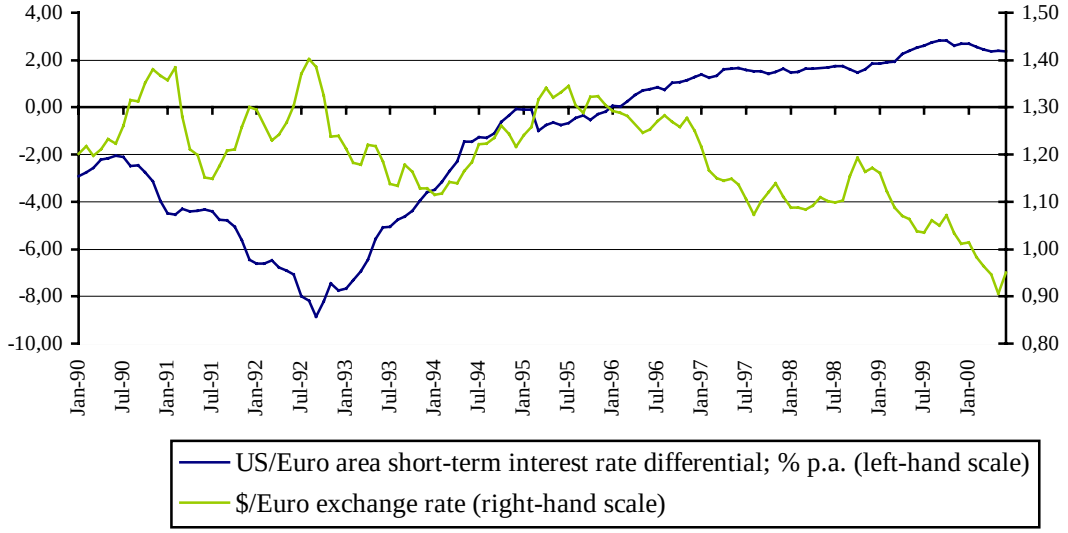


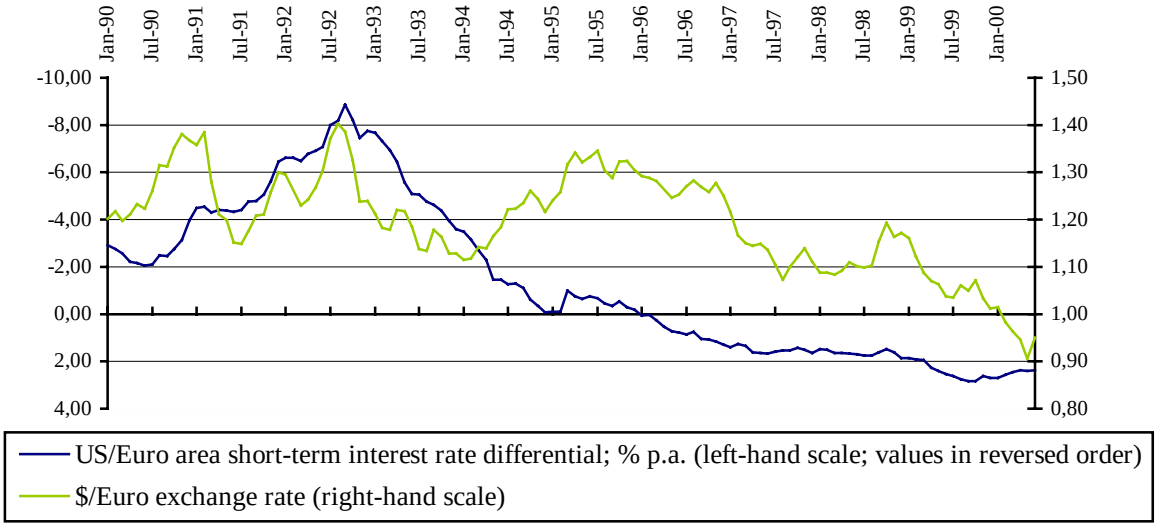
Source: Eurostat

[11] 3-month money market rates, monthly averages. Before December 1998, average of basket of the ten euro area currencies.

[12] Monthly averages. Before December 1998, exchange rate of dollar versus average of basket of the ten euro area currencies.

Chart 5: US and Euro Area Short-term Interest Rate[13] Differentials and the Exchange Rate[14] (1990-2000).



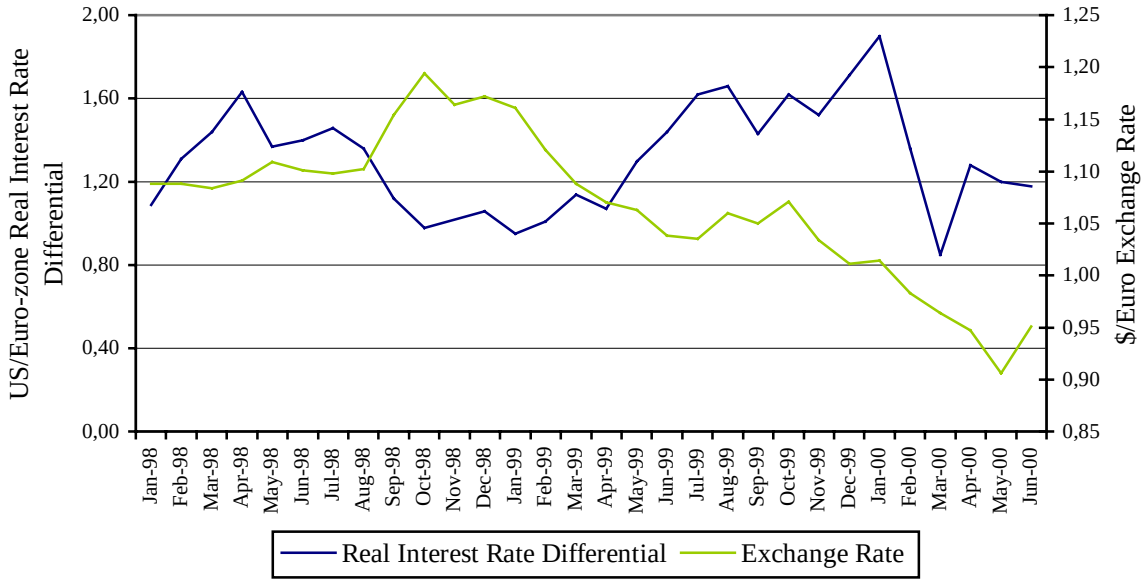


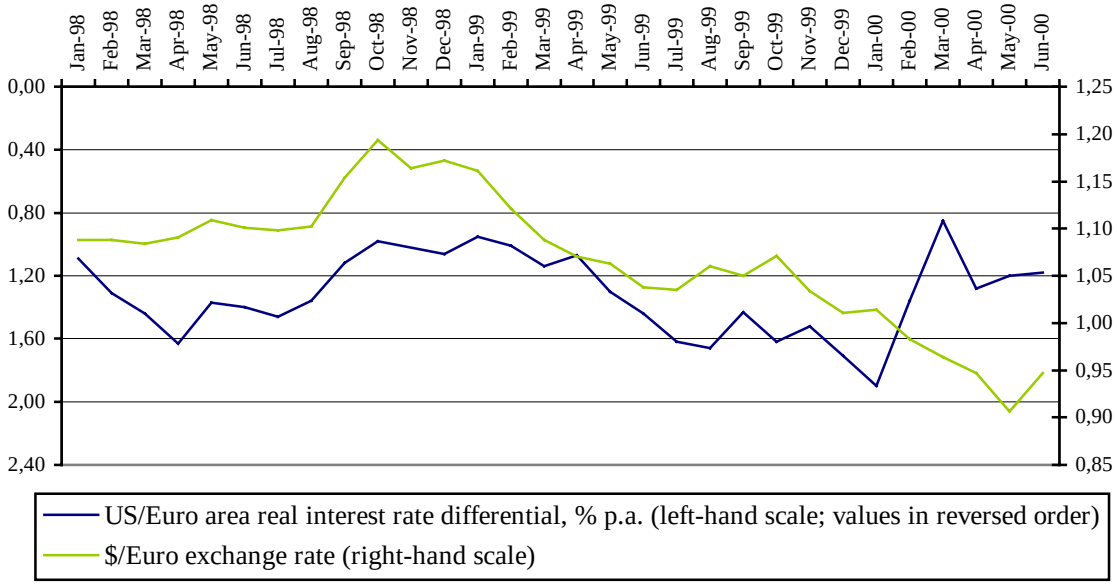
Source: Eurostat

[13] 3-month money market rates, monthly averages. Before December 1998, average of basket of the ten euro area currencies.

[14] Monthly averages. Before December 1998, exchange rate of dollar versus average of basket of the ten euro area currencies.

Chart 6: US and Euro Area Short-term Real Interest Rate[15] Differentials and the Exchange Rate[16] (January 1998 – June 2000[17])

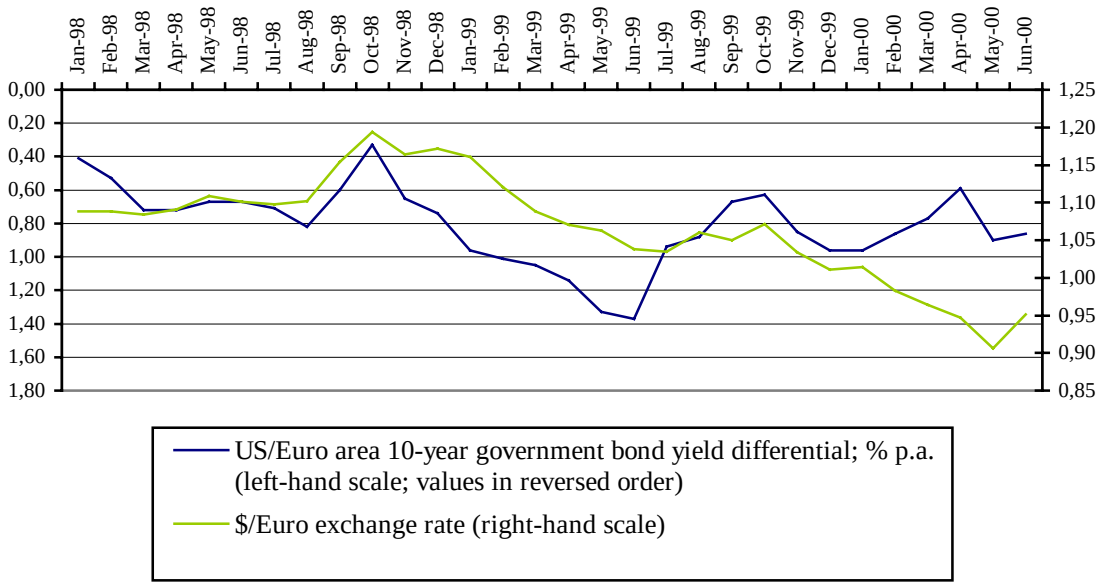


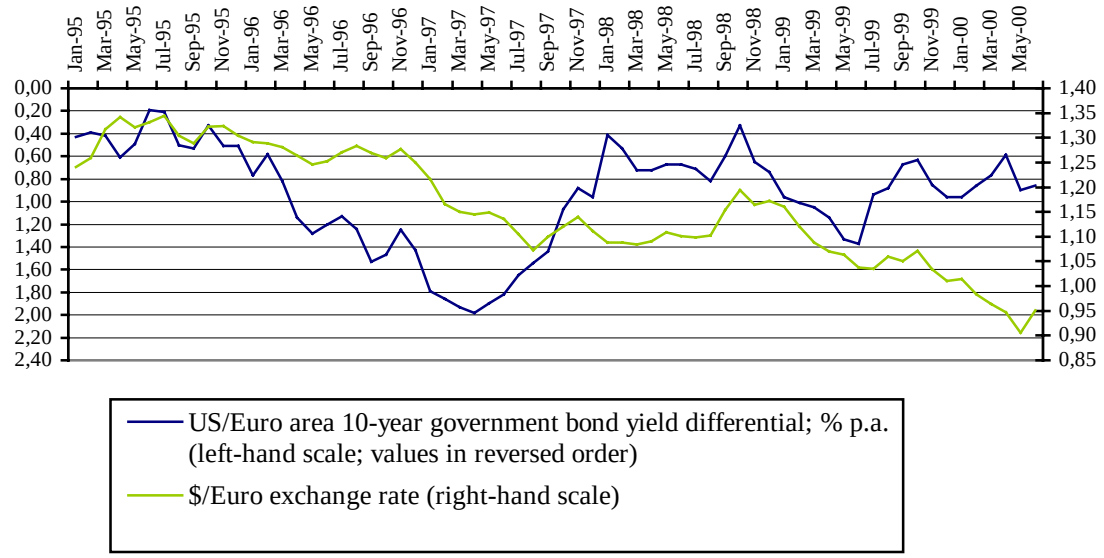


[15] 3-month money market rates, monthly averages, taking into account inflation differentials. Before December 1998, average of euro area short-term interest rates.

[16] Monthly averages. Before December 1998, average of 10 euro area currencies' exchange rates against the dollar.

Chart 7: US and Euro Area 10-year Government Bond Yield Differentials[18] and the Exchange Rate *(monthly averages)*.





Sources: ECB and Eurostat

[17] June value as of 2 June 2000.

[18] Before January 1998, 10-year German government bond yield for the euro area.

1.4. Uncovered Interest Parity (UIP)

Uncovered Interest Parity theory predicts that exchange rates will reflect differences in the interest rates paid on a range of securities denominated in different currencies, plus or minus a risk premium. For example, the gap between the annual yields on similar bonds in any two currencies should give an indication of the expected change in their parity after a year. Bond yields, moreover, will tend to reflect decisions on monetary policy taken for internal domestic reasons in each of the currency areas. In other words, the theory proposes a direct link between current monetary policy and future exchange rates. The latter will reflect the relative laxness or tightness of the monetary stances in different currency areas.

As observed earlier, this is clearly so in the long-term and in the extreme. When the money supply is out of control, interest rates and the external value of the currency will race each other in opposite directions.

A problem with UIP, however, is that it does not have a good record as a tool for predicting exchange rate movements in the markets themselves (see Brittan, 1999). One difficulty arises from the complexity of the relationship between short-term and long-term interest rates, and the fact that interest rates set by central banks are in any case only one of the influences on long rates (for a fuller treatment, see European Parliament, 2000a). A second difficulty lies in the risk premium condition, a major component of which is precisely the odds on the currencies concerned falling or rising in value.

For example, it may be expected that the return on the benchmark bonds of Country A will be 5% p.a., while that on the bonds of Country B will be 10%. If it is also expected that the currency of B will depreciate by less than 5% over the year, there will be flow of capital from A to B. If B's currency is expected to depreciate by *more* than 5%, the flow will be the other way.

This is logical investment behaviour; and the resulting capital flows will help make the exchange rate predictions self-fulfilling. But since the model depends on two sets of guesses by market participants – on future interest rates and on the future exchange rates themselves – its predictive powers can only be as good as the guesses themselves.

1.5. Is there a "correct" exchange rate?

Models of exchange-rate-determination emphasising trade flows effectively imply that *real* exchange rates will tend to be constant. Differentials in price levels will be arbitraged away by the markets as patterns of demand change and nominal exchange rates adjust accordingly. At any one time there will thus exist, theoretically, an equilibrium structure of rates.

This is not just a theory confined to economists. Journalists, politicians and businessmen frequently describe a particular currency as "overvalued" or "undervalued". Over- or under-valued against what is not always explained; but such statements imply that there exists a "correct" parity towards which the currency concerned should move. For example, a paper published by the IMF at the end of 1999 (Alberola, Cevero, Lopez and Ubide, 1999) maintains that the euro was "substantially undervalued" against the dollar, even when it was launched at the beginning of 1999. The "correct" parity was €1 = $1.26: a rate 20% above that existing at the start of 2000.

Such statements, however, illustrate a need for care when one is using the term "equilibrium". Is this a *positive*/*descriptive* concept: i.e. a rate which the markets will eventually produce once

short-term distortions have been arbitraged away? Or is it a *normative* concept: i.e. a rate which public authorities should try to achieve through monetary, fiscal, and other policies?

For some economic players – e.g. those involved in financial markets – calculating an equilibrium rate is likely to be useful largely in a descriptive sense: i.e. as a forecast. In this case, however, the words "under-valued" or "over-valued" are misleading. For example, although the phrase "the pound is over-valued" appears to have normative implications, what is really meant is: "If my calculations are correct, the parity of the pound will fall".

On the other hand, for other economic players – for example, export sales managers – and for some politicians, the term "equilibrium rate" may be less important as a forecast than as a policy recommendation. In this case the phrase "the pound is over-valued" may only mean: "I am losing export orders to the competition".

The need to calculate an equilibrium rate may, of course, only be a by-product of the need to reduce the volatility of rates within some exchange rate system. In this case, whether the rate is truly an "equilibrium" rate is less important than a general agreement that it is *sustainable*. Reaching such an agreement, however, can in the end come back to the issue of equilibrium. As a recent analysis by OECD comments in relation to the difficulties of stabilising the rates of the dollar, euro and yen within target zones,

> *"…it would be difficult to get participants to agree on the choice of central parity and the bands around it since there is no generally accepted method for calculating equilibrium exchange rates." (*Coppel, Durand and Visco, 2000)

The absence of such a method is not, however, for want of trying. A considerable number of theoretical models exist for the calculation of equilibrium exchange rates, for analysing how changes in real (as opposed to nominal or market) exchange rates occur, and for explaining how persistent deviations from such rates can arise.

1.5.1. Purchasing Power Parity (PPP)

The most common basis is that that of Purchasing Power Parity. This estimates the "real" rates that would exist if price differences between currency areas had been arbitraged away. At PPP rates a consumer with a given sum of money would find his or her purchasing power identical, no matter in which currency the sum was denominated[19].

At the level of theory, the first problem is similar to that involved in the concept of real – as opposed to nominal – interest rates: much depends on the standard of measurement. For example, if real interest rates are nominal rates *less* the rate of inflation, the calculation is likely to vary depending on the price index used.

In the case of exchange rates, how should the purchasing power of a given unit of currency be measured? In relation to the general Consumer Price Index (CPI) or the Producer Price Index (PPI)? In relation to goods and services weighted to reflect variations in expenditure and/or income patterns? Or just in relation to goods and services traded between currency areas? Few goods and services, even those traded, are exact substitutes. The theory of trade, indeed, places less emphasis on price than on product differentiation: i.e. the "international division of labour".

[19] Or, putting the concept in yet another popular way, the PPP rates are those at which the real price of a standard "Big Mac" hamburger is the same in all countries.

Though price differences may play the key role in a few (particularly commodity) markets, the evidence from OECD surveys is that most trade between developed economies is price inelastic.

In practice, world markets can never perform perfect arbitrage between currency areas. Many key components of normal domestic expenditure are not much traded (e.g. basic food): hence the possibility of different inflation rates within different regions of the same currency area.[20] Secondly, transport costs must be taken into account. Thirdly, there are the lags with which output and trade volumes respond to exogenous disturbances: exchange rates and interest rates can change quickly; production and investment plans, contracts, etc. may not. Fourthly, the effects of trade in goods and services on exchange rates can be swamped by events in capital markets (see above), which become more important as determinants of exchange rates than adjustments to trade flows.

And finally, even today – and even within the EU Single Market – we do not yet have fully free trade. Tariffs, duties, quotas, non-tariff barriers, public and quasi-public monopolies, "public interest" restrictions, national preference policies and so on are all alive and well.

As a result, nominal exchange rates nearly always deviate from PPP rates. This is obviously the case in the short term, where market volatility cannot possibly be explained by changes in relative rates of inflation. Divergence can also, however, persist for substantial periods. The exchange rate of the dollar, for example, rose steadily from the end of 1980 to peak 50% above its "real" level in 1985. It did not return to the original level until the end of the decade. If, as the text books say, "over the long run exchange rates tend to converge to their PPP values" (Lipsey and Crystal, 1995), a great deal turns on the definition of "long run". Moreover, the fact that the dollar exchange rate at the beginning of the 1990s was roughly the same as at the beginning of the 1980s may be only a statistical freak. Series for the real rates of the D-Mark, yen or pound over the same period do not show any reversion to some constant mean.

The limitations of PPP as a *predictor* of exchange rates are also illustrated by the startling fact that, in September 1992, Sterling's central parity within the Exchange Rate Mechanism of the European Monetary System was slightly *under*-valued by comparison with the PPP rate! It is not perhaps surprising that Paul Samuelson, in his seminal paper of 1964, described PPP as

> *"a misleadingly pretentious doctrine, promising us what is rare in economics, detailed numerical predictions.*" (Samuelson, 1964)

1.5.2. Balassa-Samuelson

The persistent deviation of actual exchange rates from calculated PPP rates provoked two separate papers on the subject in 1964, the first that of Paul Samelson, the other from Bela Balassa (1964). The result has become known as the "Balassa-Samuelson Model". This makes a critical distinction between traded and non-traded goods within an economy; and identifies differences in productivity growth in the traded and non-traded sectors as a key factor – the so-called "productivity-bias hypothesis".

In essence, the Balassa-Samuelson analysis confirmed that exchange rates would tend towards their PPP rates, but only as this applied to traded goods. A country's internal price structure as

[20] See the *Monthly Bulletin* for October 1999 of the European Central Bank.

whole, however, would be determined by developments in the productivity of the non-traded sectors as well, which might diverge significantly from that of the traded sector.

For example, technological advance might be faster in the more competitive, traded sectors (e.g. manufacturing) than in the non-traded (e.g. agriculture and services) sectors, leading to a divergence of productivity growth and a relative rise in the prices of non-traded goods. While price/exchange rate arbitrage would equalise the prices of traded goods between currency areas, this would not be the case for non-traded goods. Hence productivity differentials between the traded and non-traded sectors would be reflected in differentials between actual and PPP exchange rates. If the international productivity differentials, for example, were greater in the case of traded than non-traded goods, the country with the higher productivity would appear to have an overvalued currency.

Since 1964, the Balassa-Samuelson model has been subjected to empirical tests, with mixed results. For example, an examination of the hypothesis across countries and across time by Asea and Mendoza (1994) found support for the propositions that productivity differentials determine the relative prices of non-traded goods, and that they also determine the long-run differences in relative price levels between countries. However such differences "were of little help" in explaining the long-run deviations of real exchange rates from PPP rates. One of their conclusions was to cast doubt even on that element of PPP incorporated into Balassa-Samuelson – i.e. the validity of long-run PPP for *traded* goods.

Other theoretical and empirical studies have examined various models for movements in real exchange rates, and their departure from PPP rates. A recent IMF Working Paper by Jahanara Begum (2000), for example, concentrates on the role of relative productivity shocks – for example, technology shocks. The model predicts that

> *"increases in the domestic productivity of traded goods (relative to the foreign productivity of traded goods) lead to an appreciation of real exchange rates. Conversely, increases in the domestic productivity of nontraded goods cause a real depreciation…."*

The empirical evidence lends some limited support to the theory. The paper also cites a number of more general tests of the productivity-bias hypothesis which, using OECD statistics, show a correlation between changes in productivity differentials and real exchange rate movements.

1.5.3. Direct Foreign and Portfolio Investment

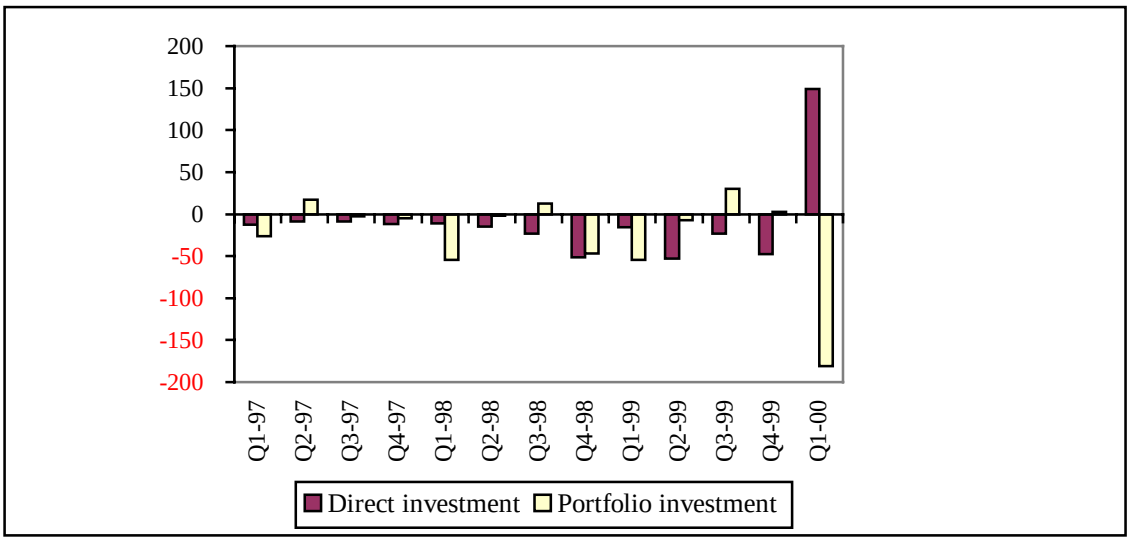
Short-term flows of "hot money" to take advantage of interest rate differentials are only part of the reason for international capital flows. Certainly of more lasting significance are the flows due to direct investment and portfolio investment in equity. The deficit on long-term capital account experienced by the euro area *vis-à-vis* the US has already been observed in section 1.2 to be a plausible explanation for the euro's depreciation during 1999.

One definition of equilibrium exchange rates might therefore be based on the expected returns on all capital assets. In conditions of full capital mobility – and assuming no legal restrictions on the acquisition of assets by non-residents, a large proviso – capital will flow to currency areas where the investment opportunities give the highest return. Exchange rates will then move towards a "portfolio balance" equilibrium in which the return on all assets is equal.

For example, at a given parity, labour costs in Country A may be considerably lower than in Country B. Investors in country B may decide that – acting under the theory of "comparative

advantage" – the production of certain goods should be re-located in Country A, and then re-imported. The result will be that Country A's external account, both capital and current, will improve, GDP will rise and so will the exchange rate of its currency against that of Country B. Again, pension fund managers in Country B may decide that, at existing parities, the equity of companies in Country A will provide greater returns than those trading on the domestic market. Or a company in Country B with spare capital may decided that it is best spent acquiring an existing company in Country A. The resulting flows of portfolio capital will raise the parity of A's currency against that of B.

Chart 8: Net direct and portfolio investment: € bn. (ECU bn. to end-1998)



Source: ECB Monthly Bulletin, July 2000

The "portfolio balance" theory of equilibrium rates, however, rests on a broad assumption that similar assets denominated in different currencies are substitutes. This is seldom the case, as a result of differing supply conditions, varying risk premia, etc. Capital flows may also be dictated by complex preferences on the part of wealth-holders: for example, the purchase of assets through a desire to diversify portfolios rather than through seeking higher returns.[21]

In addition, there is the "overshoot" phenomenon, both in the equity and exchange markets. Capital will flow into rising markets, long past the point when theoretical equilibrium has been reached, because it is expected that everyone else will be doing the same and sustaining prices. Similarly, capital will continue to leave sinking ships long past equilibrium because everyone else will be doing it. Only when the expectation of a turn in the market is firm will there be a reversal of the trend. The undercurrent of speculation as to whether either the current level of share prices on the US stock market, or that of the dollar itself, is sustainable is evidence of the problem. For example, the Bank for International Settlements' 70th Annual Report points to the worsening "*imbalances and structural deficiencies*" in the global economy – especially the

> "*unprecedented gap between the record high rate of saving in Japan and the record low rate in the United States.*" (BIS, 2000)

[21] This is one explanation offered for the capital flows from the dollar into the D-Mark during the 1970s.

Finally, the pattern of capital flows is further complicated by differences in tax systems and rates. Although, broadly, investment income is taxed at the rates prevailing in the country where an investor is resident – with the allocation of revenues governed by a network of tax treaties – low-tax regimes may have advantages. A recent study (Anderson, 2000) includes a taxation "misery index" based on adding together the top marginal rates of personal and corporate tax, VAT, wealth taxes and social-security charges. High marginal tax rates, the study asserts, are a disincentive to producers; and the figures constitute a "warning shot across France's bows".

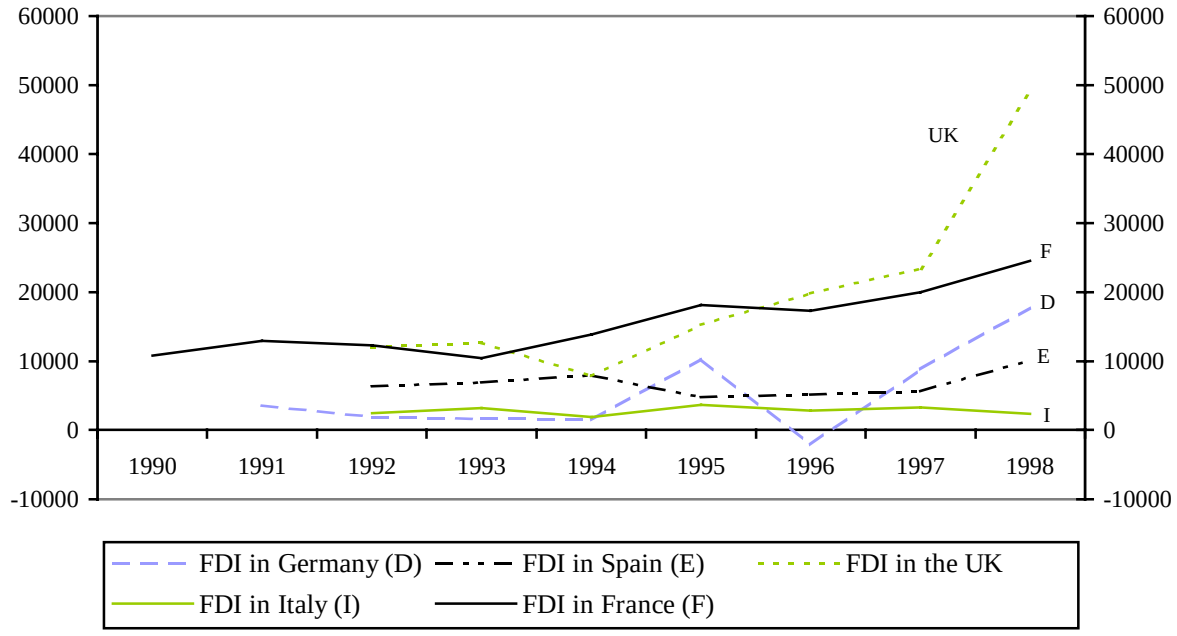
Table 3: Taxation "Misery Index"

US	IRE	UK	JAP	DE	DK	LUX	NL	FI	ES	GR	AU	SW	IT	BE	FR
90*	109.5	109.7	123	124**	125	126	124	138	139	146	147	151	154	171	193

** Excluding high-tax states like California. ** assuming tax reforms;otherwise 143. Source: Forbes Global*

Yet recent figures show that the French economy is performing remarkably well: by the end of 1999 the year-on-year growth rate was 3.2%; and high taxes do not, in fact, seem to have deterred foreign direct investment (see Chart 9). One explanation is that any tax effects were outweighed by the "under-valuation", at least against the D-Mark, of the rate at which the Franc was locked into the euro[22] – an explanation resting on the concept of a "correct" exchange rate.

Chart 9: Foreign direct investment (FDI)[23] in the major EU economies (million €)



[22] According to the IMF (Alberola, Cevero, Lopez and Ubide, 1999) "*of the four major EMU currencies, the Deutsche mark displayed a significant overvaluation at entry time (3 percent), the Italian lira was moderately undervalued (about 4 percent), and the French franc and the Spanish peseta entry rates were in equilibrium*".

[23] Definition of direct investment used by the OECD Benchmark Definition of Foreign Direct Investment.

1.5.4. Fundamental Equilibrium Exchange Rates (FEERs)

There are, of course, more elaborate ways of calculating possible equilibrium rates, based on econometric models of varying complexity.

It is intuitively obvious, for example, that the currencies of countries which are relatively successful in the world, and which are getting relatively richer, will tend to have appreciating *real* exchange rates, whatever the movements in nominal rates.

The concept of fundamental equilibrium exchange rates (FEERs) developed by John Williamson (1983 and 1985) and others, for example, differs from PPP by emphasising real macroeconomic factors rather than the nominal factors of monetary aggregates, inflation and exchange rates. The aim is to calculate the real exchange rate consequences of trend developments in demand, GDP growth, competitivity, fiscal policy, etc.

Those who have developed the model – for example, Wren-Lewis and Driver (1998) – emphasise that FEER is a medium-term concept, in the sense of

> *"an equilibrium in which asset stocks are changing but other short-term disequilibriums* (sic) *have disappeared"*.

In consequence, it is concerned exclusively with real, rather than nominal rates, and has no implications for monetary policy.

> *"In the medium term, monetary policy simply determines the price level, and it has no bearing on either the real economy or the FEER"*.

By contrast, fiscal policy is important to FEER calculations.

> *"A decrease in government spending directly lowers the demand for domestic output, tending to depreciate the FEER. Conversely, a tax cut (which will eventually be introduced if the fall in government spending is permanent) will raise consumption, increasing the demand for domestic output. These two effects will push the exchange rate in opposite directions, and it is not possible to say a priori which is more important."*

How far even such complex models are useful, either in the positive sense as forecasting tools, or in the normative sense as guides to policy, is nevertheless not entirely clear. Calculations for G7 made in early 1998 by Wren-Lewis and Driver included figures for the nominal rates of the euro in 2000 implied by the FEER. On a central assumption that Germany, France and Italy would be in the euro area, but not the UK, the nominal $/€ range was 1.404 – 1.149.

In other words, the model says that the dollar is massively overvalued against the euro, by comparison with what macroeconomic trends would imply. Of course, the time-scale is hardly, on the Wren-Lewis/Driver definition, medium term.

*

The existence of so many theories and models of *real* exchange rate determination illustrates the problem of determining what particular market, or *nominal* rates could be deemed "correct".

In addition, none of the models provides a satisfactory answer to the critical question: why do the markets generally produce so completely different an outcome?

2. The Influence of the Exchange Rate on Monetary Policy

Speaking in Rome towards the end of January 2000, a member of the ECB's Board of Governors, Tommaso Padoa-Schioppa, referred to

> *"the important role that the exchange rate plays in the design of monetary policy".*

The phrase was at once highlighted by the media, since it appeared to conflict with the ECB's usual emphasis on the internal, rather than external, value of the euro; and also with the position of the responsible Commissioner, Pedro Solbes, that there was

> *"no clear relationship between a well-defined monetary policy and the exchange rate"*.

The statements were interpreted in some quarters as evidence of "ECB confusion",[24] which, in turn, had helped push the euro down once more to parity with the dollar.

Whether the foreign exchange markets really are so sensitive to such nuances is a matter of debate. As indicated in the Introduction to this study, however, Mr. Padoa-Schioppa was in general terms only stating the obvious. There are circumstances in which the direction of monetary policy clearly affects the exchange rate, just at there are circumstances in which exchange rate developments clearly affect the conduct of monetary policy. As the value of the euro fell below $0.97 on 31 January 2000, ECB President Wim Duisenberg admitted that:

> "*The exchange rate plays an important role in the strategy of the ECB, and its further weakening could mean a risk to the ECB's goal of maintaining price stability*".

2.1. The effect of depreciation on prices

It seems common sense to assume that a depreciation of the currency, by making imported goods more expensive, will lead to a higher rate of inflation.

But this is not necessarily the case. In the first place, much depends on the importance of traded goods in relation to GDP; on the price elasticity of demand for both imports and exports; and on the availability of import substitutes. In the case of most European countries, for example, the demand for imported oil is price inelastic in the short-term, and few short-term substitutes exist. A rise in the oil price – whether as a result of changes in the supply price or a depreciation of the currency against the dollar – is therefore immediately reflected in the price of petrol.

In its 1999 review of the EU economy the Commission stated explicitly that "*exchange rate developments contributed to higher prices in the course of 1999 for the euro area*" (Commission, 1999). It added, however, that

> *"…the evidence from some cases in the early 1990s showed that the extent to which higher import prices are passed on to final consumer prices depends on the state of consumer demand and on whether the depreciation is perceived to be temporary or permanent. To the extent that foreign goods sold in the large euro-area market are increasingly 'priced-to-market' and imports are increasingly being invoiced in euro rather than in foreign currency, this would also dampen the pass-through of exchange rate movements. These factors would suggest a relatively muted pass-through of the recent euro depreciation to consumer prices."*

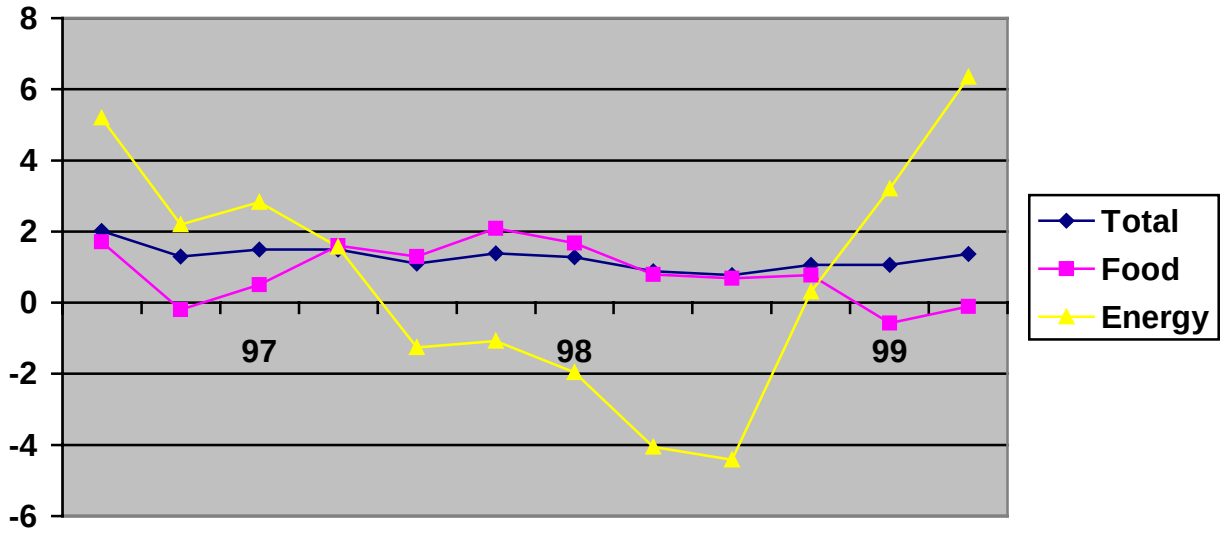
[24] e.g. by the *Financial Times* of Tuesday 25 January 2000

Moreover, a rise in the price of imports cannot, *in itself*, lead to a higher rate of inflation. For this to occur, the price-rises must be accommodated by a growth of monetary aggregates.

> *"An exchange-rate-induced increase in the price level, for a given monetary target, will reduce real monetary balances, increase interest rates and dampen domestic demand, hence putting downward pressure on prices."* (OECD, 1985)

In other words, given stable monetary policy, a rise in import prices will be offset by a corresponding fall in other prices.

Chart 10: Price movements in the EU, 1997/9



Source: Eurostat

Disaggregated figures for movements in the Harmonised Index of Consumer Prices during 1998/9 illustrate this effect (see Chart 10). After a period of sustained fall, oil prices began to rise sharply in mid-1998 and continued to rise through 1999. The general price index, however, rose only marginally, part of the explanation for which was a significant fall in food prices. If both energy and food prices are stripped out, the index shows inflation to have been virtually unchanged at 1% p.a.

2.2. Direct and indirect effects

The ECB's own analysis of how import price rises feed through into consumer prices is outlined in its June and August 2000 *Bulletins*. It breaks the mechanism down into:

- *Direct effects* – for example, a rise in petrol prices "at the pump" as a result of a rise in world oil prices (which are, of course, denominated in dollar).
- *Indirect effects*, as the rise in import prices are passed along the production chain, and are reflected in the Producer Price Index (PPI).
- *"Second round" effects*, notably on wage demands and wage levels.

As far as the **direct effects** are concerned, the analysis distinguishes between the specific event of an oil price rise, and the more general effect of a rise in the price of imported consumer goods (i.e. the effect of a currency depreciation). In the former case, "a common rule of thumb" is that a 10% increase in the euro price of oil leads to an immediate increase of 1% in the energy component of the HICP, and thus to a 0.1% rise in the overall HICP. In the second case it, like the Commission, notes the increasing tendency of foreign producers to "price to market" – i.e. to set prices in individual markets so as to maintain market share, irrespective of exchange rate movements – so that the eventual effects on the HICP are "difficult to quantify". Short-term fluctuations in the exchange rate may therefore have little or no effect on most import prices.

> *"However, more protracted changes in the exchange rate do generally feed through to import prices at some point in time."*[25]

The **indirect effects** on the HICP *via* the input costs of domestic producers **–** which, the ECB emphasises, would be *in addition* to any direct effects – arise both from a specific price increase, as in the case of oil, and a general rise in the price of raw materials and intermediate goods following currency depreciation. The analysis notes the importance of import substitution; but also observes that "the price of the domestic production of inputs closely follows world market price developments". Effects on the HICP then take place with a time-lag.

> *"A rough estimate based on historical experience suggests that the recent 20% increase in import prices, if sustained, is likely to contribute around 1 percentage point to the cumulative increase in euro area consumer prices via indirect effects over a two to three-year period."*

Examination of price indexes since import prices began to rise in late-1998 indeed shows a close correlation between import prices and industrial producer prices, but little between these and the HICP (see Chart 11). It is not certain, however, whether this is because:

- the effects have yet to work themselves through, as the ECB infers;
- the elasticity of demand has compelled producers to absorb the increased input costs; or
- the monetary stance of the ECB itself has prevented any inflationary consequences.

The **second-round effects**, the ECB observes "depend on the complex interaction between wages, inflation expectations, the business cycle and the macroeconomic policy reaction". In its earlier *Bulletins*, however, the Bank appeared to see the exchange-rate to inflation-rate channel operating largely through wage rates – what was once referred to as "cost-push" inflation.

> *"The past depreciation of the nominal effective exchange rate of the euro and the rise in oil prices during 1999 have increased the cost of imports for the euro area. This has resulted in, inter alia, short-term upward pressures on the energy price component of the HICP and possibly also on intermediate goods prices…. The risks to price stability over the medium term mainly depend on the reaction of wages to these short-term developments in consumer prices."*[26]

In its 1999 Review of the EU economy, the Commission also observed that:

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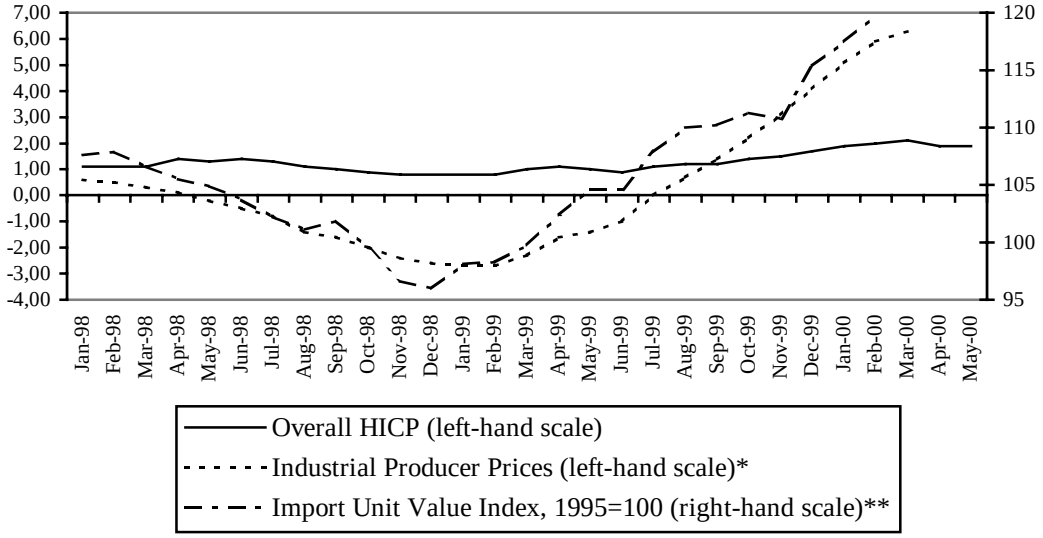
[25] ECB *Monthly Bulletin*, August 2000, p.36

[26] *ECB Monthly Bulletin*, January 2000.

"The most important upside risk to the projected path of inflation would seem to stem from the behaviour of wages." (Commission, 1999)

Chart 11: Consumer, producer and import prices in the euro area

(annual % changes, monthly data)



* Excluding Construction.

** Unit value indexes refer to transactions between the euro area and the rest of the world, calculations are based on a three-month centred moving averages.

Source: ECB Monthly Bulletin, June 2000

The immediate cause of the ECB's concern was the "trend-setting" wage-claim of 5.5% by the German engineering trade union, IG Metall. This was followed by a 4.8% claim by the German construction industry, and a 4.5% claim by civil servants.

The forecast rate of German price inflation in 2000, however, is only 1.5% (see Deutsche Bank Research, 2000b). Actual wage settlements are expected to be in the region of 2.5% – much the same as within the euro area as a whole. This is slightly higher than the average 1999 rise, in the private sector, of 2.2%. Increases in wage levels must also be seen in the context of changes in manpower productivity. The IG Metall claim was based on a forecast productivity gain in the sector of 3.5%. Overall euro area productivity is expected to rise by some 2.5%, roughly equivalent to wage settlements, so that net rise in unit labour costs could be *less* than the 1% recorded in 1999.

In the 1960s and 1970s heated debates occurred between economists and politicians concerning the relative merits of the "cost-push" and "demand-pull" theories of inflation. Though official policy in many European countries for a long time sought to curb inflation through direct influence on wage-rates, "demand-pullers" successfully demonstrated that these were doomed to

failure if the monetary authorities accommodated wage increases by increasing the money supply. However, whether the converse obtained – that wage increases could be prevented from feeding through into inflation if they were *not* accommodated – remained controversial.

These theoretical and analytical points do not lead to any precise method of calculating whether and how far a currency depreciation results in increased consumer prices. Historical experience can produce "rules of thumb"; but it is unwise to bank on the past always repeating itself. Likewise, econometric models can make forecasts. That of the OECD (Interlink), indicates that

- a 10% depreciation in the euro adds 0.6 percentage points to the rate of inflation after a time lag of one year; and
- a $10 increase in the price of a barrel of oil likewise adds 0.6 percentage points after a year, plus another 0.5 points after two years.

Detailed figures produced by Interlink are appended in Annex 2. Interlink treats the exchange rate as an exogenous variable. Similar figures can be obtained from the Commission's Quest model (see Table 3). Such figures are nevertheless only as good as the model and the data fed to it; and, as the OECD itself has observed (see page 19), even very sophisticated econometric models can achieve only poor predictive results.

2.3. Monetary Conditions

A depreciation of the currency does not only increase the prices of imports. It also reduces the price of exports, thus giving a boost to demand. This can also increase inflationary pressures – how far it does so depends upon the level of spare capacity in the economy.

For the monetary authority, gauging the correct response to a parity movement is therefore not a straightforward matter. In principle, a fall in the external value of a currency loosens the monetary stance; and, if the stance is to remain neutral, there have to be compensating domestic measures. The combined effects can be aggregated in a Monetary Conditions Index (MCI)[27].

Such indexes, however, give a false impression of precision. Different economic models will give different trade-offs between external and internal conditions. In addition, there is the problem of time-lags: a movement in the exchange rate and a compensating movement in interest rates, for example, may not affect monetary conditions at the same time.

In the case of the Pound Sterling, the Bank of England's Monetary Policy Committee minutes provide evidence of the disagreements that exist on the issue. They show that, at the May 2000 meeting, three members of the MPC voted to raise interest rates on the basis that the 7.5% fall in Sterling's parity that month would raise inflation by 0.5 percentage points in two years' time. The MCI (UK) used by the Bank of England in fact indicated that, in May 2000, the combination of 6% short-term interest rates with a £/D-Mark parity of 1 to 3.40 was equivalent to monetary conditions with short-term rates at 7.5%.

However, the opinion of former MPC member Sir Alan Budd (2000) was that the significance of the value of the pound for inflation was "vanishingly small". Econometric models had failed to find any firm link. Another former member of the Bank of England's Monetary Committee, Prof.

[27] For example, that used by Deutsche Bank in its "€MU Watch" reports is comprised 80% of real short-term money market interest rates, and 20% of the real effective exchange rate.

Willem Buiter (2000), has also referred to "the old four-to-one rule": that a 4% fall in Sterling would require a 1% rise in interest rates. "That's not economics", he commented.

The Commission's econometric model, Quest, produces figures for the consequences of movements in the euro exchange rate for both inflation and economic growth. For example, a 10% appreciation of the euro in 2000 would have the following effects over a two-year period:

Table 4: Effects of a 10% appreciation in the euro exchange rate

	2000	2001
GDP level	- 0.9	- 1.2
Consumer Price level	- 0.8	- 1.3

Source: Commission services

These calculations, of course, assume that "the monetary authorities leave interest rates unchanged": i.e. that no attempt is made to offset the deflationary impact of the exchange rate change by internal monetary expansion. Secondly,

> *"the results depend on how the exchange rate appreciation comes about. In particular, the effect on output depends on whether the exchange rate movement is caused by divergent monetary policies or a change in risk premia in the uncovered interest rate parity condition, as in the current simulation. However, the differences in the effects on consumer prices are small."* (Commission, 1999)

In other words, and unlike Interlink, Quest treats the exchange rate as an endogenous variable (for further details, see forthcoming Commission paper).

2.4. Interest rates

Whatever the transmission mechanism, a depreciation of the currency does not therefore automatically lead to a rise in the *general* level of prices. The outcome will in part depend on whether the monetary authorities wish overall monetary conditions to remain stable, and also on whether any countervailing measures prove effective. Where a depreciation is combined with an already rising rate of inflation, the main response is likely to be a rise in interest rates – precisely the action taken by the ECB on 3 February 2000.[28] Such action serves a double purpose.

- By tightening the domestic monetary stance, it bears down on inflation.
- In addition, by raising the nominal rate of return on assets, it should offset the effect of the depreciation and prevent an outflow of short-term capital.

[28] Announcing the increase, ECB President Wim Duisenberg stated that "*The development of the exchange rate was not the decisive move that tipped the scales*". Various reports from the decisive meeting indeed indicate that three factors played a part:

- The exchange rate;
- Forecasts that inflation rate might later in the year go above 2%, the Bank's definition of "price stability"; in January the rate indeed reached 1.9%; and
- The fact that the money supply, defined as M3, was rising at a rate over 1.5 percentage points above the Banks's "reference level" of 4.5%.

Historically, this second purpose has formed the most obvious link between the exchange rate and monetary policy. Under systems of fixed, or semi-fixed parities – such as the EMS Exchange Rate Mechanism (ERM) – raising short-term interest rates has formed one of the classical defences against forced depreciation (the other being intervention on the foreign exchange markets by central banks – see section 2.10).

Where internal monetary and external exchange rate pressures point in the same direction, this does not cause problems. As the United Kingdom discovered to its cost in 1992, however, such a situation does not always obtain. In the years immediately beforehand, both internal inflation and external Sterling weakness pointed towards higher interest rates. But as inflation fell, high *nominal* rates increasingly became high *real* rates, which exerted a deflationary squeeze on the economy. Internal economic conditions required lower rates.

Sterling, however, was under an obligation to remain within the narrow fluctuation bands of the ERM. The situation came to a head in August/September 1992, when large speculative positions against Sterling were taken in the financial markets. The first line of defence was official intervention in the exchange markets, backed by activation of the ECU borrowing programme. The second was an adjustment of interest rates. But neither intervention, nor a fall in German short-term interest rates, nor a rise in the UK interest rate to 15%, convinced the markets that the existing Sterling parity was sustainable; and the needs of the domestic economy appeared to preclude further UK rises. On 16 September – "Black Wednesday" – Sterling left the ERM.

BOX 3: Interest rates and the exchange rate

"Euro falls after surprise rate decision"

"The euro's negative reaction to the ECB rate hike elicited several competing explanations among analysts yesterday.

Following on from Wim Duisenberg's comments, that the move would 'clear the horizon for some time to come', many concluded that the rise had merely brought forward tightening but that the overall trajectory of monetary policy would be unchanged.

This, however, was not the view taken by the interest rate futures markets, suggesting instead that the ECB was being genuinely more aggressive. The euribor contract for December, which had been pricing in rates at around 4.75 per cent shed around 24 basis points.

A more likely explanation for the euro's fall, analysts said, was a concern that the ECB had stamped too aggressively on growth.

'There is a danger of overkill here,' said Ray Attrill, research director at economic consultancy 4Cast. 'Coupled with a very strong rise in the currency, this 50 point rate hike may be considered a menace to growth.'

He added that the move towards a variable rate refinancing meant that the market could well push rates even higher than the 4.25 per cent announced yesterday."

Currencies and Money Markets Report, *Financial Times,* Friday June 9, 2000

A different path was followed in the case of other currencies – for example, the Danish crown. Existing ERM parities were maintained by the raising of short-term interest rates to levels above 100%; and it was a matter of dispute in the inquests which followed "Black Wednesday" whether similar increases might have kept Sterling within the ERM, defeating the speculators. As already observed, Sterling's PPP parity was at that time *above* its ERM central rate, and subsequent exchange rate movements have cast doubt on the general belief at the time that the Pound was overvalued.

It is true that a change in short-term interest rates as a means of raising a currency's external value may not always work. It may even be the case that raising rates to defend a parity is counter-productive (see Box 3).

> *"Raising interest rates can sometimes strengthen a currency if the investors in that currency are being scared off by the dangers of inflation. But in Europe today, the opposite is the case. Money is flowing from Europe to America in search of stronger economic growth, not lower inflation.*" (Kaletsky, 2000)

However, when other economic factors are not exerting contrary pressures, higher interest rates are likely to raise the external parity of a currency – and this may be as unwelcome in terms of domestic policy as the reverse.

Again, an instructive example is provided by the United Kingdom.

Since leaving the ERM in 1992, the pound has been floating, and has almost classically illustrated the "overshoot" phenomenon. From its central ERM parity of DM 2.95 it had, by mid-1995, fallen to below DM 2.20. It then recovered to DM 3.00 by the beginning 1998, and in early 2000 had climbed to DM 3.20.

Box 4: The UK and euro area Inflation

"The MPC is supposed to keep inflation between 1.5 and 3.5 per cent on a one-off measure, RPIX. It is currently 2.2 per cent. The ECB is supposed to keep inflation between 0 and 2 per cent on an internationally recognised measure called the harmonised index of consumer prices. It is now 1.9 per cent. On the same measure, however, UK inflation is 0.8 per cent. So you have to wonder why UK short-term interest rates are two fifths higher than those in the euro zone, especially when UK long-term rates are lower than on comparable euro bonds."

Graham Searjeant, Financial Editor, in *The Times* of July 13, 2000.

UK interest rates have meanwhile been set almost exclusively in response to domestic monetary requirements. The lack of synchronicity of the UK's economic cycle with that of other major European economies – and also a greater perceived tendency of the UK economy to inflation, though this may in fact now be an illusion (see Box 4) – has meant that interest rates have been maintained at a level several percentage points above that in the euro area. Sterling has, accordingly risen against the euro, as has the dollar, which has maintained a similar interest-rate differential (see Section 1.3).

The consequences in early 2000 were loud complaints from UK manufacturers that they were losing export orders as a result of Sterling's "overvaluation". Though, in fact, UK exports held up surprisingly well at the high parity, it was clear that certain sectors were placed under considerable competitive pressure: for example, the UK steel and automobile industries.

For much the same reasons, fears have been voiced that a recovery of the euro (or, put another way, a fall in the dollar) might be a mixed blessing.

> *"…much as Europeans may complain about the weakness of the euro, they could find …even worse…a world in which the dollar and the US stock markets are plummeting and the euro is soaring."* (Crooks and Barber, 2000).

2.5. The exchange rate as anti-inflationary instrument

The reverse side of a depreciating currency leading to inflation is, indeed, the possibly deflationary effect of a rising exchange rate. The Commission's 1999 Review assesses one "downside risk to inflation" arising from "a harder landing for the US economy than projected", which

> *"would probably result in capital inflows leading to a strengthening of the euro. A sizeable appreciation would have the potential to reduce price pressure in the euro area quite considerably…"* (Commission, 1999)

Pegging the exchange rate to a currency of an economy with lower inflation – either fully, or with a "crawling peg", which allows limited depreciation – is, in fact, a common anti-inflation strategy. It was partly the reason that the UK Government took Sterling into the ERM in 1990, following a period in which it had "shadowed" or "lived in sin with" the D-Mark from outside. Between October 1990 and September 1992 the rate of UK inflation fell from 10.9% to 3.6%.

The OECD study already cited (1985) makes a detailed evaluation of exchange-rate targeting as compared to monetary aggregate targeting: and observes that, where the inflationary pressure comes from an upward shift in money demand, an exchange rate target has a major advantage in terms of reducing output loss. However, in the face of other shocks, (wage shock, fiscal impulse, a rise in foreign interest rates), monetary targets appear preferable. Moreover, as in the case of a depreciation,

> *"..the exchange rate will not generally influence inflation independently of the rate of growth of monetary aggregates in the long run"*.

There are also dangers in relying on exchange-rate appreciation as an anti-inflationary tool. As noted in the Introduction, the effect may not be so much to dampen internal inflationary pressures as to disguise them. A sense of complacency may be induced in the monetary authorities. Eventually, if and when the market turns and the exchange rate begins to fall, the "squeeze" needed to maintain price stability will be that much more severe.

Further dangers of relying on an exchange-rate peg also became apparent during the recent Asian financial crisis. Relatively unsupervised financial systems were able to borrow dollars at a fixed exchange rate, and at comparatively low rates of interest, backed by an apparent government guarantee. The eventual collapse left large parts of their financial and corporate sectors insolvent.

"The countries that have suffered most from the Asian crisis have been developing countries with central banks maintaining pegged exchange rates to the US dollar." (European Parliament, 2000b)

In the case of the euro itself, the use of an exchange rate target as an anti-inflation instrument was considered briefly, but rejected. The European Monetary Institute's outline of monetary policy options, published in 1997, decided that

"an exchange rate objective is not considered appropriate since, for an area potentially as large as the euro area, such an approach might be inconsistent with the internal goal of price stability." (European Monetary Institute, 1997)

2.6. The Exchange Rate as indicator

The primary objective of the ECB's monetary policy, laid down in the Treaty,[29] is indeed to preserve price stability – that is, the internal purchasing power of the euro. This the Bank has defined as a rate of inflation, as indicated by the EU's Harmonised Index of Consumer Prices (HICP), of under 2% *per annum*. The application of the policy rests on two "pillars":

- A "reference level" of 4.5% for the annualised rate of growth in the money supply, defined as M3; and
- A variety of indicators as to possible future levels of inflation, of which the external exchange rate of the euro is one.

Until now, the ECB has not been willing to publish a specific inflation target. Nor has it so far given details of any model used in forecasting inflationary trends (unlike the Commission with Quest). It is not therefore possible to state precisely what weighting the ECB gives to the exchange rate as compared to other indicators such as "first pillar" money-supply figures or movements in long-term interest rates. Analysis of statements by members of the ECB's Board of Governors, and of the *Monthly Bulletins*, nevertheless makes it possible to state that the exchange rate, at least until recently, did not weigh very heavily. Those looking for evidence that inflationary risks were small pointed to the bond markets:

"Changes in long-term nominal interest rates typically reflect markets' perceptions of long-term inflation risks.…If I take a look at long-term bonds denominated in euros, I can conclude that the ECB has already earned a considerable level of credibility." (Issing, 1999)

Those, on the other hand, who saw rising inflationary risks pointed above all to the fact that M3, during late 1999 and early 2000, was overshooting the 4.5% reference level. When it became clear that external factors were assuming greater importance, it was first on the sharp rise in oil prices, rather than the exchange rate, that attention focused. Only towards the end of January 2000 was a threat from the depreciation of the euro against the dollar specifically mentioned.

By the middle of February, the exchange rate factor had become of major significance. Otmar Issing now observed that:

"*The decline in the euro has contributed to upward risks for price stability, especially because the world economy has now really changed towards quite high growth. Raw*

[29] In Article 105, paragraph 1.

materials prices are on a rising trend, and it's not just oil…. In this context the weakening of the currency translates into substantially higher import prices.." (Issing, 2000*)*

And in the April ECB *Monthly Bulletin*, the exchange rate appeared to have become a dominating factor:

"The recent rises in the inflation rate in the euro area, as measured by the Harmonised Index of Consumer Prices (HICP), stem, to a large extent, from the combined effects of both oil price and exchange rate developments."

However, the April *Bulletin* also drew attention to the limitations of such external factors as indicators of future inflation.

"What matters for monetary policy are the trends underlying the outlook for price stability in the medium term."

From this point of view, a more appropriate index is that of "core inflation", which excludes certain volatile items like energy, some foodstuffs and alcoholic drinks[30]. Whereas the euro area inflation rate, measured by the HICP, was above 2% in March 2000, the core rate was still only just above 1%. By contrast, in April, the turnaround in oil prices resulted in an HICP rate once again below the 2% reference rate; but the core rate had risen to 1.3%.

It is reasonable to conclude that the weighting of the exchange rate among the "broad indicators" of future inflation refers (or should refer) to its effect upon core inflation in the medium term.

2.7. Which Exchange Rate ?

The role of the exchange rate as an indicator of overall monetary conditions within an economy (MCI's) and as indicator of future inflation raises an important methodological question: how is the external value of a currency to be measured? In the case of the euro, popular attention has been focused largely on the exchange rate against the dollar, with occasional side-glances at the rate against the yen. In estimating the economic effects of exchange rate movements, however, a much broader definition is necessary. Moreover, as the OECD observes,

*"Measures of effective exchange rates are clearly sensitive to the choice of the set of countries and the weighting system underlying the calculations" (*Coppel, Durand and Visco, 2000)

Most general exchange rate calculations are based on the external value of the currency in question against the currencies of the most important trading partners. The ECB itself uses two main definitions:

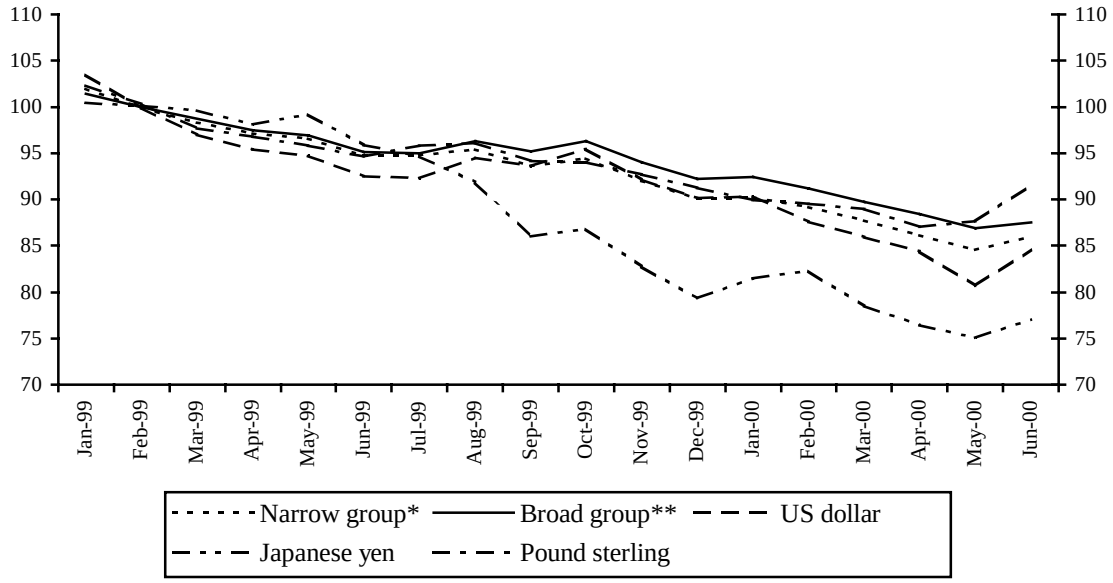
- A narrow one, based on 13 industrialised and newly industrialised trading partners of the euro area, accounting for roughly 62% of total area manufacturing trade (imports and exports).
- A broad one, based on 39 trading partners, including emerging market and transition economies. This accounts for roughly 89% of total area manufacturing trade.

Other organisations use alternative bases. The OECD measure in relation to the euro is based on a basket of 30 countries. The IMF includes all countries with a trade weight greater than 1%.

[30] For a full discussion of the concept of "core inflation", and the problems of definition, see Wynne (1999).

Chart 12: Effective exchange rate of the Euro

(monthly averages; index 1999 Q1=100)



* Calculations based on weighted averages of bilateral euro exchange rates. Weights are based on 1995-97 manufactured goods trade with the trading partners and capture third-market effects. The narrow group is composed of the following countries' currencies: United States, Japan, Switzerland, the United Kingdom, Sweden, Denmark, Greece, Norway, Canada, Australia, Hong Kong, Korea and Singapore.

** The broad group includes the currencies in the narrow group plus the currencies of the following countries: Algeria, Argentina, Brazil, China, Croatia, Cyprus, the Czech Republic, Estonia, Hungary, India, Indonesia, Israel, Malaysia, Mexico, Morocco, New Zealand, the Philippines, Poland, Romania, Russia, Slovakia, Slovenia, South Africa, Taiwan, Thailand, and Turkey.

Source: ECB

As important as the choice of countries in compiling the effective exchange rate is their weighting, which depends upon analysis of trade flows. In the case of the euro, the rates used by the ECB

> *"are computed on the basis of manufacturing trade flows (three-year average over the period from 1995 to 1997).*[31]

This, the ECB points out, is similar to that used by the Bank for International Settlements. The weightings take into account both imports and exports of manufactured goods, but exports are double weighted "to take account of third market effects". The effective nominal exchange rates are then calculated by applying the trade weightings to the bilateral exchange rates of the euro against the selected countries, mostly calculated as monthly averages of the daily spot rates.

[31] "The nominal and real effective exchange rates of the euro", in the April 2000 *Monthly Bulletin* of the ÉCB.

For real rates, a number of different deflators are used. In the case of the narrow group of trading partners, where comparable data is available, rates are worked out based on consumer prices, producer prices, and unit labour costs in manufacturing (ULCM), with work on alternatives under way. In the case of the wider group, only consumer prices are used.

The ECB's calculations on the movements of the euro exchange rate, and of the "theoretical" euro before 1999, indicate how much depends upon the methodology used. Between 1993 and 1998, the nominal exchange rate of the euro *rose* by 38% when measured against the broad list of trading partners. Over the same period, however, it *fell* by 5% against the narrow list. However, when adjusted for inflation, on a CPI basis, the discrepancy was greatly reduced.

Since the start of 1999, the euro's parity has fallen on all indexes, though more sharply on the narrow nominal definition. This, of course, reflects the importance of the dollar and pound in the narrow index, and the fact that the currencies of countries in the wider index have also been depreciating.

The ECB observes that the primary purpose of its real exchange rate indicators is to measure changes in the euro area's international competitivity; and that

> *"these indicators may not be particularly suitable for use in assessing the impact of exchange rate changes on domestic inflation through import prices".*

Real exchange rate indicators based on import prices and appropriate weightings for this purpose are "under consideration".

The actual external value of the euro – that is, its exchange rate – therefore very much depends on what it is being measured against. The euro's fall in 1999 was only about 7%, when measured as a real rate against trading partners (OECD definition); but double that against the dollar and over three times that against the yen (see table 5).

Table 5: Percentage fall in the exchange rate of the euro in 1999

Against $	Against ¥	Against £	Nominal rate (OECD definition)	Real rate (OECD definition)
- 14.2	-22.4	-11.9	-9.6	-7.0*

Source: OECD ** until October 1999*

Which of these exchange rates is the most useful in the context of monetary policy? That measured by the weighted indexes of trading partners' currencies would appear to give a fuller indication of external inflationary or deflationary pressures; and it is curious that the ECB does not yet appear to have a real exchange rate index of its own to assess that impact.

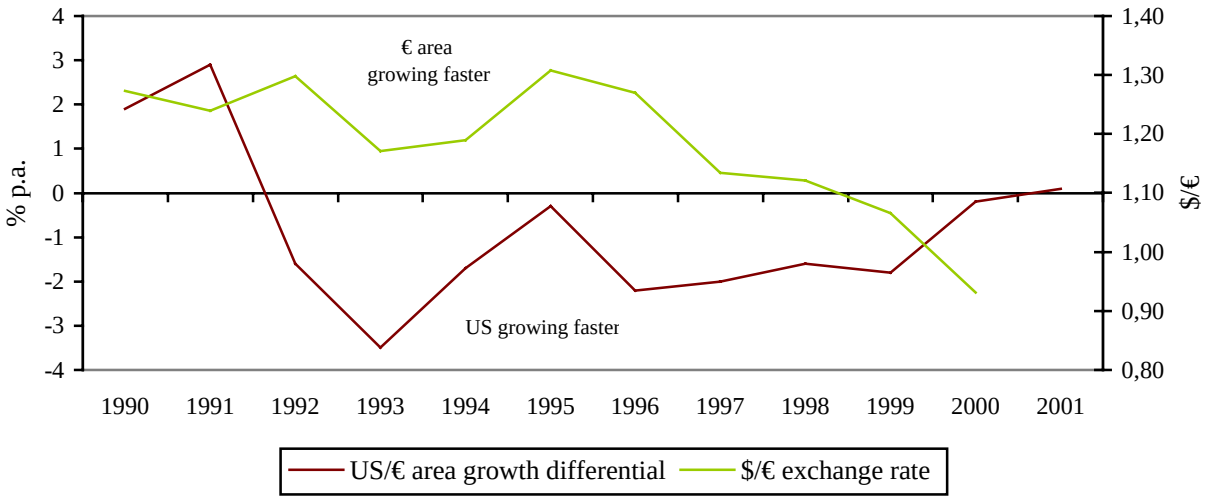
But trade, as already observed, is only part of the picture. The importance of the dollar rate is greatly increased by its role in international financial markets, and by the fact that it is used for the pricing of oil. It was the fall of the euro to below $0.90 in May 2000 which prompted the determined campaign by both the ECB and euro area political leaders to "talk up" the currency in the weeks that followed.

2.8. The Exchange Rate and Growth

If an "overvalued" exchange rate has from time to time been used as an anti-inflationary instrument (see section 2.4 above), the opposite has historically been more usual: that is, an "undervalued" exchange rate has been used as a stimulus to economic growth.

For example, it has frequently been asserted that the UK adopted such a policy following the removal of Sterling from the ERM in 1992 – though, as has been noted earlier, the depreciation of the pound to the "undervalued" level of DM 2.20 was largely the result of overshoot by financial markets. The responsibility of the monetary authorities was the tangential one of reducing interest rates for domestic reasons.

Chart 13: euro area and US economic growth (%), and €/$ exchange rate, 1990-2000



Source: Eurostat

Similar charges have also been made in relation to the depreciation of the euro following its creation in 1999. Far from being an unanticipated mishap, it can be argued, the fall in the euro parity against the dollar was a deliberate policy, designed to boost the competitivity of, in particular, German industry. Given that inflationary pressures were negligible, the ECB was able to accommodate this strategy by reducing interest rates in early 1999; and during the first quarter of 2000, euro-area and German exports were at a level over 20% higher than in 1999. Oscar Lafontaine lost his job – but won the argument!

Whether such explanations are plausible or not, there is evidence linking exchange rate movements with changes in comparative growth rates (see Chart 13). The proto-euro reached a peak value of over $1.30 in 1995, at a time when the growth rates of the euro area and the US were not far apart (2.3% as compared to 2.7%). In the following years, however, the growth rates diverged sharply, that in the euro area falling to 1.4% in 1996, while that of the US rose to 3.6% in 1996 and 4.3% in the year after. The €/$ rate then began a steady decline, interrupted only by the "europhoria" blip in 1998.

Such simple correlation, however, breaks down for the period since the euro proper came into existence. The sharp recovery of the euro area in the this period, coupled with a slight decline in US growth, should have led to a recovery in the euro as well – as the ECB, the Commission and EU Finance Ministers have constantly maintained. Instead, the euro remained stubbornly below $1, despite forecasts that the euro area growth rate in 2001 would be marginally higher than that in the US (3.1% as compared to 3%).

This experience seems to suggest that a fall in the exchange rate can boost economic growth; but that rising comparative economic growth does not necessarily boost the exchange rate.

Is the use of currency devaluation to increase economic growth justified? Such a policy may prove successful provided that it does not provoke retaliation, and does not have internal monetary consequences (e.g. inflation and rising interest rates).

The chances of retaliation depend to a considerable extent on whether the need for an economic stimulus is a general one, or confined to the economy in question. In times of internationally declining economic activity – notably during the 1930s – widespread use of the exchange rate in this way may lead to a cycle of "competitive devaluation", in which each economy attempts, at least temporarily, to export its unemployment. In contrast, exchange rate adjustment can be seen as a legitimate economic tool where the effects of some event have had asymmetric effects on different economies.

As has been noted in the Introduction to this study, however, the most important arguments against currency depreciation as a means of stimulating growth are the implications for internal policy. "Devaluation does not work" because the competitive advantage to be gained from a depreciation will rapidly be eroded through inflation. This, in turn, will induce rising interest rates, a tightening of monetary and fiscal policy and, as a consequence, falling growth and rising unemployment. Sterling depreciations in the 1950s, '60s and '70s were in some measure responsible for what became known as the "stop-go" economy.

In conditions where there exist large margins of spare capacity and where other inflationary pressures are weak, however, a currency depreciation may not have such effects. Such was the case for the pound in the early 1990s and the euro in 1999.

Indeed, it can be argued that the exchange rate of a currency should always be targeted at the lowest possible level against the currencies of trading partners consistent with internal monetary stability. Provided that retaliation can be avoided, the resulting improvement in the growth rate should also have positive effects for the conduct of monetary policy: unemployment will fall, tax receipts will rise, the fiscal position will improve and a lower level of interest rates will be possible, further stimulating economic growth.

2.9. Should there be an Exchange Rate Target?

Discussion of such matters leads to the important question: should there be an exchange rate target for the euro?

The European Monetary Institute, it has been noted earlier, examined but rejected exchange-rate targeting (though such targeting was of course an integral part of the run-up to the "irreversible locking of parities" at the beginning of 1999). The ECB then followed – or found itself obliged to follow – the policy of apparent "benign neglect".

Advocates of an exchange rate target emphasise two main advantages.

- An agreement to keep the $/€ parity within predetermined margins or "target zones" – for example, within 2 cents either side of 1:1, as recently proposed by Prof. Robert Mundell (2000) – would reduce international exchange-rate volatility, so improving conditions for trade and investment. The real economy would no longer be at the mercy of short-term fluctuations in financial markets.
- Were target zones to be established at levels reflecting economic fundamentals – that is around some calculation of "equilibrium" rates – long-term misalignments would be avoided, as would the distortions of domestic monetary and economic policy to which such misalignments give rise.

Exchange rate targeting, however, faces difficulties of two kinds.

First, there is the problem of **deciding upon the target rates or bands**. The previous section of this study has already discussed the question of what constitutes equilibrium exchange rates. As noted by OECD, there is no generally accepted method of calculating them. More important, however, is the obvious fact that any target rate – no matter how justified in economic theory – will be extremely difficult to sustain if the markets do not agree.

One need only take the example of the euro itself. At the time of its launch, its "correct" exchange rate against the dollar was widely calculated at somewhere between $1.15 and $1.30, with some calculations going as high as $1.40 (see section 1.5.4). By the start of 2000, however, economists and commentators were talking of a sustainable range of parities around 1 to 1 (see Mundell, 2000).

Attempting to keep the euro in a $1.15 to $1.30 band during 1999 and early 2000 would certainly have drawn attention to the second problem**: how to maintain the chosen target in the face of market pressures**. The most damaging possible consequences for the conduct of monetary policy have been noted by OECD. (Coppel, Durand and Visco, 2000, p.11). Keeping the euro within the selected bands

- *"…could require large swings in interest rates, which would effectively shift some volatility from the exchange market to money and bond markets."*
- Such interest rate moves "*may not necessarily be consistent with price stability and thus there is a risk that credibility of monetary policy may be lost, raising risk premia and undoing part of the benefits of monetary union."*

Moreover, maintaining an exchange rate target would also have exposed the lack of clarity, and the potential for conflict, in the provisions of the Treaty. Any exchange rate agreement would have been the primary responsibility of ECOFIN. The ECB, however, would have been legally justified in refusing to take any action in support of the agreement – for example, by raising or lowering interest rates – which conflicted with its primary duty to preserve internal price stability. OECD has commented in another paper that

> "*..the absence of an exchange rate target avoided a most unpleasant conflict of priorities in the first half of 1999."* (OECD, 2000)

2.10. Intervention

Would it not, however, have been – and still be – possible to keep the €/$ exchange rate within pre-determined bands through intervention on the foreign exchange markets? As rumours of

possible central bank support for the euro grew at the end of May 2000, *Bundesbank* President Ernst Welteke observed that "*intervention is part of the tool-kit of central bankers*".

The first main argument against intervention is that central banks simply do not have the resources to take on the foreign exchange markets. As in the case of the Pound Sterling in 1992, mobilising gold and currency reserves and borrowing facilities to support a currency believed to be overvalued merely gives speculators a "one-way bet".

Nevertheless, the reserves available to the ESCB are substantial: considerably greater, in fact, than would normally be warranted by the euro area's exposure to foreign trade.

At the beginning of December 1999, the System as a whole held gold and foreign currency reserves of € 330 billion, of which some €40 billion were the assets transferred to the ECB itself at the start of EMU Stage 3. This compared to only some $110 billion held by the US. In terms of covering the cost of imports, the euro area had gold and foreign currency reserves (to which IMF facilities may be added) of over 5 months, compared to only 1.3 months for the US.

Monetary Union, in fact, dramatically changed the exposure/reserve position of the euro area countries. The need to hold reserves for obligatory intervention within the ERM largely vanished. At the same time, trade between them – in currency terms – ceased to be "foreign" and became "domestic". The proportion of GDP accounted for by "foreign trade" halved. As against this, only that small amount of their reserves previously held in one another's currencies, largely D-Marks or ECUs, ceased to count as foreign reserve assets.

Assuming a prudent level of reserves to cover one to two months' imports from outside, the euro area's normal level of reserves can be put at about $100-150 billion. Even assuming greater prudence still, the System has adequate reserves for intervention.

> *"Figures for the surplus reserves range from $100 bn. to $240 bn. But all studies identify a considerable surplus."* (Deutsche Bank Research, 2000a)

Moreover, even limited intervention can succeed if the timing is right: that is, if it comes when there are no strong market pressures on a currency's parity. In such cases, it needs only small purchases or sales – or even the mere indication that intervention may be imminent – to push the exchange rate in the chosen direction.

It remains true, however, that the chances of a successful intervention are not symmetrical. A central bank wishing to support its own currency has at its disposal only limited resources: the gold and convertible currencies in its reserves, together with any IMF or other borrowing facilities. By contrast, a central bank wishing to support *another* currency, or to depreciate its own, has resources which are theoretically infinite: i.e. the ability to create its own money.

No matter how powerful market forces may be, they cannot force the devaluation of a currency if it enjoys the unlimited guarantee of other central bank or banks. Though the creation of money in order to intervene on the foreign exchange markets may upset the monetary stance of the intervening central bank, such intervention can be "sterilised" so that domestic liquidity is not increased.

The second main argument against intervention by any one central bank, therefore, is that its success will be uncertain unless it is supported by other central banks. More precisely, in the case of the euro, the ECB would need the support of the US Federal Reserve. Policies of "benign

neglect" on either side of the Atlantic would have to be replaced by some agreement on a "correct" $/€ exchange rate or rate band.

How an agreed bi-polar ($/€) or tri-polar ($/€/¥) system might operate has been outlined by Professor Bofinger (2000) of Würzburg University in an influential study for the European Parliament. The two major problems would be:

- Deciding on the target rate or rates – an issue examined earlier in this study; and
- Overcoming the difficulties created, on the European side, by the terms of the Treaty.

2.11. Institutional problems

Supposing that it were thought desirable for the euro area to have an exchange rate policy, how would this be achieved ? The first problem would be to take the necessary decisions.

The relevant Article of the Treaty is 111 (formerly 109). It states that

> *"By way of derogation from Article 300[32], the Council may, acting unanimously on a recommendation from the ECB or from the Commission, and after consulting the ECB in an endeavour to reach a consensus consistent with the objective of price stability, after consulting the European Parliament, conclude formal agreements on an exchange-rate system for the ECU in relation to non-Community currencies.."*

In the absence of a full exchange-rate system, the Council – acting this time by *qualified* majority, and having consulted the ECB, but *without* the object of reaching a consensus – can

> *"formulate general orientations for exchange-rate policy in relation to these currencies"*.

Finally, under the same procedure as for general orientations,

> *"where agreements concerning monetary or foreign exchange regime matters need to be negotiated by the Community with one or more States or international organisations, the Council…shall decide the arrangements for the negotiation and for the conclusion of such agreements….. Agreements concluded in accordance with this paragraph shall be binding on the institutions of the Community, on the ECB and on Member States"*.

These provisions raise at least two important issues.

a) The procedures in Council. A "general orientation" for an exchange rate policy, or an "agreement on monetary or foreign exchange regime matters" can be arrived at without the support of all euro area Member States. Each Member State, however, has an effective veto over the conclusion of a "formal agreement on an exchange-rate system". Much might turn on the precise nature of any exchange rate policy – for example a target rate for the €/$.

b) Relations with the ECB. The provisions of the Article contain the seeds of possible conflict between the Council and the ECB. In the case of "orientations" and "agreements", there would be no formal obligation to reach consensus, although in the second case the agreement would be binding on the ECB. More seriously, no provision is made for a situation in which, even after Council/ECB consultations, the parties fail to reach agreement. The ECB, under the terms of its Statute, as well as Treaty Article 105, would be legally obliged to oppose any

[32] Which covers the normal procedure for the "conclusion of agreements between the Community and one or more States or international organisations".

arrangement which, in its opinion, threatened price stability. On the other hand, the ECB could be overruled by Council.

In practice, it is likely that – in the case of a contested agreement for a formal exchange-rate system – at least one Member State would support the ECB with a blocking vote. It is even improbable that a weighted majority could be found against determined ECB opposition.

Assuming that a decision could be taken, however, the problems could well re-surface in the course of its implementation.

For example, the ECB could find itself in the kind of situation outlined in section 2.4 of this study: the level of interest rates necessary to defend the agreed euro parity would not be those required to maintain internal price stability. In this event, the ECB would have no option but to choose the latter, so precipitating a legal and institutional crisis. The same could occur within the context of Article 105(2), under which one of the ESCB's basic tasks is

"to conduct foreign exchange operations consistent with the provisions of Article 111".

Faint premonitions of such situations have already been apparent. Though the OECD was right to observe that the absence of an exchange rate target avoided "a most unpleasant conflict" in 1999, the falling euro exchange rate at the end of that year and the beginning of 2000 created popular and political pressure for the ECB to "do something". Though it carried out its legal mandate of preserving price stability *à la lettre,* its credibility was attacked, even damaged.

If, as is widely advocated and predicted, the international monetary system is moving towards a tripolar exchange rate structure, involving agreed rates or bands for the $, € and ¥, these institutional and legal issues will have to be clarified. At the international level, the creation of the euro area has, in fact, complicated rather than simplified the situation, as the disputes about European representation at the IMF and G7 in late 1998 demonstrated.

Outside the euro area – and in particular in the United States – there exists a general belief that the Kissinger Question is still unanswered: what is Europe's telephone number?

There are a number of possibilities.

- **The ECB**. If the Central Bank were to assume full responsibility for the euro exchange rate, national governments would have to exercise self-denial in interpreting Treaty Article 111. It would act only on an ECB proposal, and would in effect give the ECB a veto over any agreements. The main advantage would be full coherence in the conduct of monetary policy; the main disadvantage a public perception of an even greater role for "unelected bankers". Institutional changes would not, of course, remove the possibility of conflicts between price stability and exchange rate objectives.
- **ECOFIN and the Euro Group.** Apparent disagreements between national Finance Ministers, and between national Finance Ministers and central bankers, have been identified as a contributing factor to the euro's weakness on the foreign exchange markets in 1999 and early 2000. Several initiatives have therefore already been launched – most recently by the incoming French Presidency in mid-2000 – so that the ministers can express more authoritative and coherent positions on economic policy, and notably on the euro. In theory, "Europe's telephone number" might then be the EU Presidency. Unfortunately, the fact that not all EU Member States are currently within the euro area, the consequent unofficial status of Euro-11 – shortly to become Euro-12 and now officially christened the "Euro Group" –

and the possibility of the ECOFIN and Euro Group presidencies not coinciding, are seriously complicating factors.

- **The Economic and Finance Committee.** The Treaty of Maastricht replaced the former Monetary Committee of the European Community by an Economic and Finance Committee. This represents both national Finance Ministries and central banks, and might therefore be thought the ideal body to express a coherent and authoritative position on the euro, especially in giving "guidance" to the foreign exchange markets. As against this, it is again an unelected body, composed of civil servants and bankers; and is also virtually unknown outside specialist circles. Policy would effectively be elaborated and executed in secret.
- **The Commission.** Given its recent problems, this body is the least likely candidate. The decisions taken at the Vienna European Council of 11 and 12 December 1998 on representation at the G7 and IMF gave the Commission only roles as "consultant" or "assistant", and US objections in practice have resulted in the Commission representative being excluded altogether from some meetings.

Conclusions

The Single Currency was a logical consequence of the Single Market. The removal of tariff and technical barriers both increased trade between the Member States, and focused attention on the barriers that remained, notably the costs of operating in fourteen different currencies. The EU began to fulfil the necessary conditions for an "optimum currency area".[33]

In addition, the removal of barriers to the free movement of capital within the EU exposed national monetary and exchange rate policies to new forces, with which "half-baked"[34] solutions could not cope. The analysis of this problem in the Delors Report led to the Maastricht Treaty, to Economic and Monetary Union and to the euro.

A single monetary policy has clearly ended all such problems as far as movements between the participating countries are concerned. Where *intra-area* exchange problems exist – for example, the costs of transferring money between different countries[35] – the introduction of euro-denominated bank-notes and coins at the beginning of 2002 is likely to have a decisive impact.

One important question, however, still remains open: whether the creation of a Single Currency has so far insulated the area from the external monetary environment as to make the euro's exchange rate against other currencies a matter of only marginal importance. This, certainly, was one of the objectives of economic and monetary union. It is also true that, where some 30% of the participating countries' GDP was "foreign" trade before EMU, the percentage has now halved to a level roughly equivalent to that of the United States. Accordingly, it was widely assumed at the beginning of 1999 that the area could follow the US example of "benign neglect" towards the euro's external value.

This assumption has been shaken by the events described in the Introduction to this study. A number of factors have been involved:

- Economic models built on trade flows alone have proved insufficient. Neither the euro area's low exposure to foreign trade, nor the fact that it has had a trade surplus – where the US has had a large deficit – have prevented a large depreciation of the euro against the dollar. Capital movements may have proved a more significant factor, especially as international investors have been able to borrow in the euro area at low interest rates for investment in the faster-growing US economy. Moreover, international capital flows are themselves complex: hot money chasing high short-term interest rates, bond traders balancing yield gaps and exchange risk, medium- and long-term portfolio investment, direct investment *via* new projects or *via* take-over are all differently motivated.
- The fall in the *external* value of the euro has been seen to have an impact on its *internal* value. Though the transmission mechanisms are not entirely clear, a threat to price stability has been recognised by the European Central Bank.

[33] For a full discussion of the issue, see European Parliament (1998).

[34] The description of the European Monetary System (EMS) of UK Prime Minister Margaret Thatcher's one-time economic policy advisor, Professor Alan Walters.

[35] See the forthcoming study from the European Parliament, (2000c).

- These developments have complicated the conduct of monetary policy in the euro area. The ECB has firmly maintained that short-term interest rates have been set purely in the light of the threats to future price stability; but commentators and markets have tended to pay more attention to the effect of interest rate changes on the exchange rate. The €/$ short-term interest rate gap has been seen as one reason for the euro's fall against the dollar; and the fall has resulted in a widespread popular perception of the euro as a "failure".
- In addition, this simple model of the relationship between interest rates and the exchange rate has itself proved misleading. The fall in the euro's parity against the dollar has been widely attributed, not to the *interest rate gap*, but to the *growth rate gap* (though the closing of the gap in 1999 and 2000 has been accompanied by a fall, not a rise in euro's parity). Accordingly, any effect of ECB rate rises on the former appears to have been offset by fears that they might postpone a closing of the latter.

Should one conclude that the ECB's policy of "for the time being, neglect[36]" towards the euro's external value has outlived its usefulness? Does the euro area, perhaps, now need an exchange rate target – or at least an exchange rate policy?

Two major problems stand in the way of devising and implementing an exchange rate target.

1. If there is to be a target, what is the correct, equilibrium rate for the euro?
2. If a target – or target range – is agreed, how is it to be achieved and maintained?

Targets

Theoretical economists have struggled mightily with the problem of defining "real" exchange rates, and of identifying the factors that produce changes in such rates. Starting with Purchasing Power Parity – the simple proposition that, in conditions of free trade and floating exchange rates, arbitrage will equalise real exchange rates world-wide – various models have been constructed to define alternative equilibrium rates, and to explain why these diverge from PPP. All, however, appear to have one crucial defect: they have a bad record of predicting nominal, market exchange rates, except over limited periods. In consequence, a target €/$ nominal rate defined according to some particular definition of the real, equilibrium or "correct" rate may not, in practice, turn out to be sustainable in the face of market forces.

The alternative to seeking an objectively "real" exchange rate, of course, is to pick a plausibly sustainable nominal rate, and declare that it will be supported – no matter what – by the monetary authorities. Market forces will then themselves ensure that the rate is achieved. This, in essence, was the mechanism used to ensure that the euro came into existence at the beginning of 1999 at the conversion rates for each component currency decided in May 1998.

One attractive option on these lines, for example, might be acceptance of the Mundell (2000) proposal for fixed margins of fluctuation between the euro and the dollar of 2 cents either side of a 1:1 parity (leading, perhaps, to full Atlantic Monetary Union or even Atlantic/Pacific Union if the Yen were also locked into the system at, say, ¥100 = $/€1). The success of such a move would then depend upon how credible the markets found the mechanisms installed to sustain it.

[36] See Introduction, p.10.

Mechanisms

Devising these mechanisms would be the **first** – and perhaps the easier to solve – **of two major problems**. Chapter 2 of his study has outlined some of the pre-conditions:

- No exchange rate policy of this kind could work without a full commitment by the central banks, administrations and political systems of all those countries involved. This would be in large part because the burden of intervention would need to fall on the monetary authorities of the *appreciating* currency. Taking as example the Mundell model, if the euro threatened to fall below $0.98 (or the dollar to rise above €1.02), it would be up to the Fed. to purchase euros on the foreign exchange markets, using its power to create an unlimited supply of Dollars; and *vice versa*. This would avoid the problems of the past, in which purchases of a depreciating currency by its own central bank, using gold and foreign currency reserves and/or borrowing, could merely give speculators a "one-way bet".
- On the EU side, the institutional division of responsibilities for monetary and exchange rate policy contained in the Treaties would need to be clarified, and probably amended. This may, in any case, be necessary in order to remove the impression, widely considered a contributing factor to the fall in the euro's parity, that "nobody is in charge".

The **second problem** would be that with which this study is mainly concerned: how to reconcile the consequences of an exchange rate policy with the proper conduct of internal monetary policy. As we have seen, the European Monetary Institute had already in 1997 rejected an exchange rate objective for the euro area as possibly "inconsistent with the internal goal of price stability".

And not only price stability. As the UK discovered painfully in 1992, supporting an apparently over-valued exchange rate can also precipitate a severe deflation, with politically unacceptable costs in terms of economic growth and unemployment.

Models

Yet it is also clear that the *absence* of an exchange rate target does not necessarily remove such problems. More recent UK experience with a floating exchange rate shows that the conduct of monetary policy solely in pursuit of domestic objectives – i.e. an inflation target – can result in exchange rate movements which also threaten economic growth and employment. Likewise, the ECB has discovered that neglect of the exchange rate, whether benign or otherwise, can eventually threaten price stability itself. Similar problems in reconciling policies for the internal and external values of a currency are endemic in a world of free capital and currency markets (see, for example, Annex I).

However, calculating exactly to what extent, how, and with what time-lags exchange-rate movements influence consumer prices is not yet an exact science. Different organisations use different measures of effective exchange rates, based on trade-flows and the weighting of trading partners. Their econometric models can then estimate the consequences for inflation and growth – assuming, of course, no corrective action by the monetary authorities.

Action taken by the monetary authorities, in turn, may be based on sophisticated calculations; or on "rules of thumb" like the UK's "old four-to-one rule" (a 4% fall in Sterling requires a 1% rise in interest rates), which has been described as "not economics". Likewise, the action taken may or may not have the predicted effects.

Euro Exchange Rate Policy

It is not necessary, however, to believe in Atlantic or World Monetary Union in order argue for a more concrete exchange rate policy for the euro area. A number of elements might be addressed.

- Most urgent, perhaps, is to dispel once and for all the impression that "nobody is in charge". It is generally accepted that the sometimes contradictory statements issued by members of the ECB's Governing Council, of the Commission and of ECOFIN (see, for example, at the beginning of Chapter 2 of this study) have contributed in some measure to the euro's external weakness. Moreover, the institutional system established by the Treaty is complex (see Section 2.11); and to this has now been added a formal status for the "Euro Group" of euro area Finance Ministers. Among the subjects which the latter will specifically discuss will be the "euro exchange rate" (Fabius, 2000). It will be necessary to build on the attendances of the ECB President at Euro Group meetings, and of the Euro Group President-in-office at ECB Board meetings, to ensure that all official statements on the euro exchange rate are agreed; coherent; and supported, where necessary, by agreed and coherent action.
- At the same time, the very complexity of the system requires a major effort in the direction of transparency. The ECB, ECOFIN, the Euro Group, and the Commission all make use of separate press conferences and press statements to explain their actions. However, the only body to which all are in some measure answerable – the ECB and the Commission under the Treaty, ECOFIN and now the Euro Group by informal invitation – is the European Parliament, and specifically its Economic and Monetary Affairs Committee. The "monetary dialogue" between that Committee and the ECB, with its regular quarterly questioning of the ECB President, provides a basis for the general examination and explanation of euro area policy.
- For its part, the ECB needs to spell out, with some precision, its exchange rate policy. The June *Monthly Bulletin* contained the Bank's analysis of the mechanisms through which exchange rate movements feed through into price movements. So far, however, it has not published the economic model, incorporating these mechanisms, behind its decisions on interest rates and other monetary policy measures. Parliament's resolution (European Parliament, 1999) on the ECB's annual report for 1998 called on the Bank to publish macro-economic forecasts on a six-monthly basis, together with the data and research on which the forecasts were based; and the ECB agreed to the publication of the macro-economic forecasts, and also the economic model used to generate them.
- More generally, a broad analysis is required of the factors determining the external value of the euro, and particularly its parity against the dollar. The fall since the beginning of 1999 has prompted an extraordinary number of explanations (some of which have been examined in this working paper):
    - the short-term interest rate gap;
    - the "growth gap";
    - portfolio and direct investment flows;
    - an excess supply of €-denominated assets;
    - structural defects in the euro area, particularly in the labour market;
    - continuous expansion, and the arrival of the "new economy", in the US;

- the "Greenspan factor[37]";
- a euro area policy of deliberate under-valuation in order to promote economic growth;
- the "no-one in charge" problem;
- uncertainty about the attitude of the ECB itself towards the exchange rate;
- a "political risk premium" consequent upon the political situation in one or more participating states;
- and, of course, belief that the Single Currency project was doomed from the start.

Speaking to Parliament's Economic and Monetary Affairs Committee on 20 June 2000, ECB President Wim Duisenberg explained the "weakening tendency that has been prevalent" as being in part due to the growth differential with the United States, and in part to the interest rate differential. But he added that

> *"There are more explanations for the development of the exchange rate relationships, also some which I cannot quantify. I have a feeling that confidence and credibility play a role. You cannot forget that the European Central Bank – although the Federal Reserve Bank is not that old, but it is about 100 years old – has been conducting monetary policy for only one and a half years."* (Duisenberg, 2000c)

This last point – in essence the "Greenspan factor" – was to some extent quantified in a survey by the investment bank Goldman Sachs, carried out on 29 February 2000. The bank's clients were asked to rank, on a scale of 1 to 5, the US Federal Reserve Bank, the Bank of England, the ECB and the *Bundesbank* (as it existed before the Single Currency) in terms of how well they understood the reasoning behind each bank's monetary policy decisions. The results were:

Table 6: Ranking of Central Banks

Bank	Overall rating
US Federal Reserve Bank	4.3
Bundesbank	3.5
Bank of England	3.3
European Central Bank*	2.2

**Over 20% of respondents gave the ECB a rating of only 1.*

At one time it was asserted that the only thing needed to reverse the euro's fall was "good news": for example, indications that growth was picking up, unemployment falling, and the performance gap with the US closing. Yet arrival of the "good news" – a marked improvement in the euro area's economic fundamentals, including the closing of the growth gap with the US, and solid progress in structural reforms (notably of the German tax system) – had not, by mid-2000 had more than a minor effect on the exchange rate. This, in itself, needs explaining.

[37] The prestige of the US Federal reserve Bank, and in particular of its chairman Alan Greenspan, has created a belief that the "Goldilocks Economy" in the US might go on for ever – or, at least, that there will be a "soft landing" from the recent sustained expansion.

- Finally, however, at least one possible reason for the euro's difficulties will end at the beginning of 2002 – a widespread disregard for, ignorance of or disbelief in its existence.

  According to the Commission's report on preparations for euro notes and coins, presented to the July 2000 ECOFIN, only 2.4% by volume of firms' transactions were being carried out in euros by April 2000 (though, by total value, the figure was 25%, substantially due to €-denominated mergers and takeovers). As far as the general public was concerned, the absence of euro notes and coins made use of the new currency practically impossible – people can't "feel the money in their hands" (Duisbenberg 2000c). The Commission's third quarterly report for 2000 on the use of the euro found only 1.8% of individual transactions being carried out in euros, down from 2.4% in the second quarter.

  Where there *has* been a realisation that the participating national currencies are now "non-decimal sub-divisions" of the Single Currency, this has only led to resentment that sometimes substantial charges are being levied for changing one into another.

  The replacement of national by €-denominated *specie* as legal tender by the end of February 2002 will change both business practice and public perceptions. This, in turn should give a new reality to the Single Monetary Policy; and also to the euro's single *external* reality.

  It is likely that only then will the euro's parity against the dollar and other currencies settle at an equilibrium – or at least generally acceptable – level, and an accurate assessment of the interaction with monetary policy be possible.

Annex I: A case history – the Polish zloty

Over the last ten years the Polish currency, the zloty (PLN), has experienced a number of exchange rate systems. Before 1990, it was a virtually inconvertible currency. With internal convertibility being introduced in that year, a fixed exchange rate against the US Dollar was introduced: PLN 0.95 to the dollar. Then, in 1991, the National Bank of Poland began managing the exchange rate through a "crawling peg" mechanism.

Under this, the exchange rate was tied to a basket of reserve currencies. Until 1999 the basket consisted of:

Table 7: Composition of the pre-1999 Polish "crawling peg" basket

Currency	% of basket
$	45
DM	35
£	10
FF	5
SF	5

With the introduction of the euro in January 1999 the composition of the basked was simplified to consist of 55% in euro and 45% in dollar.

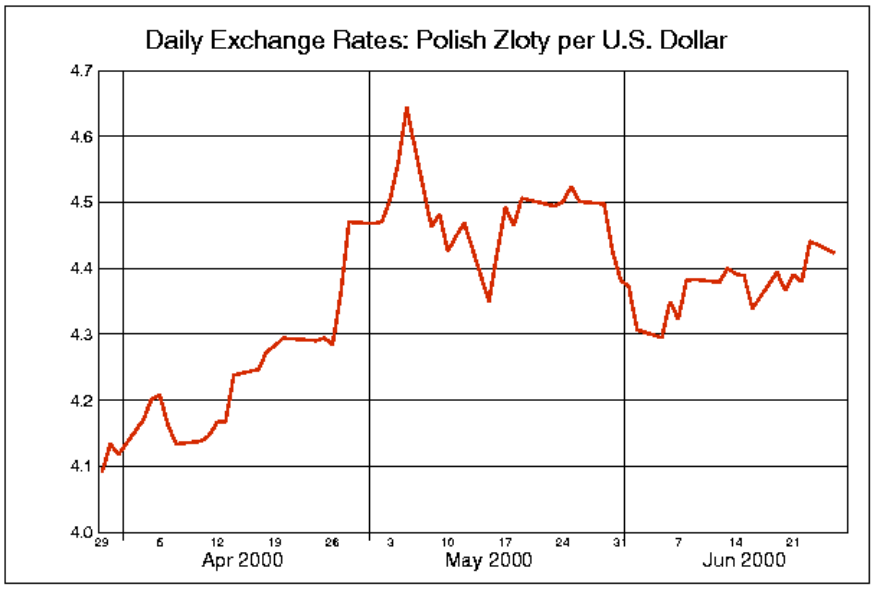
The "crawling peg" mechanism allowed for a regular depreciation of the zloty's central rate against this basket (set at 0.3% per month during the period March 1999 to April 2000). Around this central rate, fluctuations were permitted within a fixed band, the percentage margin being widened as exchange controls were lifted. In 1995, the year in which current account convertibility was introduced the band was 3.5%. In the following year the requirement that Polish firms' foreign currency earnings should be converted into zlotys was ended, and the free movement of capital virtually achieved in 1997. The band was accordingly widened to 10% in February 1998, and 12.5% in October 1998.

In April 2000, the decision was taken to end management of the exchange rate, and to let the zloty "float".

The immediate result was a sharp fall in the PLN/$ rate – 0.16 PLN in the first three days. Following the announcement on 18 April of a slight fall in the rate of inflation (to 10.3% in March from 10.4 in February) the currency stabilised; but on 28 April depreciation suddenly resumed, with the zloty falling to an historical low against the dollar on the following day. On 4 May the Bank announced that Poland's external current account deficit has risen from 8% of GDP in February to 8.3% in March; and the zloty fell further to a new low of 4.72 to the dollar. However, a speech on the same day by Bank President Hanna Gronkiewicz-Walz drew attention to the fact that the zloty had not, in fact, strayed outside its old 15% fluctuation margins; and observed that, in March, the currency had been overvalued. The result, together with the expectation of an interest rate rise – which, in the event, did not take place – was a recovery of the zloty to a more stable rate around 4.5 to the dollar.

At the end of May, there was a further improvement, with the currency reaching 4.3 to the dollar in early June before falling back to renewed stability around 4.4.

Chart 14: Daily exchange rates of the zloty against the US $, April-June 2000



Analysis

The short-term behaviour of the zloty during this period illustrates some typical features of currency markets. Following the initial float, there was a depreciation, which overshot. The recovery of mid-May likewise overshot, before short-term stability was reached at PLN 4.5:$. There was then a further appreciation at end-May, also with overshooting, before the return to a new stability at 4.4. The markets appeared to have been "hunting" a long-run equilibrium dollar rate through a process of diminishing oscillation.

Such behaviour might have been predicted without any knowledge whatsoever of the Polish economy or of events within it. Events such as those already outlined, however, may influence when changes of direction take place, while market perceptions of economic fundamentals are likely to be the major determinants of the sought-for equilibrium rate.

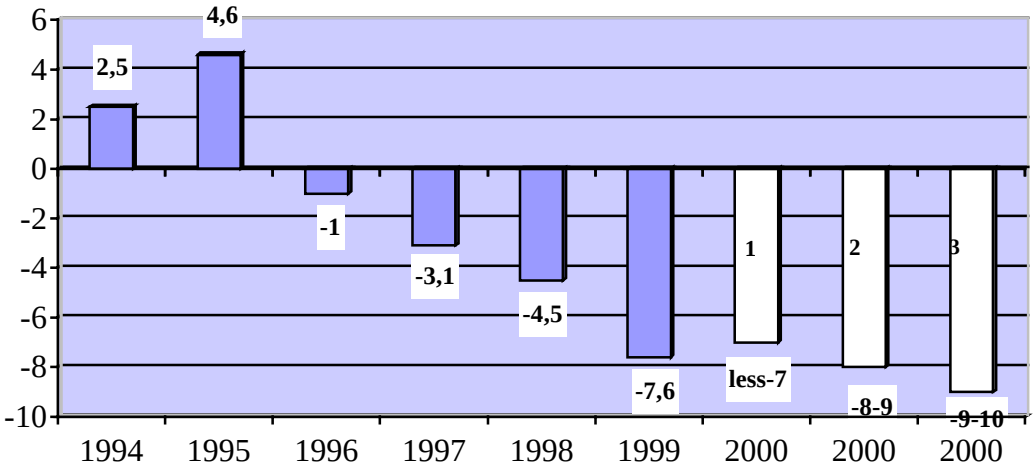
Most commentators have attributed the fall in the zloty since floating to the growing external current account deficit. In the twelve months to March 2000 it was running at an annual rate of 8.3% of GDP, and is expected to total $12.5 billion for 2000 as a whole. Particular features behind the deficit have been:

- An import boom, financed by credit expansion.
- A reduction in the competitiveness of Polish exports, which are sensitive to exchange rate movements, and are mostly low-tech products.
- A fall in exports to Russia in 1999 as a result of the financial crisis there.

- A fall in receipts from privatisation.
- The rise in oil prices.
- A particularly acute worsening of the balance of trade in services, with imports of modern services like auditing and financial advice increasing sharply.

Under classical trade theory, a depreciation of the zloty might therefore be considered an appropriate response.

Chart 15: Polish Current Account balance (% of GDP)



Forecasts:
1. G. Wojtowicz - MPC
2. S. Gomulka - Polish Ministry of Finance
3. Nomura

The deficit, however, has been covered by strong inflows of capital; and Poland's foreign exchange reserves have remained virtually stable since 1998. Large current account deficits of this kind are typical of rapidly developing economies, and should be reversed as the fruits of inward investment are realised.

On the other hand, under half the inflows of capital can be classified as genuine long-term investment. This makes the zloty vulnerable to a sudden outflow of short-term funds.

Analysts (for example, Nomura) have indeed identified capital flows as the critical factor determining the external value of the zloty, as opposed to trade or economic fundamentals. Limitations on convertibility – for example, the prohibition on foreigners' borrowing of zlotys from Polish banks – currently restrict the possibilities for speculative attack.

Policy problems

The appropriate response to the rise in credit-financed imports would be a tightening of the monetary and fiscal stance. Interest rates, however, have already been at 17.5% without any marked effect on the demand for imports. Even higher rates might both slow down economic growth and result in an inflow of short-term speculative capital.

The policy of the Polish monetary authorities is founded on direct inflation targeting. For the current year, a target range of 5.4 – 6.8% has been set by the Monetary Policy Council. Any severe fall in the external parity of the zloty could, however, threaten the target and oblige the Central Bank to intervene.

The floating of the zloty creates the risk of exchange rate volatility, which could disrupt both trade and the conduct of domestic monetary policy. On the other hand, it provides the opportunity for the financial markets to develop products to hedge against exchange risk.

Finally, the external value of the zloty is to a considerable extent linked to that of the euro. Whereas the dollar rate of the zloty fell by 3.5% in April 2000, against the DM/€ it fell by only 1.3%.

Annex 2: Results of standard simulations on the OECD's Interlink model

Table 8: € area interest rate cut: floating exchange rate

drop in short term and long term interest rates of 1 percentage point; deviations from baseline, in percent

		Years after shock				
		1	2	3	4	5
United States						
	GDP Level	-0,1	-0,1	-0,1	-0,1	0
	Inflation (Consumer Price deflator)	-0,1	-0,2	-0,2	-0,3	-0,4
	Current account (% GDP)	0	-0,1	-0,1	-0,1	-0,1
	Govt net lending (% GDP)	0	0	0	0	0
€ Area						
	GDP Level	0,7	1,3	1,6	1,8	2,1
	Inflation (Consumer Price deflator)	0,3	0,5	0,8	1,2	1,6
	Current account (% GDP)	0	0	0	0,1	0,1
	Govt net lending (% GDP)	0,5	0,9	1,3	1,5	1,9
GDP Levels						
	Germany	1,2	2	2,2	2,3	2,5
	France	0,4	0,9	1,3	1,7	2
	Italy	0,6	1,1	1,3	1,5	1,9
	Austria	0,7	1,4	2,1	2,5	2,8
	Belgium	0,5	1,1	1,6	2,1	2,6
	Denmark	0,5	1,5	2,2	2,8	3,4
	Finland	0,5	1,4	1,9	2,3	2,8
	Ireland	0,9	1,0	2,9	3,7	4,5
	Netherlands	0,6	1,3	1,6	1,7	1,8
	Portugal	0,5	0,9	0	1,1	1,2
	Spain	0,3	0,7	0,9	1,1	1,4

Nominal exchange rate floating.

Real government spending and investment held at their baseline levels.

Real interest rates are held at their baseline level.

Source: OECD

Table 9: Ten percent US dollar appreciation

(deviations from baseline, in percent)

		Years after shock				
		1	2	3	4	5
United States						
	GDP Level	-0,4	-0,8	-0,4	0	0,1
	Inflation (Consumer Price deflator)	-0,7	-0,5	-0,9	-1	-1,1
	Current account (% GDP)	-0,1	-0,2	-0,3	-0,4	-0,4
	Govt net lending (% GDP)	0,1	-0,1	0	0,1	0,1
€ Area						
	GDP Level	0,2	0,3	0,2	0,1	0
	Inflation (Consumer Price deflator)	0,3	0,2	0,4	0,4	0,5
	Current account (% GDP)	0	0,1	0,1	0,2	0,2
	Govt net lending (% GDP)	-0,1	0	-0,1	-0,1	-0,2
GDP Levels						
	Germany	0,1	0,2	0,2	0,1	0
	France	0,2	0,2	0,2	0,2	0,1
	Italy	0,1	0,3	0,2	0,2	0
	Austria	0,5	0,5	0,3	0,1	-0,2
	Belgium	0	0	0	0	-0,1
	Denmark	0,1	0,2	0	-0,2	-0,3
	Finland	0	0,1	0	0	-0,1
	Ireland	0,6	0,5	0,4	0,2	-0,1
	Netherlands	0,3	0,3	0,1	-0,1	-0,3
	Portugal	0,1	0,2	0,3	0,3	0,3
	Spain	0,2	0,3	0,2	0,2	0,1

Real government spending and investment held at their baseline levels.
Real interest rates are held at their baseline level.

Source: OECD

Table 10: Ten percent € appreciation

includes Denmark; deviations from baseline, in percent

		Years after shock				
		1	2	3	4	5
United States						
	GDP Level	0,1	0,3	0,1	0	0
	Inflation (Consumer Price deflator)	0,2	0,2	0,3	0,4	0,4
	Current account (% GDP)	0,1	0,1	0,1	0,1	0,1
	Govt net lending (% GDP)	-0,1	0	0	0	-0,1
€ Area						
	GDP Level	-0,7	-0,9	-0,6	-0,4	-0,1
	Inflation (Consumer Price deflator)	-0,6	-0,6	-0,9	-1,1	-1,2
	Current account (% GDP)	-0,3	-0,5	-0,6	-0,6	-0,6
	Govt net lending (% GDP)	0,1	0	0,1	0,2	0,3
GDP Levels						
	Germany	-0,9	-0,9	-0,5	-0,2	0,1
	France	-0,5	-0,7	-0,6	-0,4	-0,1
	Italy	-0,5	-0,9	-0,6	-0,3	-0,1
	Austria	-1	-1,1	-0,8	-0,3	0,3
	Belgium	-0,5	-0,7	-0,6	-0,5	-0,3
	Denmark	-0,5	-0,8	-0,5	-0,1	0,4
	Finland	-0,6	-0,8	-0,6	-0,3	0
	Ireland	-1,6	-1,9	-1,8	-1,3	-0,7
	Netherlands	-0,9	-1,1	-0,6	-0,2	0,3
	Portugal	-0,5	-0,6	-0,6	-0,7	-0,8
	Spain	-0,7	-0,9	-0,8	-0,7	-0,5

Real government spending and investment held at their baseline levels.

Real interest rates are held at their baseline level.

Source: OECD

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