The overvaluation of sterling since 1996: policymakers' responses

by

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Abstract

A large and sustained nominal appreciation in 1996-98 led to a serious overvaluation of sterling which persisted at least until the middle of 2003. It has been associated with severe pressure on the manufacturing sector, whose output fell between 1996 and 2002 while service sector output was growing strongly.

The policymakers, like the wider community, were well aware of the overvaluation and of the pressures created by it, but felt they could do little about them. They had difficulty in understanding past and forecasting future movements of sterling. The MPC considered but rejected suggestions for official intervention in foreign exchange markets, mainly on conjunctural grounds.

It has been argued, notably by Wadhwani (2000), that interest rates should be set differently so as to reduce the overvaluation of sterling and relieve the pressure on the tradable goods sector. In the pre-MPC period it can be argued that the Chancellor in effect followed such a policy, against the Bank's advice. Under the MPC the issue was discussed, and arguments presented for and against. However, in specific episodes this alternative policy always seemed risky, and a majority of MPC members voted against it. These decisions were taken largely for conjunctural reasons – the strength of domestic demand, the likely effects on the perception of the MPC's reaction function and credibility, and uncertainty over how the exchange rate would react to interest rate decisions taken on that basis – but the prevalence of such reasons inevitably casts doubt on the proposal itself.

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There is widespread agreement that UK monetary policy has been pursued with greater competence and success since the Monetary Policy Committee (MPC) was given control of interest rates in 1997. Policy now has a clear target and a transparent set of operating practices, the MPC's reaction function is relatively well understood, and inflation has not so far strayed far enough from the 2½% target for the Governor of the Bank of England to have to write and explain the MPC's behaviour and thinking to the Chancellor of the Exchequer. However, the period from 1997 (and in fact from late 1996) has been characterised by a strong and remarkably persistent overvaluation of sterling, and there have been recurring concerns about the resulting 'imbalances' between the tradables and non-tradables sectors of the UK economy (see, for example, Allsopp, 2001; Barker, 2002; Nickell, 2003). Such concerns have raised the question of whether the policymakers could have taken some action to forestall or correct the development of exchange rate misalignments (Wadhwani, 2000; Cecchetti et al, 2000).

This paper looks in more detail at how the problem of overvaluation developed and persisted and at the responses of the monetary policymakers to it. Section 1 sets out the basic picture, covering the movements in the nominal and real exchange rate and in the policy rate, and noting the difference in growth trends between manufacturing (as a proxy for the tradables sector) and services ('non-tradables'). Section 2 provides a chronological narrative, designed to illuminate both the general thinking and concerns of the policymakers and the reasons for specific policy actions. Section 3 discusses their attempts to understand past and forecast future exchange rate changes. Section 4 examines their attitudes to policies for influencing the exchange rate, first through intervention in the foreign exchange markets and second by setting interest rates differently, and considers what the

policymakers would have had to do with monetary policy and when in order to prevent the overvaluation developing or to undo it once it had developed. Section 5 concludes.

1. The basic picture

Sterling appreciated sharply in 1996-98 and is widely agreed to have become seriously overvalued. Figure 1 shows the movement of the nominal effective exchange rate and of relative normalised unit labour costs, a measure of the real effective exchange rate (monthly data from *International Financial Statistics*). In nominal terms (1995 = 100) sterling rose from 99.83 in August 1996 to a peak of 123.25 in July 1997 and then to a further peak of 126.3 in April 1998. It declined consistently from July 1998 to reach a low of 117.29 in January 1999. It then rose again from February 1999 (with a minor dip in July-August 1999) to reach 129.65 in April 2000. For the next 2½ years the nominal rate oscillated in a narrow range with a very slight downward trend, but from February 2003 it turned down more decisively, reaching 115.39 in May. Figure 2 shows the exchange rate of the pound against both the euro and the dollar, together with the nominal effective rate, which generally moves more closely with the euro/sterling than with the dollar/sterling rate. Movements in the euro/dollar rate can be seen from the relation between the two rates against sterling. Those movements are particularly important towards the end of the period considered here, but for sterling the depreciation against the euro is largely offset by appreciation against the dollar.

The real exchange rate, as measured by relative unit costs, follows the nominal rate closely, in this as in earlier periods. The extent of appreciation was slightly higher, as UK inflation initially exceeded euro area and, to a lesser extent, US

inflation; and there is perhaps less sign of a downward trend before the last few months of the later period. But, given the speed of the appreciation in 1996-98, it is difficult not to believe that it was the nominal exchange rate that drove the real rate in this case, rather than the other way round.[1]

One way of identifying misalignments is to focus on 'large' deviations from past averages. Figure 3 shows an upper bound for relative unit costs (rnulc), calculated as the average for 1980-2000 plus 5%, and a lower bound calculated as the average for 1975-2000 minus 5%.[2] On that basis sterling was significantly overvalued in almost every month between October 1992 and August 1996, but became overvalued from April 1997. The nominal depreciation of the spring of 2003 reduced but did not eliminate that overvaluation, at least up to May 2003. Figure 3 also shows relative consumer prices (relcp), which are affected by variations in mark-ups; on this series the overvaluation (relative to the relevant upper bound) is rather smaller.

An alternative way of identifying misalignments is to use calculations of the (varying) real equilibrium exchange rate. Wren-Lewis (2003), in a study written before the 2003 appreciation of the euro against the dollar, discusses a range of such models, including Alberola et al (1999), Driver and Wren-Lewis (1998), Church (1999) and the OECD's PPP estimates, with a focus on the euro/sterling exchange rate (the euro has a weight of around two thirds in the sterling effective exchange rate). All of these models, and the new model presented by Wren-Lewis in his paper, suggest significant though varying degrees of overvaluation of sterling in recent years. For example Alberola et al (2001), in a paper which updates and extends their earlier work, calculate a significant rise in the real (effective) equilibrium exchange rate for the UK between 1995 and 1998, but they identify a similar movement to that described above from undervaluation in 1995-96 to overvaluation in 1997-98. On

Wren-Lewis's (2003, p 36) calculations, sterling was undervalued against the euro by some 8% in 1995-96 but overvalued by 16% in 2000; and it was in equilibrium against the dollar in 1995-96 but 10% overvalued in 2000.

How are these movements in exchange rates related to the trends in monetary policy? Figure 4 presents the nominal and real exchange rates together with the policy interest rate and RPIX inflation (since 12 months before, data from *Economic Trends*). The initial appreciation coincides broadly with an upswing in interest rates. The depreciation from July 1998 coincides broadly with the first part of a downswing in the policy rate that started in October 1998. However, that downswing continued into the middle of 1999, while the exchange rate began to rise again from February. A new upswing in the policy rate began in September 1999, with the peak of the nominal rate in April 2000 coinciding with the peak level of the policy rate (6% from February 2000). However, the cuts in the policy rate of 2% between February and November 2001 were not accompanied by any major change in the nominal exchange rate. The latter finally declined more significantly only from February 2003, a month in which there was also a 0.25% cut in the policy rate.

While there is some broad relationship between turning points in the nominal exchange rate and the policy rate, there is no precise contemporaneous relationship (the correlation between the two series is – 0.16). In addition, while for the policy rate there is a clear pattern in which, after the initial upswing, successive peaks and troughs are lower, there is no such pattern for the nominal exchange rate (or for the real exchange rate, where the correlation with the policy rate is – 0.35). Since the rate of inflation has not varied widely over the period, these comments also hold for the real *ex post* interest rate (i.e. the policy rate minus the rate of inflation), with the

exception of the final half year when the real rate turns down more sharply and the nominal and real exchange rates depreciate.[3]

Figure 5 shows annual data on manufacturing, services and GDP, where the first two can be taken as (imprecise) proxies for the output of tradables and non-tradables. The data are for constant (1995) prices; insofar as relative prices have tended over the long term to rise more slowly in manufacturing than services, the data are better suited to comparing the fluctuations in the growth of each sector in different periods, rather than comparing the growth of different sectors over a single period. On this basis, over the 'long boom' from 1948 to 1973 manufacturing grew at an average of 3.4% per annum, services at 2.4% and total GDP at 3.0%. Manufacturing was particularly adversely affected by the recession of the early 1980s, which coincided with the first major overvaluation of sterling in the period. Between 1982 and 1990 the three constant price growth rates were 3.2%, 3.3% and 3.2% respectively. Manufacturing was again hit more heavily than services by the 1990-92 recession, but between 1992 and 1996, the three growth rates were 2.2%, 3.6% and 3.2%. However, between 1996 and 2002 the rates were – 0.8%, 3.6% and 2.5%.

There is a great deal more that can be said about the causes and interpretation of these fluctuations. In particular, a full analysis of the early 1980s would take account of North Sea oil and movements in oil prices, while a full analysis of the 1998-2003 period would discuss imbalances between the household and corporate sectors. For obvious reasons, little research has so far been done on the latter period, but Anderton (1999) has argued that there were significant hysteresis effects in manufacturing associated with the loss of competitiveness in the former. On the basis of Figure 5 it seems *prima facie* likely that the late 1990s/early 2000s overvaluation has also had particularly adverse effects on the tradables sector.

It should be noted that in the former overvaluation episode the fall in manufacturing was accompanied by a smaller fall in services (and in total GDP), while in the latter episode the fall in manufacturing was accompanied by and, for total GDP, more than offset by rapid growth of services, as the MPC acted to stabilise overall demand. At the same time the current account, which was in surplus in the early 1980s but reached a deficit of over 5% of GDP in 1989-90, was continuously in deficit between 1996 and 2002, but to a relatively small extent: the deficit varied between near-zero in late 1997 and just over 2% of GDP in late 1999.[4]

2. A policy narrative[5]

Sterling began to appreciate in September 1996, after four years of relative stability. The UK's exit from the ERM in September 1992 had involved a depreciation of some 14%, but after that sterling moved within a relatively small range (Figure 1). Moreover, while at first the monetary authorities had been concerned that the depreciation would bring about a significant rise in inflation, the pass-through to domestic prices turned out to be rather small (*Bank of England Quarterly Bulletin*, Novem,ber 1993, p462).

The depreciation of March-April 1995 had worried the Bank of England, which in this period was giving public advice to the Chancellor of the Exchequer (Minister of Finance) who took the actual decisions on interest rates. However, the Chancellor, Kenneth Clarke, had brushed it aside in declining to raise interest rates in May, June and July 1995, and by January the Governor had conceded that "it did now seem that the period of externally-originated cost-push pressure – aggravated by last year's fall in the exchange rate – had largely passed, with encouragingly little damage in terms of the knock-on effect onto domestic inflation" (*MMM*, January 1996, §14).

Rates were cut in March and June 1996 (only in the first case with the agreement of the Bank), but by August the Bank was becoming increasingly concerned about the acceleration of domestic demand, reinforced by rapid monetary growth and large budget deficits (*IR*, August 1996, p3). The Bank advised the Chancellor to raise interest rates in every month from September 1996 to April 1997, but he agreed to a rise only in October 1996, as a pre-emptive measure in the context of a strong recovery. Although sterling had already risen sharply, that played little part in the decision. Indeed, according to the Chancellor, "Nobody really knew why sterling had appreciated recently, just as they had not known why sterling had depreciated 18 months ago. The recent appreciation of sterling did tighten policy, although the impact on inflation would depend on why sterling had appreciated and how long it would last." (*MMM*, October 1996, §35)

At the next meeting, however, the Chancellor suggested that the further rise in sterling was "partly an over-reaction to last month's interest rate rise which the markets had interpreted as the beginning of a period of interest rate rises." (*MMM*, December 1996, §24). In subsequent monetary meetings he repeatedly presented sterling appreciation as a factor that would restrain domestic inflation so that interest rate rises were not necessary for the attainment of the inflation target. In January 1997, for example, he

> said he was not persuaded to put up interest rates given the strength of sterling. Sterling was now 7½ per cent higher than when interest rates were last raised in October… Interest rate decisions were not dependent on the exchange rate, but it was one of the factors to be taken into account. The Chancellor said he did not believe enough account had been taken of the strength of the exchange rate. Most economic models suggested an exchange rate change of this magnitude would have a significant effect on the prospects for inflation. The strength of the pound would also have a marked effect on activity, where the full effect had not been felt yet. (*MMM*, January 1997, §33)

And in March 1997 he argued that "the stronger exchange rate change was beginning to have an effect on expectations about export prospects, and also about prices." (*MMM*, March 1997, §34) The Bank, on the other hand, tried to analyse the causes and through them the likely consequences of the appreciation. It argued that the appreciation would have only a short term impact in reducing inflation and would do little to reduce the excess demand that would fuel inflation over the medium term (eg *MMM*, October 1996, §23; January 1997, §23; March 1997, §§28-9; April 1997, §37; *IR*, February 1997, pp46-50, 53).

The monetary meeting of May 1997 was the last under the old arrangements. The new Chancellor, Gordon Brown, raised the policy rate by 0.25% and announced that future decisions would be taken by a new Monetary Policy Committee. The MPC then raised rates in June, July and August by 0.25% each time. In its first meeting the MPC discussed "the problems posed for policy by the combination of strong domestic demand growth and a sharp appreciation of the exchange rate. Members agreed that the main issue at present was to assess the prospective strength of domestic demand against the effect of the exchange rate appreciation." However, with the appreciation not yet apparently affecting external demand, the MPC "agreed that the prospect for domestic demand was sufficiently buoyant that, despite the probable future impact of the higher exchange rate on activity, there was a need for tighter monetary policy in order to hit the inflation target looking two years or so ahead." (*MPC*, June 1997, §§29, 38)

In August the *Inflation Report* succinctly described the dilemma facing monetary policy as follows; "Buoyant domestic demand, fuelled by rapid growth of wealth, money and credit, has led to faster output growth. At the same time, the large rise in the effective exchange rate over the past year is now leading to severe

pressures on those sectors most exposed to international competition, especially manufacturing business" (*IR*, August 1997, p49). The MPC discussed at some length the reasons for sterling's appreciation and its effects in terms of unbalanced activity. The Committee decided that "it seemed likely that sterling was overvalued", emphasised the policy dilemma and discussed "alternative policy instruments that might help to resolve the dilemma without introducing unacceptable distortions" (*MPC*, August 1997, §§58, 61) (see section 4 below). It also issued a statement after the meeting which acknowledged the pressure placed on the tradables sector by the appreciation of the past year, explained the (domestic demand) reasons for another rise in interest rates and suggested that "upward pressures on the exchange rate should be reduced by the perception that interest rates have reached a level consistent with the inflation target" (Bank of England press notice, 7 August 1997).

For the next two months sterling was lower and figured rather less in MPC discussions, and interest rates were not changed. In November sterling began to rise again, but it had not done so enough at the time of the MPC's meeting to play a large role in the decision, which was for a further rise in the policy rate. Over the next six months, while the exchange rate fluctuated but not widely, the strength of domestic demand continued to be the main concern of the MPC, though not enough for a further rise in the policy rate, and the exchange rate was not prominent in the MPC's discussions. In April 1998, however, one argument against a rate rise was that "Sterling was strong, creating an unbalanced economy, and this would be exacerbated by a further move now." (*MPC*, April 1997, §54) And in June 1998 a depreciation (which turned out to be only temporary) contributed, together with news of a rise in earnings data, to a further 0.25% rise in the policy rate (*MPC*, June 1997, §§32, 36; see also the Bank of England press notice of 4 June 1998).

By October 1998 there had been a larger and more sustained depreciation, which was attributed by the Bank in part to the press notice issued after the September meeting (*MPC*, October 1998, Annex, §3), which had seemed to signal that a turning point in interest rates had been reached. However, by now the MPC was concerned about a weakening of the outlook for world activity and survey evidence of a domestic downturn, and it cut the policy rate by 0.25%. That was followed by cuts of 0.5% in November and December and further cuts (mostly of 0.25%) in January, February and April 1999. Sterling began to appreciate gently from a low in January 1999, then recovered more sharply in May. The MPC returned to the earlier concept of a policy dilemma, saying that the renewed appreciation "had exacerbated the imbalances in the economy… The implications for inflation, and thus for monetary policy, depended on the reasons for the appreciation." (*MPC*, May 1999, §28) It also considered, but decided against, foreign exchange market intervention (see section 4). However, it issued a statement which said that the forthcoming May 1999 *IR* inflation forecast

> takes account of the rise since February in sterling's effective exchange rate, and assumes a decline from its present high level, at least in line with interest rate differentials. If sterling were not to weaken as assumed, it is likely that inflation would undershoot the inflation target over the coming two years. In those circumstances, depending on other developments in the economy, there might, therefore, need to be further easing of interest rates in order to keep inflation on track to meet the 2½% target. (Bank of England press notice, 6 May 1999)

Sterling did not depreciate as expected by the June meeting, and that was one of the reasons for the further cut in the policy rate at that meeting (it also led to growing unease amongst MPC members about the use of the UIP assumption for the forecasts, see section 3 below).

Sterling fell back after June 1999 and received less attention from the MPC, which raised the policy rate in September, mainly in response to domestic demand

growth. That rise was followed by a sharp appreciation of sterling, which continued to rise for another six months, while the policy rate was raised again in November, and in January and February 2000. In each case the main considerations underlying the increase in the policy rate were domestic, together with a strengthening of the US and world economy in January. However, the MPC remained uncomfortably aware of "the domestic sectoral imbalances associated with the continuing strength of sterling," although there were different views both about the policy implications and about the exchange rate consequences of interest rate decisions (*MPC*, February 2000, §32, 33-6) At its February meeting it also revisited the issue of foreign exchange market intervention.

Sterling then fell some 4-5% between April and June 2000, rose a similar amount by October 2000 and fell a similar amount by February 2001, while the policy rate remained unchanged between February 2000 and February 2001. During this period the MPC repeatedly discussed the way sterling had moved, and might move, and the implications for domestic imbalances. For example, the minutes of May and June 2000 had substantial sections on the reasons for the depreciation and a consideration of whether the economy was finally 'rebalancing' itself (*MPC*, May 2000, §§6-13; June 2000, §§5-8, 29-30), while the October meeting discussed the causes of the appreciation (*MPC*, October 2000, §14). And likely movements in sterling were evoked in arguments for or against policy rate changes, for example, in March 2000 (*MPC*, March 2000, §33) and December 2000 (*MPC*, December 2000, §38). The MPC also discussed foreign exchange market intervention again in April and May 2000.

Between February 2001 and January 2003 sterling was relatively stable, while the policy rate was reduced in stages from its initial level of 6% to 5% in August 2001

and 4% in November 2001, and remained at that level until February 2003. The weakening of the US economy was the main reason for the February cut, and continued to be important, along with signs of a domestic downturn, in the cuts of April, May and August. The events of 11 September, along with evidence that the world economy was weakening further even before then, led to further cuts in September, October and (by 0.5%) November 2001. Although sterling was relatively stable, the MPC continued to concern itself with the level and movement of the pound. In May 2001, for example, one reason for cutting the policy rate by 0.25% rather than 0.5% was a risk that rising current account deficits "would trigger a sharp depreciation in sterling's exchange rate, causing inflation to rise by more than projected." (*MPC*, May 2001, §27) The August *Inflation Report* contained a two page box on imbalances in the UK economy, including charts of the growth of manufacturing and services output as well as of the current account and household/corporate sector net financial balances (*IR*, August 2001, pp52-3). In July, for some members "the risk that the exchange rate was more likely to fall than to rise further in itself affected the inflation outlook, and so should enter the considerations for the setting of interest rates. Others questioned how far policy should seek to anticipate a fall in the exchange rate" (*MPC*, July 2001, §35). And in November the MPC discussed the risks to sterling, with some members emphasising the potential upside risks to inflation from the possibility of a depreciation, while others argued that the inflationary effects of depreciation would depend on the context and suggesting that moderate depreciations might be absorbed in foreign exporters' margins with little effect on UK prices. (*MPC*, November 2001, §§16-17)

Continuing concerns with sterling and domestic imbalances can be found over the following 15 months (during which the policy rate was unchanged). In January

2002, for example, the Committee noted that "Monetary policy over the past year had been set so as to compensate for weaker external demand by reducing interest rates to support domestic demand. This strategy had so far achieved its aim of keeping inflation close to the target rate by maintaining aggregate demand growth close to potential supply, but necessarily at the cost of widening the imbalances further." It considered the medium term risks of maintaining such a policy stance if external demand remained weak, and the alternative risks that would arise from keeping interest rates high in order to try to deter or minimise the former risks. (*MPC*, January 2002, §§20-22) The minutes of February 2003 contain a discussion of the sustainability of the current account with reference to both the possibility of firms leaving the manufacturing/tradables sectors because of continued competitiveness pressures and longer term trends for the decline of the share of manufacturing. (*MPC*, February 2003, §4)

The MPC cut the policy rate in February 2003, largely on the basis of a weaker outlook for world activity and slower domestic demand growth in the UK and with little reference to sterling, although it was argued by some members that it would be appropriate "to accommodate the direct first-round effects on the price level of the recent fall in the exchange rate." (*MPC*, February 2003, §28) In the following months, as sterling depreciated below the range in which it had been moving for the last three years but the domestic economy slowed further, there was repeated discussion of whether the depreciation necessarily required a policy rate increase, given that the persistence of the depreciation was uncertain and the degree of pass-through from it was low and uncertain. (*MPC*, March 2003, §24; April 2003, §26; *IR*, May 2003, p36) Finally, a further cut of 0.25% was made in July 2003, mainly on the grounds of a

further weakening of world and UK economic activity, together with the reversal of the sharp fall in sterling around the time of the May meeting (*MPC*, July 2003, §26).

3. The policymakers' capacity to understand and forecast exchange rates

A consistent theme in the policymakers' attitudes to movements in sterling is that the consequences of an exchange rate change depend on its causes. Table 1 brings together the fruits of policymakers' attempts to understand the causes of such changes, as presented in successive quarterly *Inflation Reports* from 1996 to 2003. The table gives for each issue of the *Report* the change since the previous issue in the sterling exchange rate index (ERI) used by UK policymakers, the level of the nominal effective rate (the IFS series used in Figures 1, 2 and 4), and the comments made on the causes of exchange rate movements. The latter are divided into two categories: a) comments on the extent to which they believed movements could be explained by reference to monetary and fiscal policy news as incorporated in interest rates,[6] and b) comments on other – mainly real – factors that they identified as possible causes.

In the earlier years there was a heavy emphasis on monetary/interest rate explanations. During the initial appreciation from August 1996 to June 1998 there were quarters in which the Bank was able to report that around one half of the rise in sterling could be explained in this way, but on the whole the proportion was lower. And later on the explanatory power of these factors becomes, if anything, smaller: the appreciation of early 2000 could not be explained in this way (comments of February and May 2000), nor the fluctuations of 2002, nor the depreciation of early 2003 (May 2003). Reports on their explanatory power continued to be made in the Annex to the MPC's minutes, but were largely dropped from the *Report* itself.[7]

Successive *Inflation Reports* also highlight a range of other, mainly real, factors that might have caused exchange rate changes, ranging from oil-price variations through EMU-related portfolio diversification to news about investment income or the current account. Particular prominence was given at some points to Consensus Economics survey evidence on long run expectations of the nominal or real exchange rate (the latter derived from nominal exchange rate and consumer price inflation forecasts). The February 2000 *IR* showed the expected long run real rate (February 1996 = 100) rising from 104 (expectations of June 1996) through 110 (November 1997) and 120 (October 1998) to 122 (October 1999). The actual data for relative consumer prices (IFS, 1995 = 100) from the same dates are 101.8, 125.6, 124.9 and 129.6. The August 2000 *IR* showed the expected long run nominal rate against the major six currencies (1990 = 100) rising from 82 (expectations of June 1996) to 97 (February and June 2000), while the actual nominal effective rate for the same dates was 101.3, 127.9 and 123.4. In both cases it is hard to exclude the possibility that expectations were simply adjusting to reality after the (nominal and real) appreciation had been sustained for a long period.

However, as time goes on 'real' factor explanations typically either lose much of their purchase on the data or fail completely. A good example of this, taken from the higher frequency analysis in the MPC minutes, is the case of the depreciation of early 2003. In March 2003 the minutes discuss three possible (and not mutually exclusive) explanations: downwards revisions to market expectations of future UK interest rates (relative to other countries), perhaps as the result of a change in understanding of the MPC's reaction function (following the February 2003 cut in the policy rate); a downward revision to the real exchange rate expected in the medium term as the result of an adverse shock to UK domestic demand (relative to other

countries); and a loss of confidence due to the prospect of war in Iraq (*MPC*, March 2003, §11). But by the following month the continuing depreciation despite a rise in relative interest rates and the end of hostilities had provided evidence against the first and third of these hypotheses (*MPC*, April 2003, §7). And the month after the Committee reported that "The fall in sterling could not be fully explained by relative interest rate changes and appeared to have been influenced by the fall in the dollar against the euro. The most recent Consensus survey, published in early April, had shown a fall in medium-term expectations for sterling, but that might simply have reflected the decline in sterling over the previous two months, and it could not account for the further depreciation over the past month" (*MPC*, May 2003, §9). Thus the policymakers were forced to appeal to 'erratic' factors and/or to acknowledge their inability to explain exchange rate movements (eg *IR*, May 1997, p46; February 1998, p10; *MPC*, February 2000, §2-4; *IR*, May 2003, pp3-4).

The policymakers also tried to forecast the sterling exchange rate, as an essential input into their wider forecasts of GDP and inflation. For much of the period their forecasts were based on an 'inversion' of uncovered interest parity (UIP): if expectations are rational and therefore not systematically wrong or biased, it is possible not just to use interest rate differentials between countries to deduce the markets' exchange rate expectations but to treat those expectations as a forecast. From February 1996 (and before) until May 1997 the Bank's inflation forecasts are based on the assumptions that official interest rates remain unchanged over the next two years and that the effective exchange rate evolves according to differences in interest rates across countries, given unchanged rates in the UK (eg *IR*, November 1996, p42). No numbers are given for the exchange rate forecast, but the trends implied by

existing market interest rates are shown in charts in the 'Money, interest rates and exchange rates' sections of the *Reports.*

In August 1997, under the MPC, sterling was "assumed to depreciate rather faster than is implied by the differential between UK and overseas interest rates. This reflects the expectation that some of the portfolio and erratic factors that have contributed to sterling's appreciation over the past year will unwind. In the central projection the effective exchange rate is assumed to fall to around 90 by the end of the forecast period." That figure of 90 contrasts with the figure of 97 which can be derived from the graph based on actual market interest rates (*IR*, August 1997, pp45, 14). For the following two years, up to the August 1999 *Inflation Report*, the central projection (mode) for sterling was derived purely on the basis of UIP (with the standard forecast assumption of constant UK interest rates) and the two year out level of the ERI is stated explicitly. In some cases, however, the MPC took the view that there was a larger risk in one direction or the other, so that the mean would be above or below the mode.

By November 1999, it was clear that the UIP forecasts were producing systematic errors, and one of the external members of the MPC in particular was pressing for a reconsideration. In a lecture given in September 1999 Wadhwani presented evidence of the errors implied by UIP forecasts of the sterling/DM rate since 1996, which he showed were typically smaller than the errors produced by a random walk/constant exchange rate assumption, and went on to present and estimate a new 'intermediate-term' model of the exchange rate. The issue had surfaced in the MPC's discussions in June 1999, the first meeting which Wadhwani attended, and was discussed again in August (*MPC*, June 1999, §32; August 1999, §14). At that meeting the Committee decided to include in the *Inflation Report* a new Table 6.B

giving the effect on the RPIX and GDP forecasts of alternative assumptions preferred by some members of the committee, and that for August 1999 included the assumption of a constant exchange rate (as against the UIP assumption underlying the MPC's central projection). For the November 1999 *Report* the MPC decided to base the central projection on an average of the standard UIP forecast and a constant exchange rate (random walk), and the effects of the two alternative pure assumptions are given in Table 6.B for that and the next two *Reports.*[8] This 'compromise' basis for the sterling forecast is specified in successive *Reports* up to the end of 2000, and continues to be used after that.

Table 2 assembles the evidence on the policymakers' success in forecasting the sterling exchange rate. The table gives the level of the ERI in the quarter of each issue of the *Inflation Report* and the level taken as the starting-point for the forecast[9] (as specified from August 1997) since on occasion these differ considerably; the forecast for the standard inflation forecast horizon (eight quarters after the quarter of the issue); and the outturn in that quarter. The forecasts for the pre-MPC period are derived from the projections given in the 'Money, interest rates and exchange rates' sections which use market interest rates rather than the constant UK interest rate assumption, and are not presented as actual forecasts. The forecasts for the MPC period are those underlying the central projections (modes); where a second number is given it refers to the mean of the forecast where that is specified in the *Report*, while an arrow indicates that the MPC did not specify the mean but stated that it considered the risk to be skewed. In every case over this period where a mean or a skew is indicated, the risks are skewed downwards rather than upwards.

Figure 6 graphs for each issue of the *Inflation Report* the two-year ahead forecast (mode), the two-year ahead outturn, the forecast starting-point where that is

available and the current level of the ERI. It is immediately clear that there are large and continuing errors in the forecasts. The largest errors are those in 1996 (25% on average), when sterling was changing most rapidly (but as indicated above the 'forecasts' are not true forecasts). The first forecast by the MPC, which explicitly assumed a larger depreciation than suggested by the UIP assumption, is also well below the outturn (by 15%). For the next two years the errors are always in the same direction (forecast < outturn) but slightly smaller, at 7.6% on average. If the mean forecast were taken rather than the mode, these errors would all be larger. After November 1999, when the new compromise basis for the forecast is introduced, the errors are on both sides and considerably smaller, with a mean absolute deviation of 1.7% (November 1999 to February 2003). However, the apparent improvement is put into question by the fact that the major depreciation of early 2003 was not foreseen (and no downwards skew was identified either), and the error for May 2003 is 5.6%.

More broadly, it should be noted that the closest relationship in Figure 6 is that between the forecast and the current level of the ERI.[10] This suggests that exchange rate fluctuations are largely not offset by changes in relative interest rates, so that the starting point for the forecasts changes but the implied extent of depreciation remains largely unchanged. This means that fluctuations have to be interpreted largely as changes in the long run equilibrium exchange rate expected by the markets, and hence that the long run expected exchange rate is as volatile as the spot rate in the market (whereas in other markets long term expectations are typically more stable than spot rates). It also means that exchange rate changes are not associated with changes in the markets' expectations of interest rates – despite the general understanding that exchange rate changes affect inflation and hence may affect the policy rate under inflation targeting.

Finally, it should be emphasised that the range of error in the forecasts for sterling is significant in relation to the inflation target: according to Table 6.B the alternative exchange rate assumptions would have changed the two year ahead RPIX forecast by – 0.4% in August 1999, ± 0.3% in November 1999 and February 2000, and ± 0.2% in May 2000. It seems likely, therefore, that exchange rate forecast errors contributed to the systematic undershooting of the RPIX target between mid-1998 and late 2002 (though a full analysis would require a discussion of errors in forecasting the pass-through from the exchange rate to retail prices).[11]

4. What could have been done about the overvaluation?

In principle there are two sorts of actions the policymakers could have taken to avoid or reduce the overvaluation of sterling: they could have intervened directly in the foreign exchange market, and they could have set interest rates differently.

The issue of foreign exchange market intervention was discussed briefly by the MPC in August 1997, and then more carefully in May 1999 and February and April 2000. In August 1997 intervention was one of three 'alternative policy instruments that might help to resolve the dilemma without introducing unacceptable distortions', the others being variable reserve requirements on the banking system and changes to debt management. According to the minutes, "There was a consensus that intervention was worth contemplating but only if it was accompanied by credible actions to put the economy on a course consistent with the inflation target. In those circumstances, it could help to bring about an adjustment in the exchange rate, which might otherwise be more protracted" (*MPC*, August 1997, §§61, 64). The Committee apparently did not discuss whether there were any such 'credible actions' open to it,

but passed on immediately to a discussion on the policy rate. It did, however, issue the statement referred to in section 2.

In May 1999 the renewed rise in sterling and the exacerbation of the policy dilemma prompted the MPC to consider two possible actions: the issuing of a statement to explain the role played by sterling in its policy rate decision, whatever that was; and direct intervention. On intervention it

> did not believe that intervention could materially affect the balance between demand and supply in the foreign exchange market; rather it would help to underline the Committee's views about the implications of sterling's strength. However, given that sterling currently seemed well supported in the market, it was not possible to be confident that intervention would have the desired effect, and it could possibly have a perverse effect. It was also important not to confuse the market about the role of the exchange rate in the Committee's analysis and reaction function, which were geared to the inflation target (*MPC*, May 1999, §30).

Thus the MPC was emphasising the signalling channel rather than the portfolio balance channel, and arguing that the nature of the conjuncture was such as to make success less likely. In addition, they were concerned that a signal about the exchange rate might weaken their attempts to establish a clear understanding of their target and their reaction function. These elements can all be seen in later discussions on the same subject.

When the MPC returned to the issue in February 2000, with sterling still strong and the manufacturing sector continuing to be squeezed, members' attitudes were more clearly differentiated. Some members were "prepared to contemplate" intervention mainly as a signal, but "most of them concluded that it could be an option only if the Committee decided to leave the repo rate unchanged and, even then, would have to depend on market conditions" (in fact the MPC voted by eight to one to raise the policy rate). Others argued against intervention on conjunctural – sterling-related and euro-related – grounds, on the basis that "a failed attempt to influence the

exchange rate via intervention would damage the Committee's credibility", and on the argument that the Committee's views could be conveyed through the minutes without intervention (*MPC,* February 2000, §37).

The last serious discussion of the issue during the period was in April 2000, when it was suggested that intervention "could, if successful, not only be profitable but also improve the balance in the economy between the internationally exposed sectors of the economy and other sectors which were growing very rapidly, reducing the risk that the Committee would need to adjust monetary policy sharply later." In what sounds like a heated debate (some members were "not at all attracted to this view"), similar arguments to those used on previous occasions were presented, with some members opposed to intervention under any circumstances and some opposed to it in the current conjuncture. From the latter camp it was argued that "intervention would be effective in current circumstances only if accompanied by an easing of monetary policy, which would not be appropriate in the present conjuncture, and to intervene ineffectively could be counterproductive" (*MPC*, April 2000, §28).

With intervention in the foreign exchange markets ruled out, could the MPC could have set interest rates in some different way which would have avoided the problems of overvaluation? Wadhwani (2000; see also Cecchetti et al, 2000) argued cogently that in principle this was possible. He started by insisting that the MPC should not either aim for a higher rate of inflation than the 2.5% target, which would throw away hard-won gains to credibility, or adopt an exchange rate target, which could not be pursued in addition to the inflation target with the single instrument of the short term interest rate. He suggested instead that the MPC should be "concerned with deviations of inflation from target at all time horizons", and that looking at asset price misalignments as well as the two year ahead inflation forecast would enable it to

fulfil its remit more effectively: this would enable it, as Cecchetti et al (2000) had argued, partly through a simulation on a Bank of England model (Batini and Nelson, 2000), to minimise the volatility of inflation around the target. He also suggested that such a policy rule could be rationalised as an appropriate response to uncertainty, in a world where asset prices can sometimes convey additional information to that which is used to produce inflation forecasts.

In the current (2000) UK conjuncture in which the most important asset price misalignment was the overvalued exchange rate, Wadhwani's policy rule would have involved setting interest rates a little lower than what would be required to hit the inflation target two years out: such a policy might make sterling lower than it would be otherwise, which would reduce the size of the inflation undershoot in the short run, reduce the size of the inflationary shock that might occur in the long run if and when the exchange rate eventually corrected itself, and – by reducing the decline in the capacity of the tradables sector resulting from overvaluation – strengthen the ability of the economy to increase output in response to the shock of a fall in sterling. Such a policy was in sharp contrast to the view that interest rates should be held higher than they would otherwise be in preparation for a fall in sterling which would tend to push inflation above the target.

Just as this view was not explicitly discussed in the minutes, the case against it can also be found largely elsewhere, in lengthier statements by other members of the MPC.[12] Three specific arguments can be distinguished. First, it was not clear how the exchange rate would react to an interest rate change, so gearing the latter to an intended effect on the former might not be sensible (eg George, 2002a, p95; 2002b, p217; King, 2002, p469).[13] Second, overvaluations, like other asset price misalignments, were not easy to identify (eg King, 2002, pp469-70; Nickell, 2003,

p337; see also Clews, 2002). Third, complicating the MPC's reaction function by introducing asset price misalignments ran the risks of confusing the financial markets and weakening credibility (eg Allsopp, 2002, p494; Nickell, 2003, p132). Two related arguments made by Allsopp (2002, p496) and Nickell (2002, p338) were that the pass-through from the exchange rate to prices might be quite low and that the lags to demand from interest rates and exchange rates were similar: under these assumptions both the early MPC concern with the downside risk to sterling and Wadhwani's concern with future inflation shocks as a reason for heading off exchange rate bubbles were misplaced, and policy could afford to react to exchange rate changes only when they happen.

At this point it is useful to return to the policy narrative of section 2, and ask what the policymakers would have had to have done and when, if they were to have avoided the development of the sterling overvaluation in the first place, or to have eliminated it later on; and whether they addressed the issue in some way at the time. First, most of the initial appreciation of over 20% between August 1996 and July 1997 occurred at a time when the Bank of England was increasingly concerned about the risks to inflation and was pushing for increases in interest rates, while the Chancellor was using the appreciation as a reason for not putting interest rates up more rapidly. In fact the Bank identified a shift in the balance of the recovery from net exports to domestic demand, a trend "likely to be reinforced by the appreciation of sterling… It would be a mistake, however, to try to alter the balance of the recovery by pursuing an easier monetary policy in order to offset the rise in the exchange rate… if monetary policy fails to counteract the potential inflationary consequences of growth of domestic demand then, as in the late 1980s, the problem could become a weak rather than a strong exchange rate" (*IR*, November 1996, p46). The MPC, when

it took control of interest rates in June 1997, implicitly supported the Bank's view that the Chancellor had taken risks with inflation in late 1996 and early 1997, and raised interest rates rapidly for its first few months. In August 1997, it "expressed considerable concern about sterling's level and its unbalancing effects on the economy" but took the view that, because the downward impact on inflation from the appreciation was only temporary, the underlying inflationary pressure had to be addressed by a rise in interest rates to check the growth of domestic demand (*MPC*, August 1997, §58-60).

It is clear that over this period the policymakers were well aware of what was happening to sterling and its implications for the real economy. In the pre-MPC period it is even arguable that they took (inadvertent) action of the sort advocated by Wadhwani, insofar as the Chancellor refused to raise interest rates when domestic considerations suggested that would have been appropriate. And in the MPC period the rise in interest rates was slow (four consecutive rises but each of 0.25%[14]), which might have been expected to minimise the likelihood of further appreciation.[15] But given the outcome – that is, inflation of over 3% in late 1996 and 2.7-3% in the second half of 1997 – and the need at the beginning of the MPC experiment to establish a clear understanding in the markets of the MPC's reaction function, the suggestion that in this period interest rates should have been set consistently a bit lower is not attractive.

If nothing could have been done to head off the rise of the overvaluation, perhaps something could have been done later to deflate it. In particular, could the policy rate have been lowered further and/or more rapidly during the following downswing so as to bring about a depreciation large enough to correct the misalignment? As already noted, the policy rate was reduced by a total of 2.5%

between October 1998 and June 1999 (three cuts of 0.5% and four of 0.25%) to reach its lowest level since 1977. Sterling had already begun to depreciate, and continued to do so until January 1999, but by June it was back to its mid-1998 level. In principle, the MPC could have cut interest rates faster and/or further, and this might have precluded the upturn in sterling. There do not seem to be any statements in the minutes to suggest that the MPC welcomed the depreciation as a move towards the correction of the imbalances that had concerned it; in fact the minutes for late 1998 and early 1999 have almost no mentions of sterling. However, a more sustained series of cuts in the policy rate might have led to a much sharper depreciation as happened in the early 1980s, when the authorities were lowering interest rates and trying to bring sterling gradually down from its first major overvaluation, but were repeatedly knocked off course by undesired sharp falls in the pound and had to raise interest rates to steady it (Cobham, 2002a).

With sterling appreciating again from January 1999 to a new peak in April 2000, the MPC could presumably have kept interest rates lower to try to preclude the appreciation. In fact it raised rates from November 1999 for domestic and later world economy reasons, despite its awareness of the renewed policy dilemma. The minutes for February 2000 contain a particularly detailed discussion, in which the Wadhwani argument was spelt out, and opposed:

> It was noted that an interest rate policy which helped to sustain sterling at current or higher levels ran significant risks with the inflation target at some future point when sterling could fall sharply. In the interests of making it easier to meet the inflation target at all times, an interest rate path now that helped to keep sterling lower would be desirable. On the other hand, an interest rate policy which sought to offset the current strength of sterling would risk fuelling domestic demand, which could have adverse implications for inflation further ahead. (*MPC*, February 2000, §§34)

In fact the Committee voted by eight to one (with Wadhwani in the majority) for a 0.25% rise. Similarly, in August 2000 it was argued that “Any tightening would also

put upward pressure on sterling's exchange rate. That… would also add to the risk of sterling's already-overvalued exchange rate falling sharply in the future – thus creating a risk of undershooting the target in the short run but overshooting it later on if and when sterling fell back" (*MPC*, August 2000, §38). But such statements[16] are typically either one among several arguments in favour of a majority position, or an argument from a minority position: they do not appear to have driven the decisions.

What this discussion shows is that when specific situations are examined the policy of keeping interest rates lower to prevent or to undo overvaluation looks much more difficult and risky, both to policymakers at the time and to outsiders with hindsight. Typically the cases in which such action would be warranted are also cases in which there are strong domestic demand reasons against it. In addition, there is always uncertainty about how the exchange rate will react to an interest rate change (it could under-react, over-react, react perversely, or not react at all). The Wadhwani proposal would be much more attractive if there was a clear, systematic relationship between the level of interest rates (in any given situation) and the level or change of sterling: it might then be possible to set policy so as to trade off optimally the effects on activity and inflation. But it should also be noted that such a clear relationship could exist only if the exchange rate was less erratic. In that case exchange rate misalignments would arise less frequently, so the problem which the proposal is designed to address would be smaller.

5. Conclusions

A large and sustained nominal appreciation in 1996-98 led to a serious overvaluation of sterling which persisted at least until the middle of 2003. It has been associated

with severe pressure on the manufacturing sector, whose output fell between 1996 and 2002 while service sector output was growing strongly.

There can be no doubt that the policymakers, like the wider community, were well aware of the issue of sterling overvaluation over this period, and of the pressures that it was exerting on the balance of the economy and on the tradables sector in particular. However, they felt there was little they could do about them without prejudicing their ability to fulfil their objective of price stability. In addition, they had great difficulty in understanding after the event why sterling had moved in the way it did, and in forecasting its likely movement before the event. The MPC was also well aware of modern thinking on official intervention in foreign exchange markets, but rejected suggestions for intervention mainly on conjunctural grounds (though it did not explore, as perhaps it might have done, the possibility of internationally coordinated intervention).

By 2000 there was a well-argued case, of which the MPC was well aware, for setting interest rates differently, in a way designed to reduce the overvaluation of sterling and relieve the pressure on the tradable goods sector. In the pre-MPC period it can be argued that the policymakers (i.e. Chancellor Clarke) in effect followed such a policy, against the advice of the Bank. The MPC confronted the issue more clearly, before but particularly after the development of this case, and other members formulated some serious arguments against Wadhwani's proposal. However, in specific episodes where it could in principle have done something different, the alternative policy always seemed very risky, and a majority of MPC members (sometimes including Wadhwani himself) voted against it. These decisions were taken largely for conjunctural reasons – the strength of domestic demand, the likely effects on the perception of the MPC's reaction function and credibility, and

uncertainty over how the exchange rate would react to interest rate decisions taken on that basis – but the prevalence of such reasons inevitably casts doubt on the proposal itself.

Notes

[1] For more general discussions of the relationship between the two see Mussa (1986).

[2] See Cobham (2002a) for further explanation. The lower bound is calculated from quarterly data, in the absence of monthly data before 1978.

[3] The correlations between the real policy rate and the nominal and real exchange rates over the period are 0.05 and – 0.13 respectively.

[4] Data from *Economic Trends* for the current account deficit as % of GDP in the current and three previous quarters.

[5] See Cobham (2002b) for further detail on the monetary frameworks in operation up to and after May 1997. References to *IR*, *MMM*, and *MPC* refer to relevant issues of the *Inflation Report*, the minutes of the Monthly Monetary Meetings (up to May 1997), and the minutes of the Monetary Policy Committee's meetings.

[6] See Brigden et al (1997) for an explanation of the way in which exchange rate movements can be decomposed so as to isolate the contribution of monetary policy news. An earlier intuitive explanation is given in the box on p16 of the February 1997 *Inflation Report*.

[7] See, for example, *MPC*, December 2000, §18; February 2001, Annex, §21; April 2001, Annex, §19; February 2002, Annex, §21. See also Allsopp (2001, p490): "The Bank routinely calculates how much of a change in the sterling exchange rate and of a change in the dollar/euro exchange rate can be explained by changes in fundamentals, such as interest rate differentials. The answer, unfortunately, is 'not much'."

[8] Table 6.B itself continued until May 2002, but the number of alternative assumptions included in it declined from 4 or 5 at the beginning to 2 in August 2000.

[9] In general the starting point was the average of the ERI over the 15 working days preceding the MPC's meeting, but in November 2000, as the result of high short term volatility, the average of the 5 previous working days was used.

[10] The correlation between the current quarter ERI and the forecast is 0.95, that between the forecast starting-point and the forecast (MPC period only) is 0.70, and that between the forecast and the outturn is 0.21 for the whole period and – 0.05 for the MPC period.

[11] The MPC's own analyses of its forecasting record highlight the problems in forecasting the exchange rate and their contribution to the regular undershooting of the RPIX target, particularly during the early years: see *IR*, August 1999, p55, August 2000, p65, August 2001, p59 and August 2002, p53.

[12] See also the wider discussion on monetary policy and asset prices, notably Bernanke and Gertler (1999), Vickers (1999) and Cecchetti et al (2000).

[13] While Wadhwani's (2000) discussion of incorporating asset price misalignments within the inflation targeting process assumes implicitly that the effect of interest rate changes on exchange rates is relatively clearcut, his discussion of foreign exchange market intervention is cast more explicitly in terms of a foreign exchange market with 'momentum-based' as well as fundamentals-based traders and of 'hysteresis' effects. These points are picked up by Sarno and Taylor (2001) in the discussion in their conclusion of a possible coordination channel for the effects of intervention.

[14] This contrasts with the average absolute change in the policy rate of 0.69 for 1975-95, and 0.74 for 1990-95.

[15] Such a strategy was followed in 1988, with apparent success (Cobham, 2002a).

[16] See also *MPC*, July 2001, §37: "Turning to the issue of imbalances and any associated exchange rate risk, if the short-term interest rate was held higher now because of an expected depreciation of the exchange rate, this might lead sterling to be stronger than it might otherwise be…"; and August 2001: "if sterling were to fall on account of accumulating economic imbalances, policy would probably be easier rather than harder to operate in the medium-term, so concerns about the imbalances on that score should not stand in the way of a further cut in interest rates now."

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Table 1: *Inflation Reports* on explanations of exchange rate changes

IR	**Change from last *IR*[1]**	**Nominal effective rate[2]**	**Relevant comments in *IR* on (a) contribution of monetary news to explanation of sterling exchange rate changes and (b) other (real) factors which might contribute to explanation of exchange rate changes**
Aug 1996	-0.4	99.83	a) – ; b) fall in expected UK inflation relative to overseas
Nov 1996	8.1	108.4	a) "it seems likely that perceived tighter UK monetary policy accounts for at least some of the appreciation" (p17); b) oil price rise
Feb 1997	6.5	114.88	a) "The changes in the actual and expected paths of interest rates account for only about one quarter of the rise [in sterling]" (p48)
May 1997	1.6	116.81	a) "changes in expected domestic and overseas monetary and fiscal policies can account for perhaps around a half of the rise in sterling since February" (p45)
Aug 1997	2.5	120.95	a) "changes in expected domestic and overseas interest rates, and any fiscal policy effects, account for around one half of the rise in sterling since May" (p13); b) EMU-related uncertainty, pre-EMU diversification, erratic effects
Nov 1997	-2.9	122.24	a) "at no time since August 1996 has monetary policy news explained more than half of the appreciation of sterling, and in recent months its estimated contribution has been considerably smaller" (p16); b) EMU and erratic effects
Feb 1998	2.8	123.4	a) "… the Bank's estimate of the contribution made by monetary policy factors to recent changes in the nominal effective exchange rate… This contribution has been relatively constant and small in recent months" [but they have more explanatory power over bilateral movements] (p10); b) portfolio/EMU and erratic effects
May 1998	1.2	121.97	a) "Changes in market expectations of interest rates have continued to make only a small contribution towards the exchange rate appreciation since August 1996" (p11); b) portfolio effects, actual/expected productivity movements
Aug 1998	-1.4	123.18	–
Nov 1998	-4.5	118.5	a) "A small part of the fall [in sterling] can be explained by the positive interest rate differential that existed between UK interest rates and overseas interest rates" (p10); b) –
Feb 1999	0.1	118.85	–

IR	Change from last *IR*[1]	Nominal effective rate[2]	Relevant comments in *IR* on (a) contribution of monetary news to explanation of sterling exchange rate changes and (b) other (real) factors which might contribute to explanation of exchange rate changes
May 1999	3.9	122.95	a) "Around a half of the rise in the sterling ERI since February is consistent with the movements in the differential between expected UK interest rates and those overseas… But estimates of monetary news based on relative yield curves can explain little of the overall increase… since August 1996" (p10); b) record surplus on investment income, survey evidence of rise in expected real exchange rate
Aug 1999	-0.9	121.86	–
Nov 1999	2.4	124.69	–
Feb 2000	3.6	127.85	a) the rises in sterling against the euro since the November *IR* and since the start of 1999 "do not appear to be explained by changes in expected relative interest rate differentials between the United Kingdom and the euro area, as reflected in yield curves" (p11); b) survey evidence of rise in expected real exchange rate
May 2000	1.2	127.91	a) "Changes in interest rates in the United Kingdom relative to the euro area do not appear to explain the appreciation of sterling against the euro" (p12); b) relative euro/sterling risk premia, survey evidence of rise in expected real exchange rate, possible rise in equilibrium exchange rate of UK relative to euro area (but little evidence in macro data so far)
Aug 2000	-4.2	126.55	a) "the recent depreciation of sterling against the dollar or the euro cannot be explained by revised views about future relative interest rates. This was also true of sterling's earlier appreciation" (pp10-11); b) survey evidence of no further change in expected real exchange rate, market evidence of increased risk premium on sterling
Nov 2000	1.3	126.36	a) – ; b) rise in prospective real growth and hence returns on assets in US relative to UK
Feb 2001	-3.3	122.71	a) – ; b) downward revisions of expectations of GDP growth and interest rates in US relative to UK, reduction in risk premium on euro relative to sterling
May 2001	1.7	125.59	a) – ; b) increased uncertainty about non-US economies, rise in risk premium on euro relative to sterling

IR	Change from last *IR*[1]	Nominal effective rate[2]	Relevant comments in *IR* on (a) contribution of monetary news to explanation of sterling exchange rate changes and (b) other (real) factors which might contribute to explanation of exchange rate changes
Aug 2001	0.9	123.92	–
Nov 2001	-0.7	125.17	–
Feb 2002	1.0	126.55	a) "The overall strength of sterling may have been associated with the sharper rise in short-term interest rate expectations for the United Kingdom than in most other economies. Sterling has fallen, however, against the dollar, reflecting still more acute rises in short interest rate expectations in the United States" (p10); b) –
May 2002	-0.3	124.16	a) – ; b) survey evidence of rise in expected exchange rate
Aug 2002	-1.0	124.12	a) – ; b) increased risk premia on US assets, equity investors' pessimism re corporate profits, concerns re US current account deficit
Nov 2002	0.6	124.79	–
Feb 2003	-2.1	120.85	a) – ; b) US current account deficit, increased likelihood of war in Iraq
May 2003	-4.4	115.39	a) "movements in market interest rates cannot help explain the depreciation in sterling over the quarter" (p3); b) some survey evidence of downward movement in expected long run exchange rate (but reasons unclear)

Notes: [1] percentage change in sterling ERI (exchange rate index in UK official statistics) from date of previous *IR* as given, or percentage change between forecast starting-points (usually based on 15 days) in successive *IRs*; [2] monthly average level for nominal effective exchange rate (as in *IFS*).

Table 2 Exchange rate forecasts and outturns

Inflation Report	ERI in IR quarter[1]	Forecast starting point[2]	Forecast quarter[3]	Forecast[4]	Outturn in forecast quarter
February 1996	83.5		1998 Q1	82	105.4
May 1996	84.8		1998 Q2	81.75	105.3
August 1996	85.5		1998 Q3	82	104.4
November 1996	91.4		1998 Q4	87.5	100.6
February 1997	96.9		1999 Q1	93	101.1
May 1997	99.6		1999 Q2	95	104.1
August 1997	102.5	105.1	1999 Q3	90	103.8
November 1997	103.1	102.0	1999 Q4	98↓	105.9
February 1998	105.4	104.9	2000 Q1	101.0↓	108.4
May 1998	105.3	106.2	2000 Q2	103.0↓	107.7
August 1998	104.4	104.7	2000 Q3	99.7/96.4	106.4
November 1998	100.6	100.0	2000 Q4	97.7/94.9	107.6
February 1999	101.1	100.1	2001 Q1	97.6/96.1	104.5
May 1999	104.1	104.0	2001 Q2	99.6↓	106.4
August 1999	103.8	103.1	2001 Q3	96.6	106.1
November 1999	105.9	105.6	2001 Q4	101.8	106.1
February 2000	108.4	109.4	2001 Q3	107.1	106.9
May 2000	107.7	110.7	2002 Q2	108.9	105.3
August 2000	106.4	106.1	2002 Q3	104.6↓	105.7
November 2000	107.6	107.5	2002 Q4	106.6	106
February 2001	104.5	104.0	2003 Q1	102.9	102.3
May 2001	106.4	105.8	2003 Q2	105.0	99.1
August 2001	106.1	106.7	2003 Q3	104.7↓	
November 2001	106.1	106.0	2003 Q4	103.2↓	
February 2002	106.9	107.1	2004 Q1	104.6↓	
May 2002	105.3	106.8	2004 Q2	104.1↓	
August 2002	105.7	105.7	2004 Q3	103.5	
November 2002	106.0	106.3	2004 Q4	104.5	
February 2003	102.3	104.0	2005 Q1	101.8	
May 2003		99.4	2005 Q2	98.0	

Notes: [1] ERI average for the quarter in which the forecast was published, source *Economic Trends*. [2] The starting point for the forecast where this is specified in the *IR*. [3] Quarter for which forecast is given (two years out). [4] See text for sources and significance. Where two numbers are given the first is the mode and the second the mean. An arrow means that the MPC viewed the risks to the exchange rate to be skewed in the direction indicated.

Sources: *Inflation Report*, successive issues; *Economic Trends*, successive issues.

Figure 1: Nominal and real exchange rates

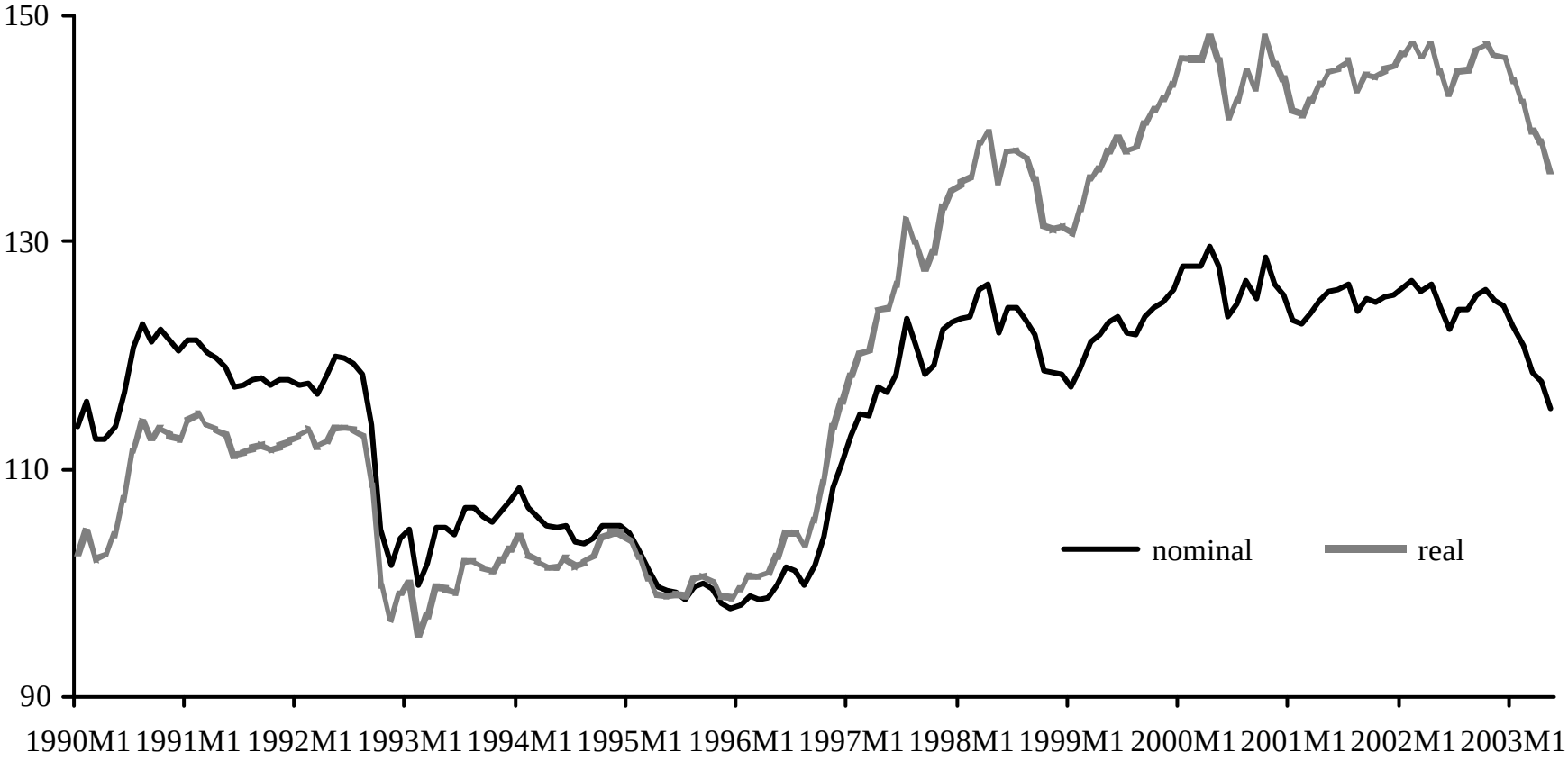

Figure 2: Exchange rates against euro and dollar

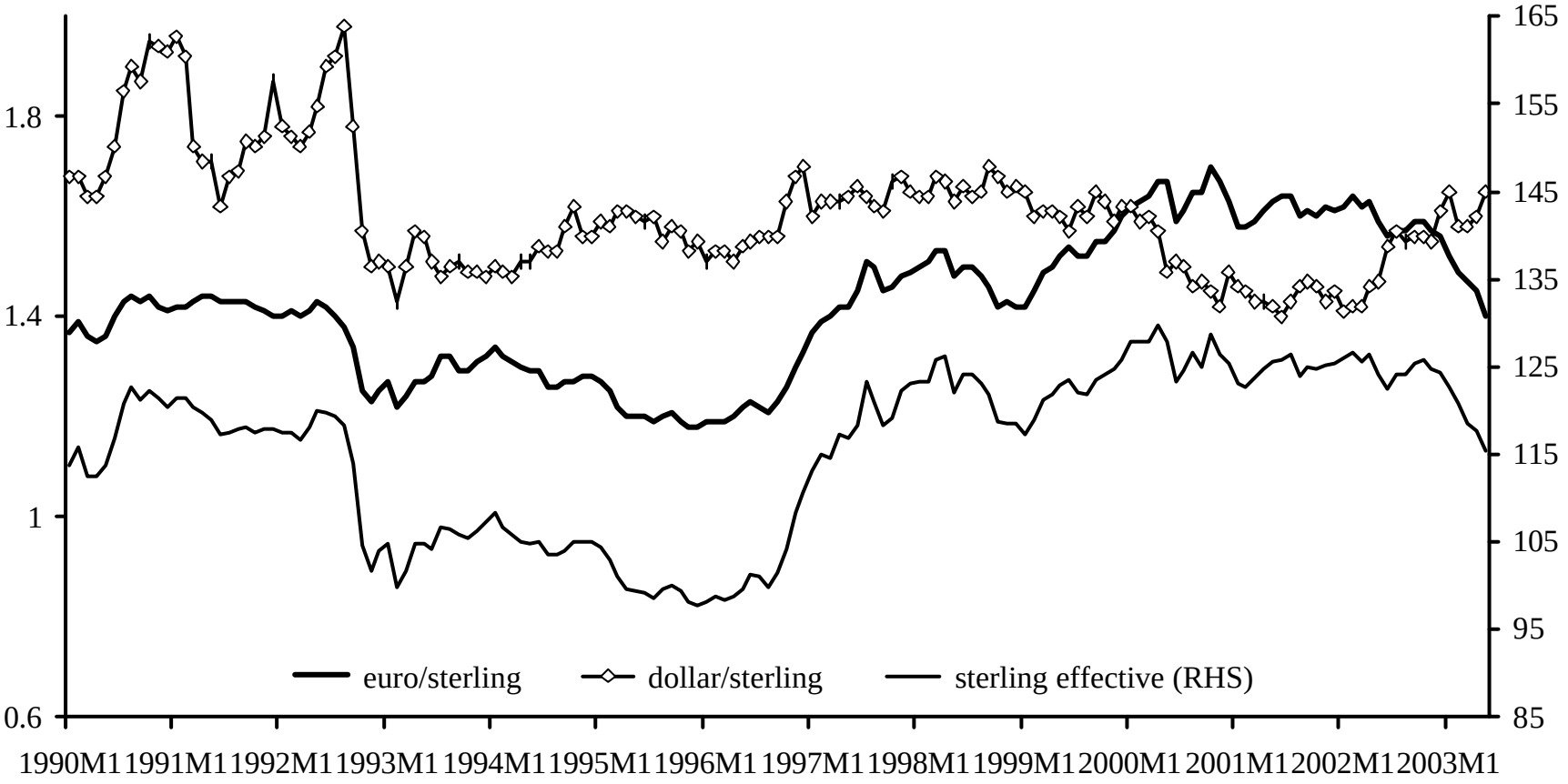

Figure 3: Misalignment

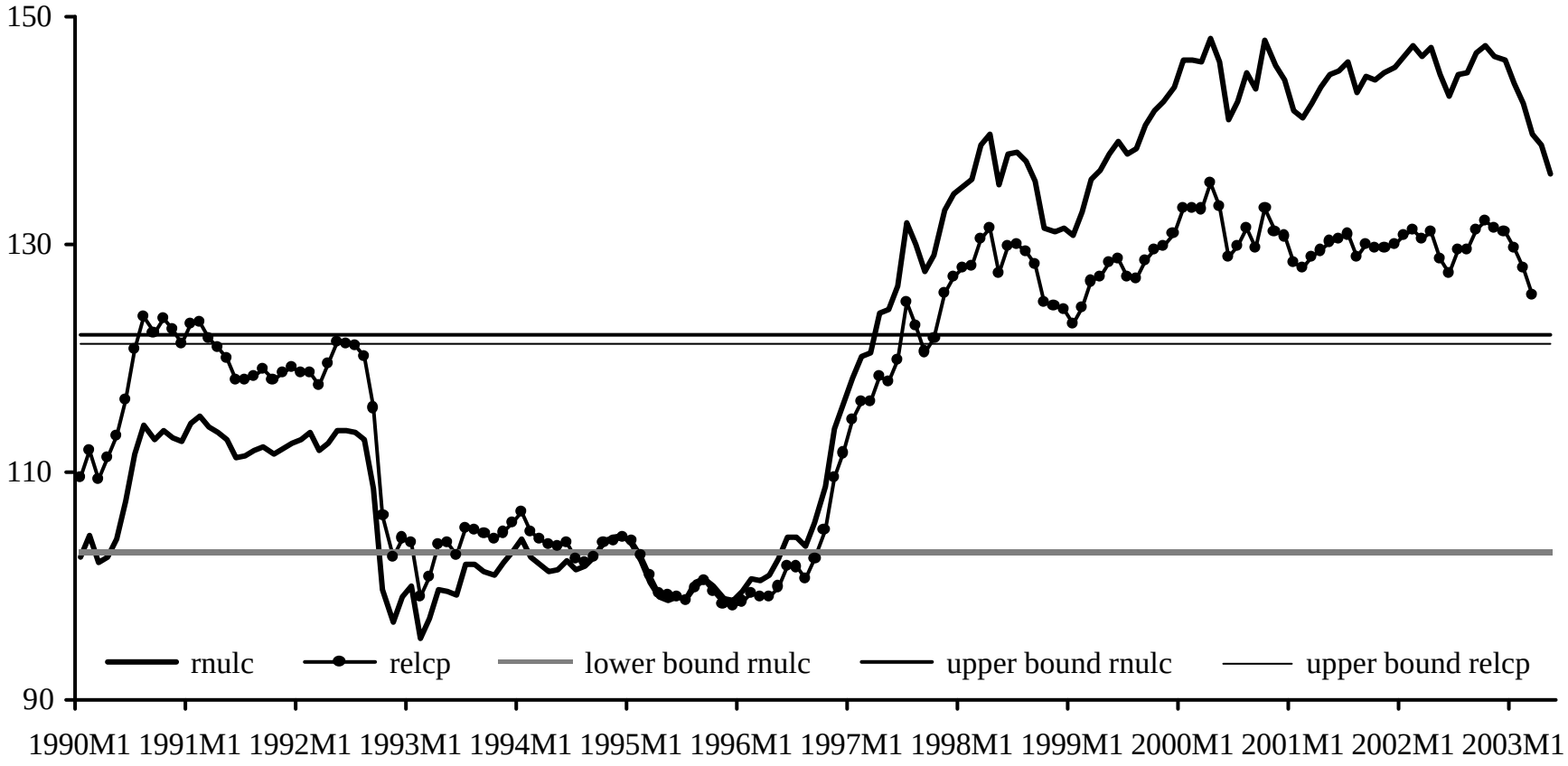

Figure 4: Exchange rates, policy rate and inflation

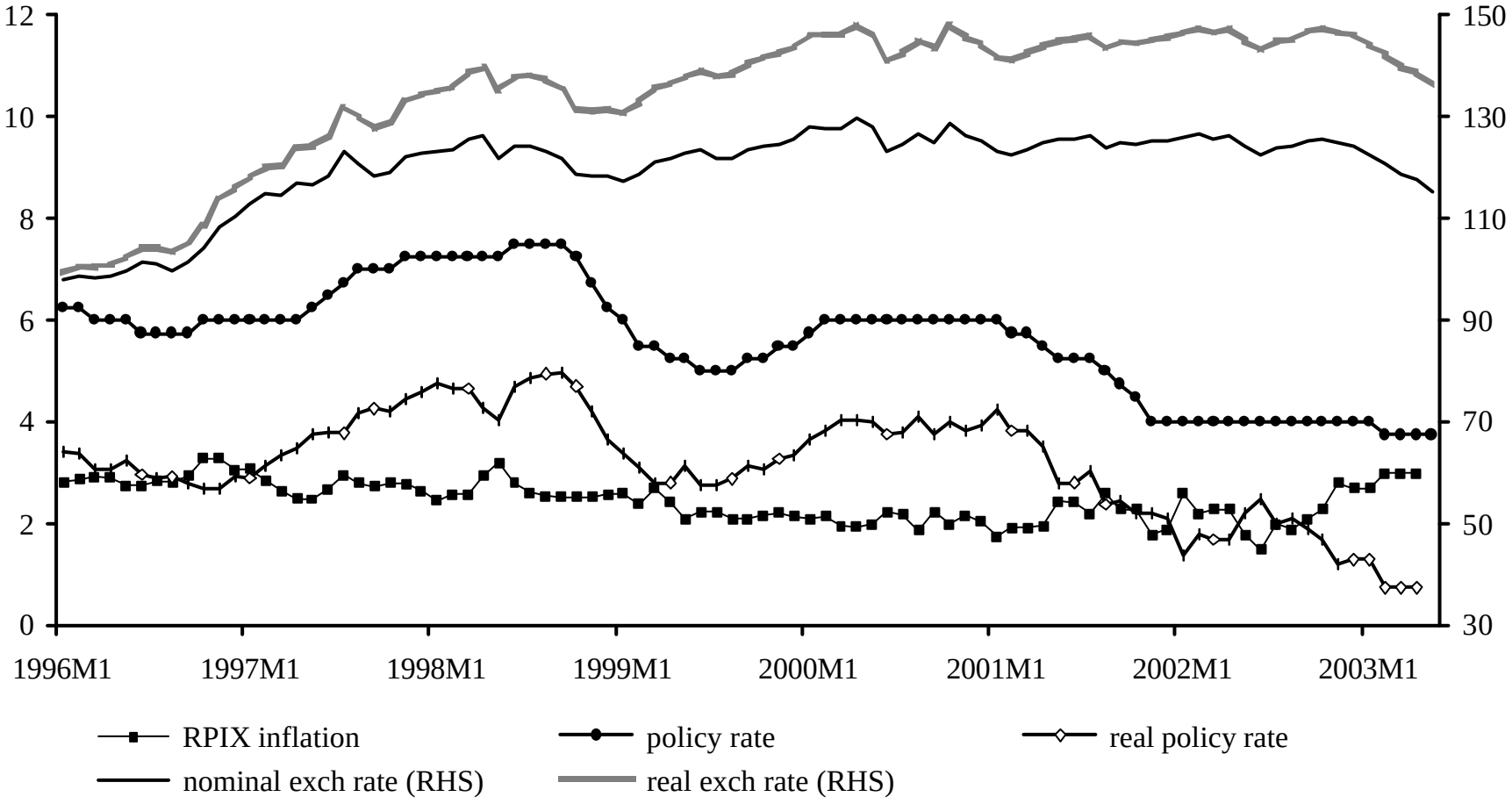

Figure 5: Manufacturing, services and GDP

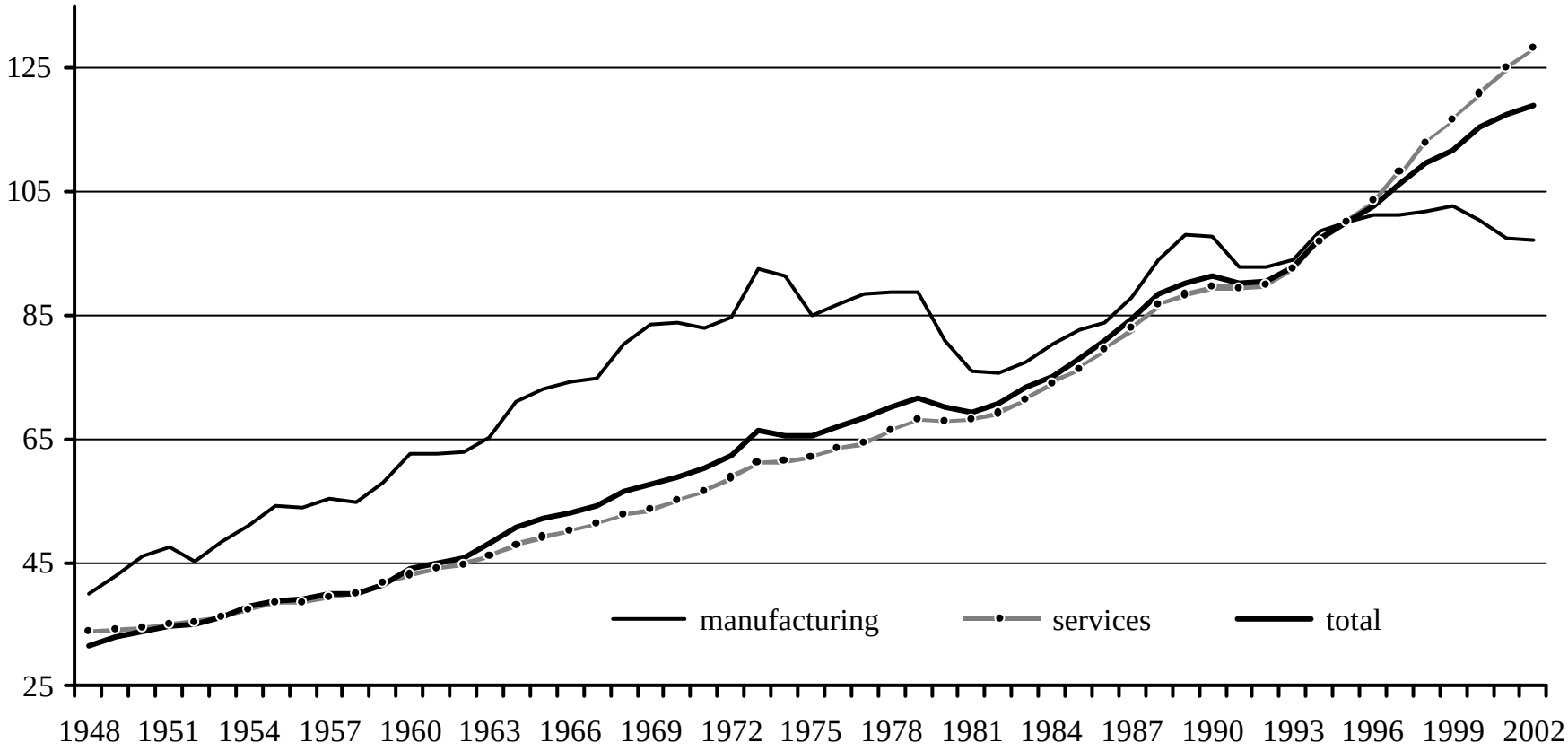

Figure 6: Exchange rate forecasts and outturns