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Monetary targets, exchange rate targets and after:
a stochastic "hard-landing" for sterling?

by

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No. 336

October 1989

This paper is circulated for discussion purposes only and its contents should be considered preliminary.

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This paper was presented at a seminar on "Exchange Rate Policy in Selected Industrial Countries" held at the Centre for European Policy Studies, Brussels, October 12-14, 1989. Research support by the ESRC is gratefully acknowledged (grant no. R000231417), as is the benefit of comments from Christopher Taylor. But the authors are solely responsible for the views expressed.

Abstract

This paper describes three distinct phases of UK exchange rate policy in the 1980's (monetary targeting with free floating of the early 80's, exchange rate targeting of the mid 80's and the current "pragmatic" approach) and indicates the likely reasons for the switches in policy. The demise of monetarism has been generally attributed to the instability of the velocity of money; and we argue that it was the strength of domestic demand (especially by consumers) which was to a large extent responsible for the ending of the experiment in shadowing the DM.

We note that the policy stance pursued subsequently by Mr Lawson as Chancellor involved driving interest rates far above those in West Germany while keeping sterling reasonably steady against the DM. To reconcile this with free currency arbitrage, we argue that UK interest rates contained a risk premium reflecting the market belief that, come the end of the consumer boom, the Government will allow sterling to fall as a means of achieving current account adjustment.

Postscript (November 1989)

This paper was written for a conference in mid October 1989. Since then, Mr Lawson has resigned as Chancellor rather than continue in circumstances where Sir Alan Walters was perceived as speaking for the Prime Minister on exchange rate matters. (Ironically, Sir Alan Walters then promptly resigned from his post as special adviser to Mrs Thatcher.) Mr Major has taken over as Chancellor; and the pound has fallen substantially below DM3.00.

Because our analysis seeks to develop a consistent account of market expectations under Mr Lawson, however, it would be inappropriate to "update" what we said in the light of later information. Revisions to the text have therefore been confined to stylistic changes designed to make it clear that the Chancellor referred to is Mr Lawson and not his successor. In addition Appendix 1 has been extended to include other scenarios suggested by Christopher Taylor in his discussion.

Introduction (see postscript at the front of the paper)

Exchange rate policy in the UK has gone through profound shifts over the decade during which Mrs Thatcher has been Prime Minister. At first the pursuit of anti-inflationary monetary targets took priority, with interest rates being set so as to attain these "intermediate" targets and the exchange rate left to be determined by market forces. Two developments prompted a reorientation of policy by the mid 1980's, however. First was the discovery that the demand for money was not stable, and second the observation that, during a period where the Government made substantial efforts to pursue a consistent medium term strategy, sterling could rise to a peak of over \$2.40 in 1980 and then fall to a trough of less than \$1.10 in 1985.

As a result, the stability of the exchange rate became an object of policy, with Mr Lawson, as Chancellor, subscribing to the aims of the Louvre Accord of 1987. By then, indeed, it seemed as though monetary targets had been effectively discarded, with interest rates being set instead so as to keep sterling in an (unpublished) range of approximately $\pm 5\%$ *vis a vis* the German Mark. When rising pressure of aggregate demand threatened to reignite inflation, however, the commitment was suspended, and sterling rose against the DM in early 1988.

In 1989, as long as Mr Lawson was Chancellor interest rate policy attempted to please two masters: to keep a check on inflation and to keep the pound above a "floor" of DM3.00. Under this policy, base rates rose to their highest level since November 1981 and this coincided with a level of the real exchange rate which is close to the previous peak attained in 1981 (see Table 2). Unlike 1981, however, the

Government is in financial surplus and sees no need to implement a contractionary fiscal policy to take the pressure off monetary policy. Under Mr Lawson, indeed, it was tax cuts that were promised in future budgets.

After chronicling these shifts of policy in more detail, we describe the recent deterioration of the external balance, now in substantial deficit largely on account of the very rapid growth of consumers' expenditure. In section 3 of the paper we then address a paradox inherent in the situation as of October 1989, namely how sterling could remain steady at (or slightly above) DM3.00 consistently with free capital movements and widely differing interest rates on the two currencies (UK base rates in October 1989 stood at 15% as against a Bundesbank Rediscount rate of 6% and a Lombard rate of 8%). The paradox disappears if, as we suggest, the market expected the Government to condone a fall in sterling, with the ending of the consumer boom treated as a stochastic event.

1. Three phases of exchange rate policy.

(a) Monetary targets 1980-1986

The Conservative Government which took power in the UK in 1979 adopted a monetarist strategy to bring down inflation. In 1980 the Medium Term Financial Strategy (MTFS) established a series of broad money targets for the years ahead, designed to keep steady downward pressure on the growth of nominal GDP and to give a clear signal to wage bargainers that inflation would not be accommodated. The main instrument for achieving the monetary growth targets was to be the level

of short term interest rates. But in order that this should not lead to excessive crowding out of private investment, the money supply targets were accompanied by plans to limit fiscal deficits, so as to relieve the pressure on credit markets and thus lower the level of interest rates required.

The UK's experience of the implementation of this strategy has been well documented and analysed. Of particular interest is a paper by John Fforde appearing in the Bank of England Quarterly Bulletin (1983) which stressed the "political economy" of such targets. There he emphasised that the adoption of these intermediate targets (for money and borrowing) freed macroeconomic policy from the perceived obligation to aim for high aggregate demand, positive growth and current external balance even when inflation was on the increase, thus making the commitment to preventing inflation more credible. He goes on to observe: "the difficulties that have come to seem inherent in short-term monetary targetry are by no means fatal to the associated counter inflationary strategy once its practical credibility can be established by the perceived behaviour of policy in response to the developing and disinflationary economic situation. For what matters is the refusal of the authorities to stimulate demand in 'Keynesian' fashion, or to 'reflate', as conditions develop that would in the past have justified and provoked such a response. The fact that monetary targets have not concurrently been met, or that the meaning of particular developments in this or that aggregate has been very ambiguous, is of less importance." (p. 207)

The official analysis was summarised in a speech by the current Governor of the Bank of England (1986) who stated that, though the broad money targets of the MTFS were, in effect, only hit in one out of six years, the desired result of reduced inflation was nevertheless achieved. The principal factor which reconciled these two contradictory results was a substantial reduction in the velocity of circulation of broad money which the Governor attributed to the reduction in regulation of banks and building societies and the development of new modes of behaviour by these institutions. (The ending of the building society cartel and the entry of banks into the mortgage market had led to a substantial increase in the availability of finance for the personal sector, for example; and other innovations had led to an increase in liquid assets held by industrial and commercial companies and other financial institutions.) Another important factor was the movement of the exchange rate: sterling had continued to rise strongly from 1979 to 1981, borne up by political factors and by its petrocurrency status as well as by high nominal interest rates.

The Governor's conclusion was that, when the relationship between an intermediate target such as broad money and the ultimate objective of policy breaks down, the policy maker should be ready to ignore the message of the intermediate target. The acknowledgement that velocity can be unstable and the suggestion that monetary growth targets are not a reliable means of achieving lower inflation were, of course, in direct contradiction to the monetarist principles of the MTFS and the Governor's speech was widely regarded as marking the official abandonment of monetarism by the UK government.

(b) Shadowing the DM: 1986-1988

The repudiation of monetary targetry by the UK government coincided with international concern over the pattern of exchange rates (which were seen as becoming increasingly divorced from fundamentals). A move towards giving greater consideration to the value of sterling in the setting of monetary policy was also underway in the UK. The experiment with monetary targeting had helped cause the pound to rise dramatically against the dollar and the DM. This was seen as a major transmission mechanism for monetary policy which greatly aided the fall in inflation, but at the expense of a recession much sharper than anticipated. The experience had suggested, however, that given instability in the velocity of money the exchange rate might even be regarded as a better indicator of the tightness of monetary policy than the money stock itself.

The emphatic shift away from monetary targets towards exchange rate stabilisation was subsequently confirmed in the then Chancellor's speech to the IMF in September 1987 where Mr Lawson roundly declared that "our objectives should be clear: to maintain the maximum stability of the key exchange rates, and to manage any changes that may be necessary in an orderly way." He went on to make it clear that he was not suggesting a "return to Bretton Woods", but endorsed the idea of wide currency bands, which could be realigned without requiring a change in spot rates. He also noted, however, that international success in managing rates from 1985 to 1987 had depended on a common concern to control inflation: "What made the Plaza and Louvre agreements possible was that the countries participating were, and remain, in effect, members of an anti-inflationary club, with a clear commitment

to taking whatever steps are necessary to curb their own inflation. It is vital that that commitment continues, individually and collectively. A resurgence of inflation in any individual country would make it difficult to remain within the club." A critical ambiguity in the speech lay in whether or not reference to the "steps necessary to curb inflation" included adjustments to the stance of fiscal policy. Observers such as Williamson assumed it did¹, but subsequent events were to prove otherwise.

A move towards exchange rate targeting on the part of the UK could, most naturally, have been achieved by taking sterling into the Exchange Rate Mechanism of the European Monetary System. The UK had made a commitment to join "when the time was right" but had not joined in the early 1980's on the grounds that it would have compromised the UK's monetary targets and that the pound was overvalued because of North Sea oil. The abandonment of monetary targets and the fall in oil prices which produced a decline in the value of the pound against the DM removed these objections but proved insufficient to convince the Prime Minister

¹ Consider the following interpretation of Lawson's strategy outlined by Williamson: "Fiscal policy was supposedly being guided by a target for the growth of nominal income sufficiently high to permit continued catchup growth but sufficiently taut to restrain any major acceleration of inflation. Monetary policy was devoted to targeting the exchange rate, and the actual target zone (if I may use the phrase) was defensible: the DM was the most sensible unit in terms of which to formulate a target, and a range of DM 2.70 to DM 3.00 was reasonably competitive without being inflationary." Williamson (1988)

that full membership of the EMS was beneficial. Nevertheless, at the instigation of the Chancellor, the UK embarked on a policy of "shadowing" the DM within an unpublished band (with a ceiling believed to be DM3.00 and a lower limit no higher than DM2.80 - possibly as low as DM2.70).

As can be seen from Table 2 this band was successfully defended for 15 months up to Spring 1988, but by then, because of rapid demand growth, there were growing signs of overheating in the domestic economy - rising inflation, accelerating growth of narrow (and broad) money and a rapid move towards deficit on the balance of external payments. Yet, in the face of considerable buying pressure, interest rates had to be lowered to prevent sterling breaching its unofficial ceiling.

Why sterling should have been so strong at that time is an interesting question. One suggestion is that, as for the dollar earlier in the 1980's, there was something of a "fad" in the currency - based on the evidence of strong real growth and the hope that this signified a supply side miracle on this side of the Atlantic. A more prosaic explanation was offered by Sir Alan Walters (until recently the Prime Minister's personal economic adviser - see postscript) which runs as follows. If the nominal exchange rate between sterling and the DM had a credible floor beneath it, in the manner supposed during this period, then there could be no substantial expected downside exchange rate risk involved in investing in UK assets. Arbitrage (made possible by the absence of exchange controls in the UK) dictates that UK

interest rates must come into line with German rates; and Walters argued that the strong buying pressure on sterling was a manifestation of this process.

He further argued (with the apparent agreement of the Prime Minister) that this was leading to a totally inappropriate setting of monetary policy in the still relatively high inflation UK. Consequently the Mr Lawson, who was in any case more concerned with cutting taxes than capping sterling, was forced to abandon his experiment.

(c) 1988 to the present¹: Fighting inflation without intermediate targets.

Interest rates had reached a brief minimum of 7.5% before the upper edge of the band was abandoned in early 1988. But by October 1989 they were double that level, and it appeared that the authorities had made a rapid switch from setting monetary policy with reference to external considerations to giving most weight to internal developments, inflation in particular. However, the precise *modus operandi* of monetary policy had been left unclear.

Had exchange rate targeting been completely abandoned? Not according to Mr Lawson who (for instance in evidence as Chancellor to the Treasury Committee) implied that the upward move of sterling in 1988 essentially signalled an upward realignment of the target band. But his credibility was undermined by the

¹ i.e. up until the date of the Conference in October 1989 - see the postscript at the front of the paper.

knowledge that the Prime Minister has no desire for early entry into the ERM, and that her personal adviser in these matters believed in floating exchange rates and monetary control. Neither was it clear that monetary targets were the appropriate guide to interest rate changes, as the Prime Minister's position might suggest.

Though there were obvious differences of view between Mr Lawson and the Prime Minister as to what targets might be appropriate, official statements on monetary policy emphasised the unity of view on the need to reduce inflation. As for fiscal policy, it was well known that the Mr Lawson did not favour fiscal fine tuning. He may, it is true, have deferred tax cuts in his 1989 budget in the light of the economic conjuncture, but it was difficult to imagine him (or indeed his successor) presiding over tax increases.

But how did Mr Lawson - with only one policy instrument - succeed in serving two masters? How was he able to set interest rates sufficiently high as to exert significant downward pressure on inflation, while, at the same time, keeping the exchange rate reasonably stable against the DM - which pays much lower interest? The interest differential cannot, as for France or Italy, be attributed to the effect of capital controls - there are none. Instead the explanation we offer later in the paper is simply that his policy necessarily involved the perception of a very significant downside risk for sterling. (Perhaps this is obvious: but consider the corollary - that the interest rate policy used as a substitute for fiscal fine-tuning relies on embedding a currency risk premium into UK interest rates!)

Official response to the Delors Report

Whatever may be true of current monetary policy and the status of exchange rate targets, the government retains its commitment to take the pound into the ERM "when the time is right". The Delors report on European Monetary Union has emphasised that the first stage in the move towards a common currency is the participation of all EC members in the ERM. To this end the Prime Minister has more clearly specified the conditions under which the UK will join. The first condition is a reduction in UK inflation below the EC average. This reflects her belief (shared by Sir Alan Walters) that fixed exchange rates encourage inflation in a high inflation country for the reasons already outlined. This view contrasts sharply with the conventional wisdom that the EMS has helped high inflation countries such as Italy and France to bring down inflation to German levels. Alan Walters has explained this paradox by claiming that the exchange controls retained by France and Italy over this period have allowed them to maintain higher interest rates than Germany while the fully deregulated UK would not have this option. This leads to the second condition specified for UK entry into the ERM which is the removal of remaining exchange controls in other EC countries.

The Delors Report raises another important issue for UK policy which is the extent to which fiscal policy in member countries need be a matter of Community concern. It is typically large public sector deficits which have been taken to threaten the viability of the EMS. The UK experience, discussed below, suggests that uncoordinated programmes of supply-side tax cuts can also put a strain on

membership of a fixed exchange rate system, not by causing deficits but through their impact effects on domestic absorption.

2. The Current Account Deficit

The UK current account balance has been moving steadily towards deficit since the peak surplus of 1981 which was associated with high oil revenues and a severe recession which depressed imports. (Table 1 gives the balance of payments expressed as a percentage of GDP.) Renewed growth and the falling value of oil revenues reduced the current account to near balance by 1986 and a modest deficit in 1987. However, during 1988 there was a dramatic and rapid deterioration in the position to a deficit of over 3% of GDP. Currently there is evidence that the position has stabilised at this level but there is little sign that it is reversing itself. There is, it is true, some doubt about how accurate these figures are, particularly since there is a large discrepancy between the current and capital accounts. It is possible, therefore, that the level of the deficit is not as large as stated above; but the deterioration over the last two years is clear enough and is consistent with strong consumption and GDP growth experienced in that period. (As can be seen from the table, GDP growth has recently been about 4% while consumption growth has been rising strongly to around 6% per annum.)

What lies behind the sharp turnaround? For a current view, we cite the assessment by Gavyn Davies and David Walton of Goldman Sachs: "The genesis of these current difficulties faced by the economy [i.e. inflation and the external deficit]

can be traced back to the very rapid expansion of demand which occurred from 1986-88. This culminated in growth of around 8% in real domestic demand last year, as against an increase of 4.5% in domestic supply (i.e. national output). The inevitable result was that the gap between demand and supply has manifested itself in a widening of the balance of payments deficit on current account, which has lately been running at almost 4% of GDP", (1989, p. s1)

It is not only demand factors which have been at work: Britain's international price competitiveness has suffered badly from a worsening inflation performance combined with the strength of sterling. Thus in a commentary on the "growing problem of competitiveness" Tim Congdon described the position as one of "serious exchange overvaluation" and notes indeed that "on some measures, including the IMF index of relative unit labour costs, British industry is as uncompetitive today as it was in 1981". (This is a reference to the period when, under the Medium Term Financial Strategy, sterling reached its peak and manufacturing industry was severely squeezed.)

The recent situation would, to use Williamson's terminology, be referred to as one of exchange rate "misalignment"; and a crude update of his calculations suggests that the rate was outside the target zone associated with his name. Thus for 1984 Q4 Williamson (1985) had estimated that sterling was about 7% above what he called its Fundamental Equilibrium Exchange Rate (FEER). But over the next four years the real exchange rate appreciated by about 11% (see Table 2): and with the fall

in the oil price the FEER should, if anything, have fallen. So by 1988 Q4 the "misalignment" would be at least 18% - i.e. clearly outside a zone of +/-10% centred on its FEER. Sterling had weakened since 1988 Q4, (by about 6% to an effective rate of about 91 in mid October 1989) but it would still be classified as misaligned.

In the medium term assessment already cited, Davies and Walton reckoned that a reduction of the deficit by about 1% of GDP a year for the next three years was necessary in the light of "past experience in medium sized economies such as the UK [which] suggests that deficits of the order of 3-4% of GDP cannot be financed for very long without producing severe downward pressure on the exchange rate." To get the necessary improvement in the deficit they reckoned that the growth of domestic demand must be held to only 1-1.5% in the next 2 or 3 years, and, "to get the required boost in net trade volumes, sterling may need to depreciate by 15% early in the period." (p. S2)

Nigel Lawson as Chancellor argued forcefully that the UK balance of payments deficit is not something that calls for an official cure; it merely requires private financing. For the UK, the argument runs, the external deficit is the counterpart of an excess of investment over saving by the private sector and not by the Government; to the extent that the deficit reflects extra investment spending it will easily prove self-financing; and to the extent it is based on high consumption it will prove self limiting. In neither case is fiscal policy adjustment called for on balance of payments grounds.

Mr Lawson also attempted to defend the exchange rate above a floor of DM3.00. Did he expect that the deficit would eventually correct itself with the exchange rate at that level? In the section that follows we examine this question more closely. Even if we assume (as did Mr Lawson) that the consumption boom is temporary and that financing is entirely unlimited, we nevertheless find that a change in the real exchange rate will be called for when the boom ends. This might, of course, be achieved by a fall in British prices relative to those overseas at a fixed nominal exchange rate. But the level of UK interest rates is, we argue, evidence that the market expected the adjustment to come via the exchange rate itself.

3. The exchange rate - a stochastic "hard-landing" for sterling?

The formal analysis is provided in Appendix 1, but the logic is straightforward enough. From the position of high employment equilibrium, let there be a temporary boom in private consumption which would, in the absence of crowding out, add $b\%$ to aggregate demand. Assume further that the ending of the boom is treated as a stochastic event which is (correctly) expected to occur with a constant probability π per unit time. The implications are shown graphically in Figure 1 for a special case where it is assumed that the money supply is set in such a way as to prevent any overheating in response to demand shocks. (This implies a vertical LM curve, as shown in the lower panel of the figure.) In the upper panel, depicting the price level and the exchange rate, the equilibrium point, labelled E, is where the economy starts from before the temporary boom and where it ends up

after the boom dies away. The associated stable path is marked SS and the 45^0 line labelled PPP (Purchasing Power Parity) indicates points with the same real exchange rate.

[Figure 1 here]

At the initial level of the exchange rate, the boom shifts the IS curve to the right to IS_1 in the lower panel. If the boom were permanent aggregate demand would have to be brought into line with supply (\bar{y}) at world interest rates by an appreciation of the exchange rate (by an amount indicated by the distance EA in the upper panel). This would shift the IS curve all the way back to IS_0 . But if the boom were temporary there is an expectation that the rise in the exchange rate will be reversed: so while the boom lasts domestic interest rates must stand above world rates by πf to compensate asset holders for the downside exchange rate risk (π is the probability of the boom ending and f is the anticipated fall in the exchange rate back to E in the upper panel). Because of the slope of the IS curve, higher domestic interest rates will crowd out elements of domestic demand and consequently the exchange rate need not rise so much in order to rebalance demand and supply. Thus the exchange rate only rises to B in the upper panel and the IS curve shifts to IS_2 ¹.

The extent to which a consumption boom crowds out components of domestic demand as well as the external balance will not, of course, be independent of the

¹ The assumption of a vertical LM curve, characteristic of this scenario is, of course, extreme. It helps the exposition but is by no means essential. Two (more complicated) scenarios are examined in Appendix 1.

structure of taxation. The tax deductability of interest payments in particular may shield domestic demand at the expense of the trade balance, as we show in Appendix 2. It may be no coincidence that the extent of such interest subsidies in the UK was the subject of critical comment by IMF economists in the (Autumn) 1989 World Economic Outlook.

The analysis presented in Figure 1 helps explain a number of features of the UK situation in late 1989. The temporary boom causes a real and nominal appreciation of the exchange rate - much as occurred in the UK over the two years to 1989 Q1 (see Table 2). The scenario we describe in the model also involves a current account deficit, but no policy adjustment is necessary to ensure the return to equilibrium. Just a policy of wait and see; which is very much what Chancellor Lawson seemed to be saying about the UK deficit. However, the eventual adjustment relies on a fall of sterling - which he strenuously denied. The anticipated depreciation allows domestic interest rates to stay above world levels while the exchange rate remains stable - again much as has occurred in the UK over the past year. Despite the Chancellor's denial of eventual depreciation, the risk premium embedded in UK interest rates nevertheless proved useful to him in allowing some control over domestic demand without the use of fiscal policy.

What would it take to prove Mr Lawson right (in denying nominal depreciation) and the markets wrong? Formally the answer is an unanticipated tightening of monetary policy, as and when the consumer boom ends - sufficient to

ensure that the necessary improvement in competitiveness comes not by a step change in the nominal exchange rate but by UK price disinflation (relative to competitors). In Figure 1, such a policy would appear as a shift of equilibrium along the PPP line to R where the real exchange rate is the same as at E but where prices are lower and the nominal exchange rate is higher. When the boom ends there is no immediate fall in the exchange rate, but an adjustment from B to R along the stable path (S'S') by means of price deflation.

Unlike the exchange rate, goods prices are not set in flexible auction markets. So the path of depreciation by disinflation would not be easy, as Congdon indicates in his commentary. "Inflation pressures cannot be moderated sufficiently without a long period of tight money, an arduous campaign against high pay settlements and a cyclical reduction in UK growth beneath the international norm. The whole prospect is hardly very appealing, particularly as it implies slow growth in the years leading up to the next election." We return to this theme (the political constraints on policy) in the conclusions which follow.

4. Discussion and Conclusions

Intermediate targets - first for the money supply and then for the exchange rate - have played a central role in UK anti-inflationary macroeconomic policy over the last decade. But since 1988 it is the objective of reducing inflation itself - rather than specific targets designed to achieve it - that has been cited as the key to the conduct of policy.

The rationale for adopting monetary targets in the first place has been explained to large extent in terms of the political economy of replacing the implicit commitment to stabilise demand at a high level whatever the rate of inflation by a credible threat to squeeze the economy harder the higher the pace of wage and price increases. If this was the objective they must be judged a success even though the targets themselves were regularly overshoot: no one was left in any doubt as to the determination of the Thatcher Government to reduce inflation. But the severity of the recession in the trading sector caused by the monetary squeeze (and the associated rise in sterling and the cuts in public spending) led many to question the wisdom of pursuing such targets. Ironically enough, those variations in velocity of money which ultimately undermined the reliability of M_3 as an intermediate target probably owed a great deal to the programme of financial deregulation pursued by a Government committed to making the economy more competitive in financial services.

As an alternative, the adoption of an exchange rate target against the German mark in 1988 seemed an attractive way of anchoring policy against inflation while avoiding the vagaries of the velocity of broad money. But once again, it would appear, the efficacy of the target was in part undermined by "shocks" to demand stemming from financial liberalisation - and from tax cuts designed to make the economy more efficient. Thus the dramatic fall in the savings ratio has been attributed in large part to the effects of liberalisation on both the availability of credit

and the value of property on which it could be secured - see Davies (1989), Deaton (1989) and Franklin et al (1989). And Mr Lawson's supply-side-friendly tax cuts in the 1988 budget (like those of President Reagan in the early 1980's) had demand effects which effectively put an end to his experiment in shadowing the DM.

That nominal exchange rates are not good at offsetting the macroeconomic impact of demand shocks may not be apparent to many supporters of the EMS, but it has been emphasised by Sir Alan Walters, until recently the Prime Minister's outspoken personal economic adviser (and himself a believer in monetary targets). He, in fact, went much further and argued that the EMS without exchange controls would prove dynamically unstable as nominal interest rates are kept in line with those in West Germany and real interest rates are lower the higher domestic inflation. Walters, and other monetarists such as Patrick Minford and Brian Griffiths, are quick to point out the superior stabilisation provide by monetary targets and floating rates in the face of demand shocks - and to blame much of the current inflation on the experiment with exchange rate targeting.

Should one forecast, therefore, a return to the targeting of the money supply after all - maybe even targets for M3 as the proven leading indicator of the recent surge in aggregate demand? Surely not: for the benefits of stabilising demand so as to keep nominal income on track can in principle be obtained without the risk of trying to do this via targets for a fickle monetary indicator which has frankly lost all the credibility it once had.

How monetary targets would do this was shown clearly enough by Mr Volcker of the US Federal Reserve Board - namely by exchange rate appreciation. On the other hand, for those, like John Williamson, who seek stability in nominal income growth without misalignments, the answer is equally clear - namely demand management by fiscal contraction.

But Mr Lawson, it appeared, was no longer a monetarist; and he is certainly no Keynesian. So how could he manage to use monetary policy alone to squeeze the level of aggregate demand by high and rising interest rates while at the same time keeping sterling reasonably stable against the DM? The answer proposed in this paper is that under his policy - where there was no credible floor for the exchange rate¹ - the increased downside risk of currency depreciation has driven a substantial wedge between interest rates in the UK and Europe, and this wedge gave Mr Lawson the leverage he wanted. The high real interest rates have acted as a substitute for fiscal contraction in checking the boom in demand; but the risk element they contained limited the extent of appreciation of sterling, keeping it reasonably close to DM3.00. We have argued that if it is correct to believe that the strength of consumer

¹ Witness the following quote from Lex of the Financial Times, 6 October 1989: "All Mr. Lawson did [in raising base rates to 15%] was maintain the differential between UK and West German rates and sterling is still perilously close to its floor. If the currency dealers took another run at it, the results would scarcely bear thinking about."

spending will ultimately subside under the weight of consumer borrowing, then the need for these high rates will evaporate; and sterling can finally fall so that the trade balance will take up the slack in aggregate demand. But even if it is the risk of just such a fall of sterling that has kept interest rates high (and helped to control demand growth) could the Government not finally, when the time comes for the rate to fall, simply change gears and prevent the fall (e.g. by joining the EMS at, say, DM3.00 and a narrow band)? That is, to use the expectation of depreciation as long as it proves convenient, but then to falsify the expectation by holding the line on the exchange rate after all!

Such financial juggling might have appealed to Mr Lawson but there is a General Election to be held before 1992. And as Davies and Walton suggested in their review: "...the precarious political situation makes it impossible that the Prime Minister will be prepared to induce an outright recession in the next year or two if, as seems likely, this is required to bring inflation down to around 3-4% ahead of the election. Rather it is likely that the commitment to a stable sterling policy will wane as the economy slows... At that stage, it is likely that base rates will be engineered downwards, even if this induces some substantial depreciation in the sterling exchange rate." It is this sort of expectation which we assumed to be correctly built into sterling interest rates as of October 1989.

Table 1

	GDP Growth	Consumption Growth	Current Account*	Public Sector Deficit*
1980	-2.3	0.0	1.4	5.1
1981	-1.1	0.0	2.7	4.2
1982	1.8	0.9	1.7	1.8
1983	3.7	4.5	1.3	3.8
1984	1.8	1.8	0.6	3.2
1985	3.7	3.6	0.9	2.1
1986	3.0	5.6	0.0	0.6
1987	4.4	5.3	-0.7	-0.4
1988	3.7	6.4	-3.3	-2.5

(* as a percentage of GDP)

Table 2

	Nominal Effective Exchange Rate	DM/£	Dollar/£	Real Effective Exchange Rate*
1980	117.7	4.227	2.32	110.1
1981	119.0	4.556	2.02	114.1
1982	113.7	4.243	1.75	109.0
1983	105.3	3.870	1.52	101.7
1984	100.6	3.790	1.34	98.6
1985	100.0	3.784	1.30	100.0
1986	91.5	3.183	1.47	94.7
1987	90.1	2.941	1.64	95.1
1988	95.5	3.124	1.78	103.9
Q4	96.6	3.716	1.22	96.8
85Q1	92.9	3.628	1.12	92.0
Q2	101.0	3.878	1.26	100.4
Q3	104.6	3.920	1.38	105.2
Q4	101.4	3.711	1.44	102.8
86Q1	95.0	3.382	1.44	97.2
Q2	96.1	3.387	1.51	99.4
Q3	90.2	3.109	1.49	93.6
Q4	85.1	2.868	1.43	89.0
87Q1	86.7	2.837	1.54	90.9
Q2	90.4	2.964	1.64	95.2
Q3	90.5	2.974	1.62	95.5
Q4	92.7	2.989	1.75	98.9
88Q1	93.5	3.013	1.80	101.0
Q2	96.6	3.142	1.84	105.2
Q3	95.2	3.165	1.70	103.6
Q4	96.7	3.175	1.79	106.0
89Q1	97.1	3.233	1.75	108.0
Q2	93.6	3.140	1.62	-

* Calculated as a geometric average of the IMF indexes of Relative Unit Labour Costs, Relative Normalised Unit Labour Costs, Relative Wholesale Prises and the Morgan Guaranty index of real exchange rates.

Table 3

	M0 Growth	M3 Growth	Base Rates	Price Inflation
1980	5.6	18.4	14.00	7.8
1981	2.0	25.9	15.50	12.0
1982	3.3	8.9	10.25	8.6
1983	6.5	11.1	9.00	4.5
1984	5.7	10.1	9.62	5.0
1985	3.4	13.7	11.50	6.1
1986	5.2	20.6	11.00	3.4
1987	4.9	22.6	8.20	4.2
1988	7.7	20.7	13.00	4.9
Q4	5.7	10.1	9.62	4.8
85Q1	5.4	11.7	13.25	5.5
Q2	5.4	11.1	12.50	6.9
Q3	4.4	12.7	11.50	6.3
Q4	3.4	13.7	11.50	5.5
86Q1	3.7	16.3	11.50	4.9
Q2	3.2	19.7	10.00	2.8
Q3	4.0	20.0	10.00	2.6
Q4	5.2	20.6	11.00	3.4
87Q1	4.4	20.0	10.00	3.9
Q2	4.5	19.7	9.00	4.2
Q3	5.0	20.2	10.00	4.2
Q4	4.9	22.6	8.50	4.1
88Q1	5.2	20.7	8.20	3.4
Q2	6.6	20.4	9.50	4.3
Q3	7.6	22.7	12.00	5.5
Q4	7.7	20.7	13.00	6.5
89Q1	6.7	21.3	13.00	7.4
Q2	5.8	22.1	14.00	8.3

Sources: National Institute Economic Review and Economic Trends (various issues).

Appendix 1: Exchange rate effects of a stochastic boom.

The consequences ascribed in the text to a rise in consumption (the reversal of which is expected with a constant probability π) may be estimated with the aid of a modified Dornbusch model where there is perfect international mobility of financial capital, a floating exchange rate and stochastic demand. The formal analysis is actually much the same as that used by Miller and Weller (forthcoming) to study the consequences of a "Blanchard Bubble" in the exchange rate¹.

Assuming no change in fiscal policy or the money stock, the equations applying as long as the boom lasts are

$$m - p = \kappa y - \lambda i \quad (1)$$

$$y = -\gamma i - \eta(x + p - p^*) + b \quad (2)$$

$$Dp = \phi(y - \bar{y}) \quad \text{or} \quad p = \phi \int_{-\infty}^t (y(s) - \bar{y}) ds \quad (3)$$

$$Dx = i^* + \pi(x - \hat{x}) - i \quad \text{or} \quad x = \int_t^{\infty} (i^*(s) + \pi(x(s) - \hat{x}) - i(s)) ds + \tilde{x} \quad (4)$$

where $\hat{x} = \theta_s(p - \bar{p})$.

¹ There is also a formal similarity between the analysis presented here and the so-called "peso problem". However, the focus of attention in that case is the uncertainty concerning government policy. By contrast, in this paper, the source of uncertainty is private sector behaviour.

The values of the long run equilibrium \bar{x}, \bar{p} are obtained as steady state solutions of the system when the boom has ended, i.e. when $b=0$ in equation (2) and $\pi=0$ in equation (4).

Here financial markets are taken to be forward-looking, but the process of price adjustment is not (though the analysis could without much difficulty be extended to include forward-looking labour contracts). The first equation, which defines equilibrium in the money market requires no elaboration, except to say that we ignore cumulative velocity shocks for the moment. Note that output is demand determined, and, of course, demand in equation (2) depends *inter alia* on the boom term, b . Inflation is given, in equation (3), by excess demand.

The probability of the boom ending, denoted π , makes its appearance in the arbitrage equation, (4). In that event, the system will revert to the stable trajectory which leads to equilibrium at \bar{x}, \bar{p} : so, in the meantime, there is a risk of an exchange rate adjustment (a fall) of $x - \hat{x} = x - \theta_s(p - \bar{p})$ where θ_s is the slope of the stable manifold for the system without the boom. The term $f = \pi(x - \hat{x})$ is, in effect, the cost of buying insurance against the anticipated fall of sterling.

After substitution, the system with consumption booming becomes

$$\begin{bmatrix} Dp \\ Dx \end{bmatrix} = A' \begin{bmatrix} p - \tilde{p} \\ x - \tilde{x} \end{bmatrix} \text{ where } A' = \frac{1}{\Delta} \begin{bmatrix} -\phi(\gamma + \eta\lambda) & -\phi\lambda\eta \\ \kappa\eta - 1 - \pi\theta_s\Delta & \kappa\eta + \pi\Delta \end{bmatrix}$$

where \tilde{p}, \tilde{x} are the stationary values for $b > 0$, and $\Delta = \kappa\gamma + \lambda$.

Without the boom, the system is simply

$$\begin{bmatrix} Dp \\ Dx \end{bmatrix} = A \begin{bmatrix} p - \bar{p} \\ x - \bar{x} \end{bmatrix} \text{ where } A = \frac{1}{\Delta} \begin{bmatrix} -\phi(\gamma + \eta\lambda) & -\phi\lambda\eta \\ \kappa\eta - 1 & \kappa\eta \end{bmatrix}$$

It is straightforward to verify that the extra terms appearing in A' do not change either the stable root or the stable eigenvector.

Thus in the top panel of Figure 1 in the text, the two stable eigenvectors are drawn parallel, separated by the distance f , which represents the fall constantly expected with probability π . (This drives up interest rates, as shown in the lower panel). For simplicity Figure 1 is constructed on the assumption that the government follows a money supply rule which makes the LM curve vertical. Formally this can be represented by setting λ equal to zero. In this case the equilibrium with the boom, shown in the upper panel of Figure 1, lies immediately above the equilibrium when the boom ends. The effect of the boom is simply a jump of the exchange rate from E to B , with no effect on the price level, either on impact or, indeed, subsequently.

We now repeat this analysis for the situation where the government fixes the money stock and therefore allows a certain degree of excess demand. Formally this is represented by setting λ to a positive value. We consider two alternative scenarios.

(a) No long-run accommodation

In this case we assume that the government fixes the money stock at a level which is consistent with a post-boom equilibrium at point E in Figure 2. This implies that the rise in the price level caused by the boom is not accommodated. As can be seen from the lower panel in Figure 2 the upward sloping LM curve allows the excess demand to exert upward pressure on the price level. This is shown in the upper panel as a move towards point B along the stable path S'S'. The rise in the price level reduces real balances and shifts the LM curve to the left while the accompanying loss of competitiveness also shifts the IS curve to the left. The rate of interest rises towards point B' in the lower panel where excess demand is choked off by both higher interest rates and a higher real exchange rate.

When the boom ends (which can happen before the economy reaches B, and almost surely will) the exchange rate drops to the stable path (SS) associated with the post-boom equilibrium. There is then a recession which lowers the price level back towards point E.

[Figure 2 near here]

An interesting feature of this alternative scenario is that the consumer boom not only generates a current account deficit by causing the real exchange rate to appreciate, it also adds to that deficit by creating overheating - which happens to be a feature of the current UK situation which many commentators emphasise.

As we discuss in our conclusion, however, it may not be reasonable to assume that the government is willing to allow a post-boom recession to develop such as that described in Figure 2. This leads to our third scenario.

(b) Long-run accommodation.

Suppose the government is correctly expected to fully accommodate the rise in prices generated by the boom by increasing the money stock at the time the boom dies. This scenario is illustrated in Figure 3. If, for instance, the price level has reached p_1 when the boom dies then at that point the government is correctly expected to increase the money stock so as to shift the equilibrium down the PPP line to E_1 . (This obviously involves a greater expected fall of the exchange rate than for previous scenarios so the stable path associated with point B becomes downward sloping while the point B itself is shifted downwards.) The stable path shown in the lower panel is also twisted in a clockwise direction and the point B' is higher (to reflect the greater risk premium necessary to induce asset holders to hold domestic currency).

[Figure 3 near here]

The analysis is essentially unaltered by these modifications except that, when the boom dies, there is no recession since the price level is supported by a larger money stock. This scenario seems more consistent with the electoral pressures faced by the UK Government.

Appendix 2: The Tax Structure

In the latest IMF World Economic Outlook it is suggested that there are significant distortions in the UK tax structure which blunt the effectiveness of interest rates on demand. Here we show that such distortions may throw the weight of monetary policy contraction more heavily on to the external rather than the internal side of the economy. Specifically the analysis illustrates how, in a model where capital movements are fully deregulated but fiscal distortions remain on the domestic side of the economy, demand or price shocks which are met by non-accommodating monetary policy can lead to more crowding out of net exports than would occur if distortionary rules were abolished.

We use the model as specified in Appendix 1 but introduce a fiscal distortion to the aggregate demand function in the form of a tax subsidy to interest payments. For simplicity we work only with the vertical LM curve case ($\lambda=0$) and ignore the boom. The new aggregate demand function is as follows

$$y = -\gamma(1-t)i - \eta(x + p - p^*)$$

where t measures the tax subsidy. This might, for example, represent the effect of mortgage tax relief which, in the UK, has a significant effect in shielding consumers from the effects of high interest rates.

Solving the new model yields the following expression for the slope of the stable manifold

$$\theta_s = \frac{1 - \kappa\eta}{\gamma(1 - t) + \kappa\eta}$$

We assume that the parameters of the model are such to yield overshooting (i.e. $1 - \kappa\eta > 0$). If t is set to zero we obtain the manifold marked SS in Figure 1 in the text. Positive shocks to the price level, in this case, cause interest rates to rise and the exchange rate to appreciate along the stable manifold. But if the tax subsidy, t , is positive we find that the stable manifold is steeper and the exchange rate rises by more for any given shock to the price level. The effect of the larger appreciation is to cause more of the burden of real adjustment to fall on net exports and less to fall on domestic spending.

The intuition behind this result is clear. The tax subsidy reduces the impact of interest rates on aggregate demand but has no direct impact on the arbitrage link between exchange rates and interest rates. When a price shock reduces real balances and forces interest rates up the tax subsidy cushions domestic demand and forces interest rates higher in order to restore equilibrium in the goods and money markets. The forward looking exchange market translates higher current and future interest rates into a higher current exchange rate.

The implications for tax reform are equally clear. The removal of distortionary controls on capital movements certainly increases the influence of monetary policy. But that influence will fall unduly on net exports if fiscal and regulatory distortions are not also tackled on the domestic side.

Definition of variables and symbols

The variables in the text and appendix are defined as follows

m	log of the domestic money stock
p	log of the price of domestic output
y	log of GDP
\bar{y}	log of non-inflationary level of GDP
x	log of the exchange rate, (foreign currency price of domestic currency)
i	the instantaneous domestic nominal interest rate
b	the extra demand created by a consumer boom
$*$	denotes a variable in the "rest of the world"
$-$	denotes the value to which a variable will tend while $b=0$
\sim	denotes the value to which a variable will tend while b does not equal zero.
D	denotes the time derivative of a variable
π	the probability of the boom ending
θ_s	the slope of the linear stable manifold

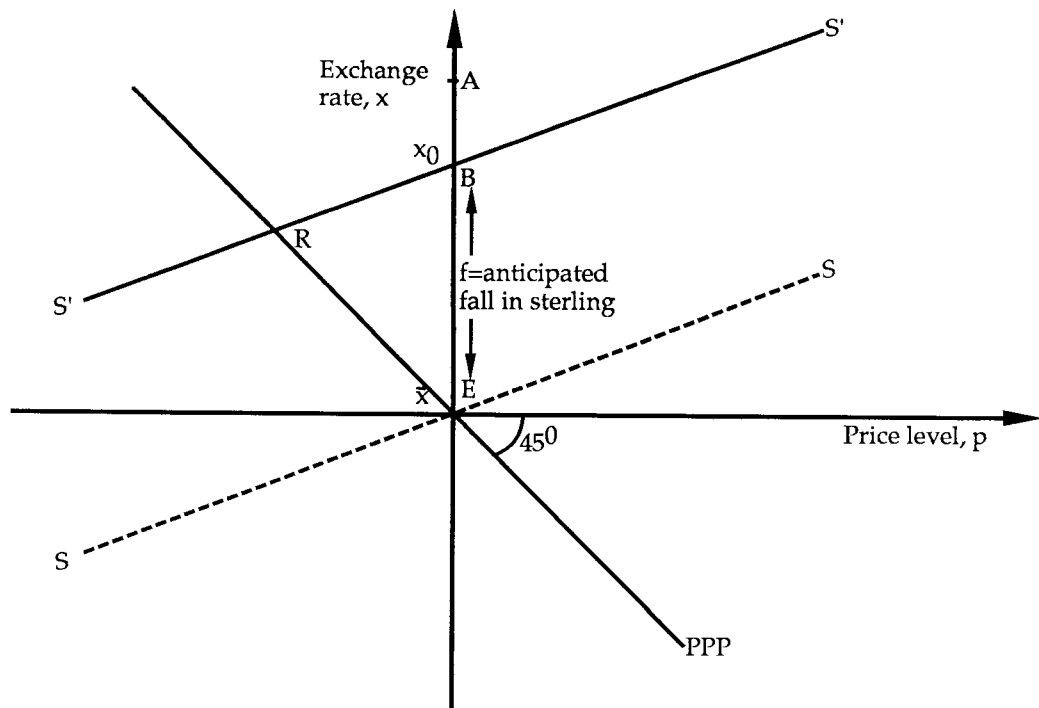
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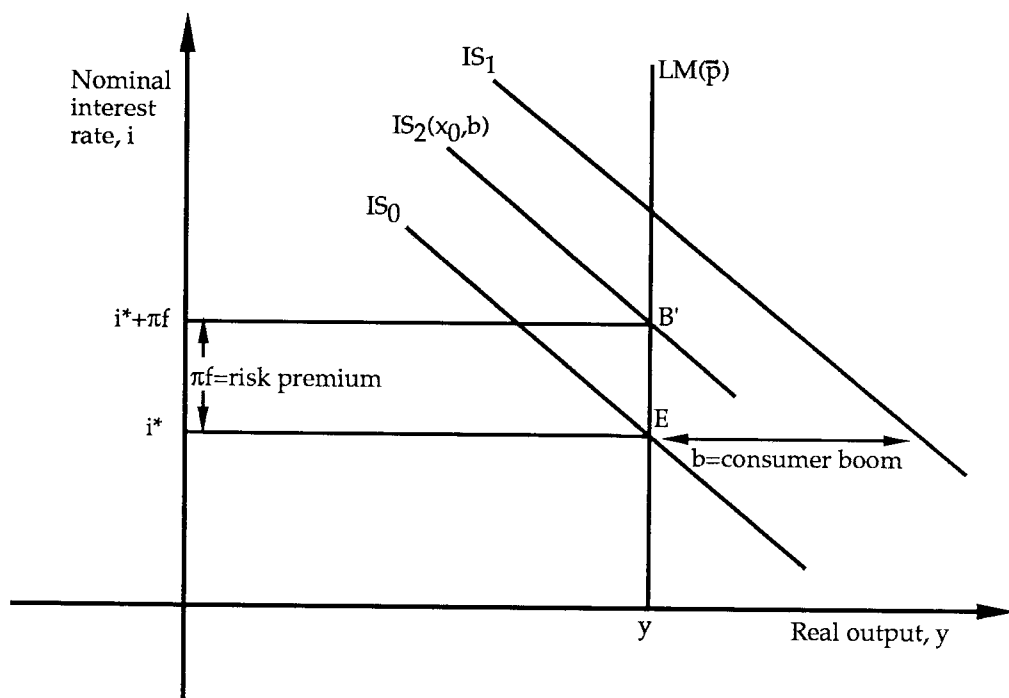
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Figure 1. The consumer boom and the anticipated "hard-landing" for sterling.

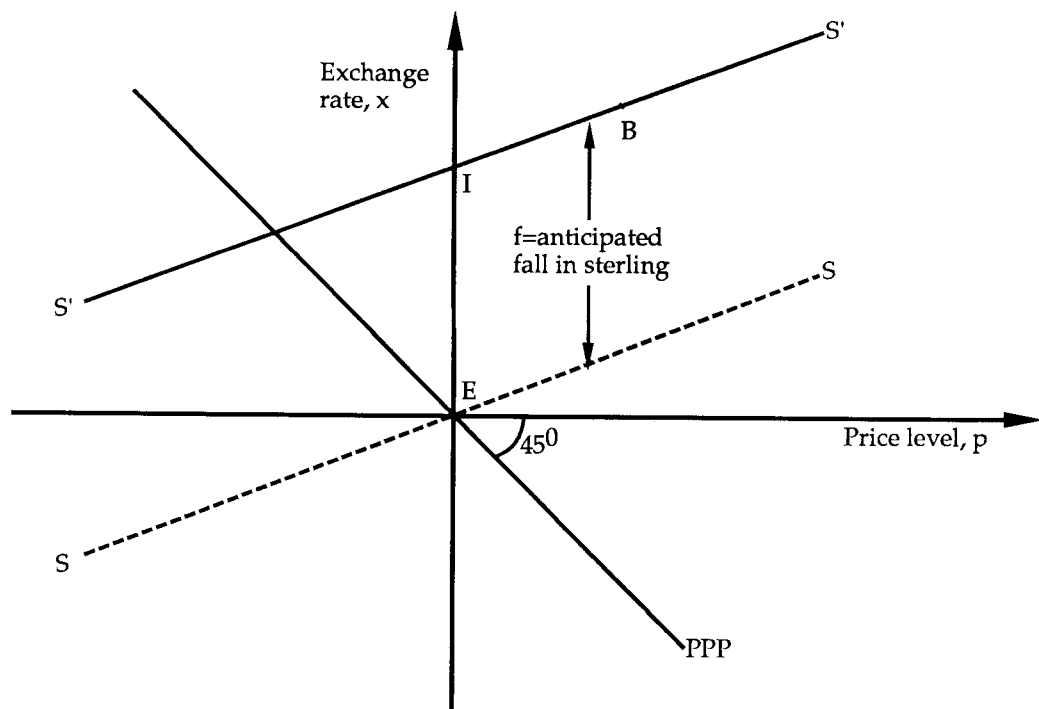


(a) Price level and the value of sterling.

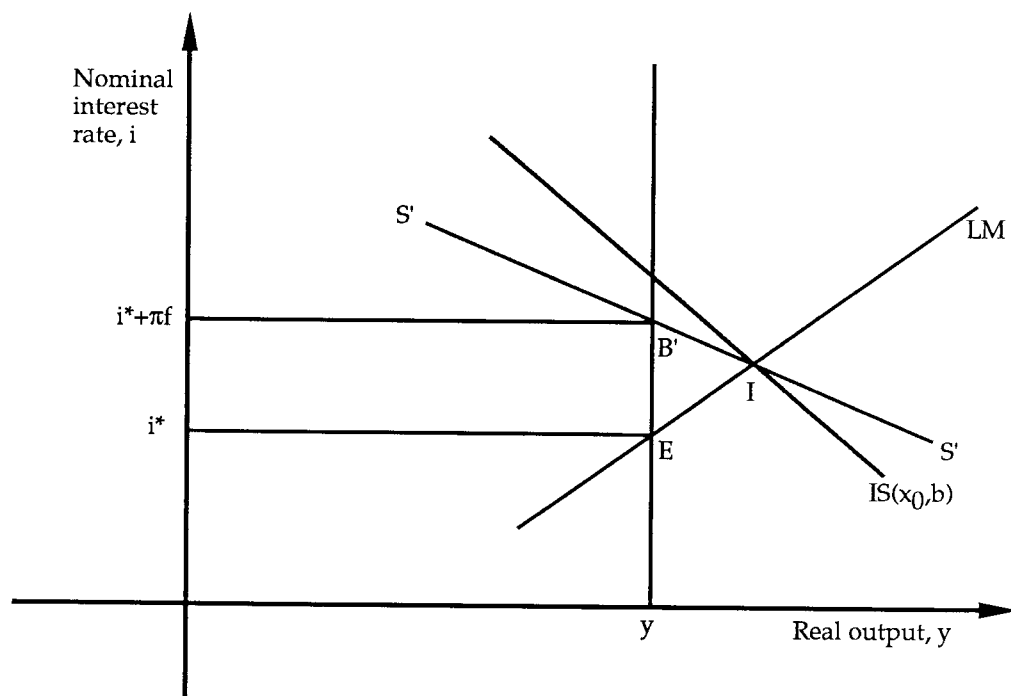


(b) Output and the level of interest rates.

Figure 2. No long run accommodation.

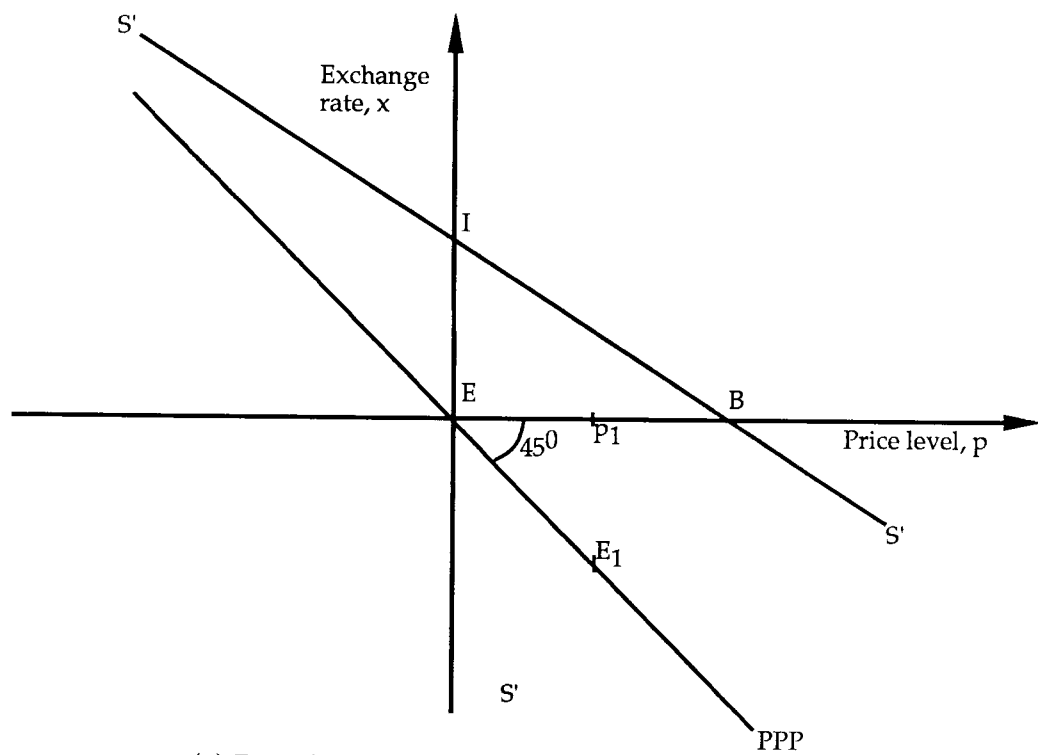


(a) Price level and the value of sterling.

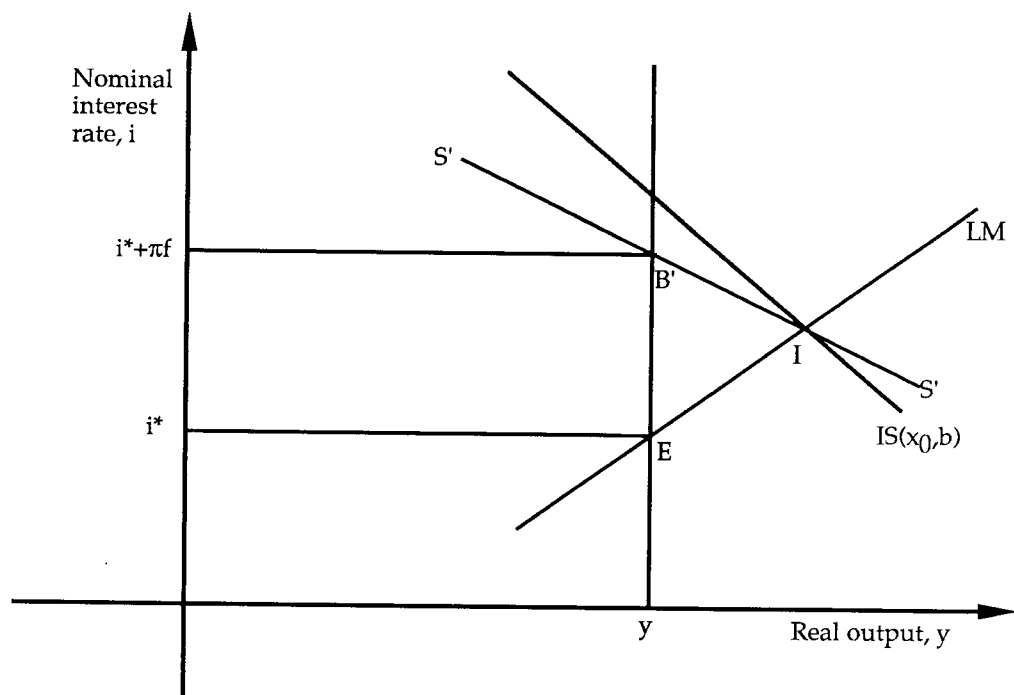


(b) Output and the level of interest rates.

Figure 3. Long run accommodation.



(a) Price level and the value of sterling.



(b) Output and the level of interest rates.