Speech

Macroeconomic Policy Rules in Theory and in Practice

Speech given by

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I Introduction

It is a great pleasure to address this distinguished conference on policy rules. My task, as I understand it, is to set the scene from the standpoint of someone engaged in the monetary policy process—with an emphasis on the two-way interaction between policy and academic enquiry. Certainly, as compared with the situation a decade or so ago, there is a recognisable consensus, with developments in policy, in macroeconomic theory, and in empirical analysis pulling, so to speak, in the same direction.

I will structure my presentation as follows. Section II is my take on the emerging consensus. In that context, I will outline some of the features of the current UK system which seem particularly important as well as indicating some areas of continuing difficulty. Section III goes back to consider the wider historical and theoretical debate over policy rules. Whilst the consensus has it that interest-rate policy reaction functions should be 'rule-like' (Taylor, 1993; Meyer, 2002), it is equally true that systems such as that in the UK can be described as embodying 'constrained discretion' (Bernanke and Mishkin 1997, p. 106; King, 1997a, p. 440; Balls, 2001). Where does this leave the 'rules versus discretion' debates of the past? And how rule-bound should central banks be in practice? Section IV returns, in a highly selective way, to some of the unresolved issues. How, for example, should policy-makers treat fluctuations in asset prices? What difference does openness make? How can forecasts and policy reactions be improved in the face of various types of uncertainty? What is, or should be, the role of fiscal policy? Section V concludes.

II The consensus

A rough characterisation of the developing consensus on macroeconomic policy design would include the following:

1. There is no long-run trade-off between nominal developments (inflation) and the real economy (homogeneity, degree zero, of the nominal price and wage system).
2. It is essential to establish a credible, non-accommodating policy to control the price level and inflation.
3. The primary responsibility for the control of inflation should be assigned to monetary policy.
4. Monetary policy should be carried out by an independent central bank.

5. The principal instrument of policy is the short-term interest rate.
6. The central bank's responsibilities in controlling inflation in the medium term should be carried out at minimum cost in terms of deviations of output from potential and deviations of inflation from target.

Clearly, different parts of the consensus have different status. Thus, whilst 1 and 2 may be regarded as fundamental, 3, 4 and 5 are instrumental and more contentious—alternative choices and arrangements could be made and have existed in the past. The important qualification, 6, requires welfare judgements or at least some scheme for weighting together different costs.

Recent legislation, defining mandates for central banks, reflects these complex objectives. Thus, the European Central Bank (ECB) is charged with maintaining price stability and *without prejudice to that*, to support the policies of the European Commission as laid out in Article II of the Treaty—which include growth and employment. The *Bank of England Act*, similarly, adopts a *hierarchical* or *lexicographic* ordering, charging the Monetary Policy Committee with maintaining price stability and, *subject to that*, with supporting the policies of the government for employment and growth. In the United States, there are multiple objectives, but given the widespread agreement on 1 and 2 above, there has, in recent years, been a hierarchical ordering there too.

In the economics literature, the monetary authority's behaviour is typically described in terms of the abstract concept of its *reaction function*, which delineates how the instruments of policy are adjusted in response to (*a*) its targets, and (*b*) its assessment of the current and future state of the economy. Assuming that the instrument of policy is the short-term nominal interest rate, the interest-rate reaction function can thus be seen as an algorithmic rule or feedback system describing how the monetary authority attempts to home in on its objectives. Simple versions of such reaction functions abound, including the Taylor rule (where the interest rate is taken as responding to current deviations of inflation from target and output from potential) and that implicit in inflation forecast targeting regimes, where interest rates react to deviations of forecast inflation from target.[1] In practice, the reaction function is embedded in an institution—usually the

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[1] See Svensson (1997) for pioneering academic work on inflation forecast targeting, and Batini and Haldane (1999) for a discussion of incorporating inflation forecasts into policy rules with emphasis on the UK.

central bank together with associated constitutional and other arrangements—and may involve a complex set of procedures and judgements. It is unlikely to be expressible as a single simple rule—at the least it would involve a set of anticipated contingent responses.[2]

The reaction function approach brings out several intertwined aspects of the current practice of monetary policy. The first might be termed the *nominal anchor* function: the assignment of medium-term responsibility for the control of the price level or inflation to the monetary authority. This function, in turn, has two dimensions. The first is the target itself—which may be explicitly quantified (as in the UK) or implicitly defined, e.g. as price stability. The practical question of how the target should be made operational and measured is not as straightforward as sometimes appears. The second dimension is the instrument of policy and the feedback system, which together must be sufficiently powerful to achieve the medium-term objective for prices and inflation.

The second general aspect of current practice is the stabilisation function, capturing the idea that the medium-term objective should ideally be achieved at minimum cost (e.g. in terms of deviations of inflation from target and output from potential). The optimum reaction function clearly depends on the characteristics of the economy, on the shocks anticipated, and on the welfare judgements made. Since the optimum reaction function is likely to be highly sensitive to alternative models and specifications and shocks, there is interest in simple rules which produce reasonably good results and which appear robust. The practical policy analogue is the search for a set of procedures which delivers a sensible reaction function with desirable properties in a wide range of possible circumstances.

The monetary policy reaction function is thus an extremely important part of the way in which the economic system as a whole functions; and for the system to function well, it must have, and be perceived to have, appropriate properties. With forward-looking behaviour, it is the credibility of policy as embodied in the reaction function that stabilises expectations of inflation. But there is more to it than that. Combined with a standard 'natural-rate' or 'accelerationist' view of inflationary pressure, an 'appropriate' reaction function should lead to the anticipation of longer-term economic growth at

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[2] In the simplest approaches involving demand shocks and price shocks (often described misleadingly as 'supply shocks'), policy involves offsetting demand shocks completely whilst price-level or Phillips curve shocks involve a trade-off between the variability of the output gap and inflation.

potential rates and the understanding that deviations of output from potential and inflation from target will (in some sense) be as small as possible given the shocks hitting the economy. This 'two-for-one' aspect of inflation target regimes has been stressed (in the context of euro area monetary policy) by, for example, Alesina *et al* (2001). From a political-economy point of view, the idea that well designed inflation-targeting regimes are also 'employment-friendly', is of the utmost importance in gaining acceptance of the framework. The same general line of argument points to the importance of transparency—on which more below.

So far I have been speaking rather generally about a certain type of monetary policy regime which combines longer-term control of inflation with activist stabilisation in the short term. Within such a framework, one can imagine many different institutional arrangements—many different reaction functions, some no doubt, better than others. Like other matters of definition, it is hard to define exactly what is meant by an appropriate regime, but we mostly recognise it when we see it. (Just as we recognise cats and distinguish them from dogs, though most of us without a degree in biology would be hard pressed to define the difference.) Again from a political-economy point of view, what really matters is that an appropriate policy framework should be instituted with the right general properties. That then leads on to a second set of questions about improving or even optimising performance. To use another analogy, a boat without a helmsman is an indeterminate system. With a helmsman in place, there is a good chance that the boat will move across the bay in the direction desired by the operator. The big question is whether there is a helmsman in the boat or not. But, of course, the boat would function much better and more predictably with a skilled steersman than a novice. The debate about policy rules has now moved, it may be argued, beyond the question about how to pin down the rate of inflation and provide a nominal anchor to centre on how to become better at steering the economy.

Characteristics of the UK system

UK post-war history is littered with attempts to design a macroeconomic framework to provide a nominal anchor against inflation combined with a reasonable amount of stabilisation. Most ended in failure, usually with serious conflict between internal and external objectives. Inflation targeting was introduced in 1992 after Sterling was ejected from the ERM. The present regime, with monetary policy delegated to the Monetary Policy Committee at the Bank of England, was instituted in May 1997.

UK policy clearly owes much to the 'demonstration effect' from the perceived reaction function of the independent Federal Reserve in the US. US experience could not, however, be simply transplanted. The Federal Reserve is both goal-independent and instrument-independent and, in formal terms, the reaction function is hardly pinned down at all. One of its objectives is 'price stability', but the nearest anyone has come to defining what is meant by price stability is Greenspan's (2002a, p. 6) famous remark that '…price stability is best thought of as an environment in which inflation is so low and stable over time that it does not materially enter into the decisions of households and firms.' Instead, the perceived reaction function is reputational—deduced from historical behaviour since the early/mid 1980s. The original Taylor rule was put forward as descriptive of Federal Reserve behaviour, though Taylor himself has argued (e.g. 1999, 2000) that it has desirable properties across a wide variety of possible models of the economy. In the UK, whilst the experience of inflation targeting from 1992–97 had been favourable, the reputational route to the establishment of a credible reaction function was not really available in 1997. Not only was there a new government, but also there was a history of monetary failure, reflected in financial market expectations and risk premia, despite the relatively good inflation performance from 1992–93 onward. What was needed was the establishment of a credible monetary policy—a credible and appropriate reaction function—via institutional design. It goes without saying that academic work on policy rules, on credibility, and on the kinds of properties that interest-rate reaction functions should have (including, of course, studies of successful versus unsuccessful historical experiences), were crucial inputs into that process—and that they remain crucial in the adaptation of the MPC process over time.

I am not going to give a long account of the UK system, the broad characteristics of which are well known.[3] But I do want to pick out a few points which seem important from the point of view of system design.

1. *The target*

The general commitment to price stability (and, subject to that, to supporting the government's policies for growth and employment) is defined in the *Bank of England Act 1998*, where it is also laid down that it is the Chancellor of the Exchequer's responsibility to set the target. A well-known feature is that the target is set as a single number (not a

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[3] There are many accounts of the operation of the Monetary Policy Committee in the UK. See especially King (1997a, 2002), Balls (2001), Balls and O'Donnell (2001), and Bean and Jenkinson (2001).

range), and that it is set in a forward-looking but effectively time-independent manner. The target could change, but in practice has been maintained at 2.5% for the annual rate of change of the series RPIX since inception in 1997. An oft-cited reason for retaining governmental responsibility for setting and defining the target is that it is the government that is democratically accountable to the public. It also means that the delegation of responsibility for meeting the target to the MPC is particularly clear-cut.

With a point target which defines an aspiration in a timeless way, it is obvious to all that it will not be exactly met, so that ideas of shocks, uncertainty, and constrained discretion are, arguably, built-in from the start. The *symmetry* of the objective, whereby shortfalls in inflation are treated as of equal importance to overshoots, is appropriate to a reaction-function type of feedback system and, as already noted, has proved extremely important in gaining public acceptance of the inflation target regime.[4]

2. *Central bank independence and delegation*

Thus the Bank of England is instrument-independent not goal-independent. It has long been recognised in the UK that the principal instrument of monetary policy is the short-term interest rate,[5] so the task of the MPC is, in principle, very straightforward: to use its control of the short-term interest rate to meet, as far as possible, the externally-given objective. But what is the reason for delegation?

It is tempting to see the answer in terms of the academic literature on time-inconsistency and the inflation bias, in particular the argument made famous by Rogoff (1985) that the bias would be reduced by delegation to a conservative central banker. I would not want to deny that this literature was, in general terms, influential, but it does not really ring true as the reason for the institutional change. If there were an inflation bias, it could still apply to the target-setters—the government—though the institutional change can be seen

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[4]An 'open letter' system operates, also symmetrically, if the divergence from target in any given month exceeds one percentage point, and should be regarded more as an 'enabling device' in the event of major shocks (such as oil crises) than as a sanction in the event of divergence from target. Surprisingly, given historical experience in the UK, no open letter has been triggered since the inception of the new system. Even more surprisingly, the nearest it has come to being triggered was on the *downside* in July this year when annual RPIX inflation for June came in at 1.5%.

[5] There was a brief flurry of debate in the UK over monetary base control in the early 1980s, which fizzled out. Monetary targeting in the UK was of the 'indicator' variety, with interest rates used to try to meet the intermediate objective. From this point of view, the chosen aggregate was unfortunate in that broad money was not easily controllable by the instrument (since it was interest-bearing), and the relationship between the monetary aggregate and the final objectives was weak, unreliable, and changing over time.

as a form of commitment technology, with costs involved in opportunistically changing or abolishing the target. But, as far as the monetary authority itself is concerned, it is widely argued that the time-inconsistency problem is not an issue. Bean (1998a) simply removes the temptation to 'cheat' or 'renege' from the central bank's objective function,[6] a procedure which can be seen as supported by statements by Blinder (1998), who, writing about the US, sees no temptation to generate surprise inflation, and, more recently by Meyer (2002), who also downplays any importance of time-inconsistency issues.[7] Vickers (1998), writing as the Bank of England's Chief Economist and a member of the MPC, suggested further that no Walsh (1995)-type incentives are necessary, as there is no incentive to want to generate inflationary surprises or to run the economy at anything other than at its natural rate of output/unemployment. He states that, 'Quite apart from our statutory duty, we have the strongest professional and reputational incentives, which in my opinion are incapable of being enhanced by financial incentives, to get as close as we can to the inflation target.'

What this means is that the main point of delegation is not to employ conservative financiers, nor to set up a system of compensating incentives, but simply to hand over responsibility for the 'reaction function' to a technically-competent authority charged with doing the job as well as possible. Credibility is important, but credibility here has little to do with the meaning derived from the inflation bias literature, and a great deal to do with clearly-specified objectives and with competence and trust that the job will be done as well as possible. This means that explanation of procedures, transparency and accountability are key aspects of the system.

3. The operation of the MPC

Arguably, the system in the UK is as transparent and accountable as any in the world. The nine members of the MPC (five 'internal' and four 'external') are individually accountable under the Act for their votes: interest-rate decisions are by simple majority: the votes of each member are published within the Minutes, which appear after two weeks. Moreover, the MPC is severally responsible for the quarterly *Inflation Reports*, and the assessments and two-year-ahead forecasts for GDP growth and inflation

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[6] This practice does not preclude the possibility that the steady-state value of potential GDP is inefficiently low from society's point of view, due to e.g. monopolistic distortions, but effectively delegates responsibility for eliminating the effects of these inefficiencies to microeconomic policy (as advocated by e.g. Meade, 1951, and Rotemberg and Woodford, 1997).
[7] See also Posen (1993), McCallum (1995), King (1996, 1997b), and Taylor (1997) for related discussions.

published therein. (The forecasts are published as fan-charts, with probability ranges, to emphasise the inevitable uncertainty.) There are other checks and balances, such as appearances before Parliament's Treasury Select Committee and supervision of procedures by the Court of Directors of the Bank of England.

As far as the operation of policy is concerned, the process can be described as an inflation forecast target regime—a process which, along with the institution of the *Inflation Report*, was taken over from the system in place in 1992–97. The usual justifications for the focus on future inflation (e.g. Svensson, 1997, 2002) are lags in the transmission mechanism, and the need to take account of a potentially large number of influences on the inflation process. Decisions are taken at relatively high frequency on a monthly timetable, with procedures in place for additional meetings if necessary.[8] The forecasts are quarterly. Pragmatically, it is sometimes useful to see the process as divided into two: the assessment of the current and future state of the economy on the one hand; and the response or reaction to that assessment on the other. Given the structure of the MPC, there are, in principle, nine different assessments, nine potentially different reaction functions, and a majority voting procedure that translates all that into an interest-rate decision. Despite the underlying complexity, the broad characteristics of the overall reaction function (using the term rather generally) are discernible and relatively predictable.

A feature of the UK system with individual accountability and transparency is that it leads to publicly-expressed disagreements and dissent as well as, obviously, public knowledge of closely-split votes. Early worries that both of these would work against credibility and be destabilising now appear unfounded. If, as argued, the relevant meaning of 'credibility' is a reputation for competence and trust in the system, then this should not be surprising. Given large uncertainty, it is presumably reassuring rather than otherwise that disagreements and differing assessments occur, are discussed and are resolved as far as policy is concerned by the decision-making procedures.

The discernibility and predictability of monetary policy in the UK have, I would argue, been greatly enhanced during the operation of the new system. I want to stress two aspects. The first is the consequence of the successful offsetting response to the Asia crisis and the Russian Default (the latter occurred in late August 1998). Interest rates

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[8] This has happened once since inception—after the terrorist attacks of September 11th, 2001.

were substantially cut in stages against the developing consensus perception that a quite serious recession was more or less inevitable in 1999. In the event, that incipient recession was headed off; the reaction function worked. Perhaps even more importantly, it led to public understanding that the reaction function really was intended to operate symmetrically—and, relatedly, that inflation targeting also involved output-gap stabilisation. The second point is that in innumerable speeches, presentations and discussions by members of the MPC, it has been commonplace to stress the conditionality of policy. Thus, it is well understood that lower growth, should it eventuate, would (other things being equal) trigger a monetary easing. It is well understood that, should inflationary pressure arise, whether for demand-side or for supply-side reasons, monetary tightening would ensue—and if that proved insufficient, there would be further interest rises until it *was* sufficient. It is also understood that, should fiscal policy change, there would be compensating interest-rate reactions to maintain consistency with the inflation target. (Thus, doubts about the monetary response to a fiscal tightening, which have been expressed, for example, about the system in place in the euro area, do not seem to be problem in the UK context.) All this means that the broad features of the reaction function in place in the UK increasingly seem to be publicly-understood and built into expectations. The reaction function could not easily be expressed as a policy rule—but appears 'rule-like' in the sense of Taylor (1993), with the caveat that the rule-like behaviour involves contingent responses.

Indeed, success in stabilising medium-term anticipations of growth, unemployment and inflation could itself be the source of problems if, as recently, offsetting strategies contribute to imbalances between sectors and rising prices for assets such as houses.

4. Did it work?

On the face of it, in terms of outcomes for inflation and growth, the UK system has worked well—though it is usual to qualify such remarks with the observation that it is too soon to tell. Chart 1.1 displays the record on annual RPIX inflation. It suggests that there has been a remarkable improvement in inflation since inflation targets were adopted in 1992 and a moderate undershoot in the last few years. If anything, the chart suggests that it was the adoption of an inflation-targeting regime that was important rather than the radically new arrangements introduced in 1997.

Chart 1.1: UK inflation performance under different monetary regimes

Chart 2.1: Inflation performance and expectations

[1] Ten year ahead market inflation expectations
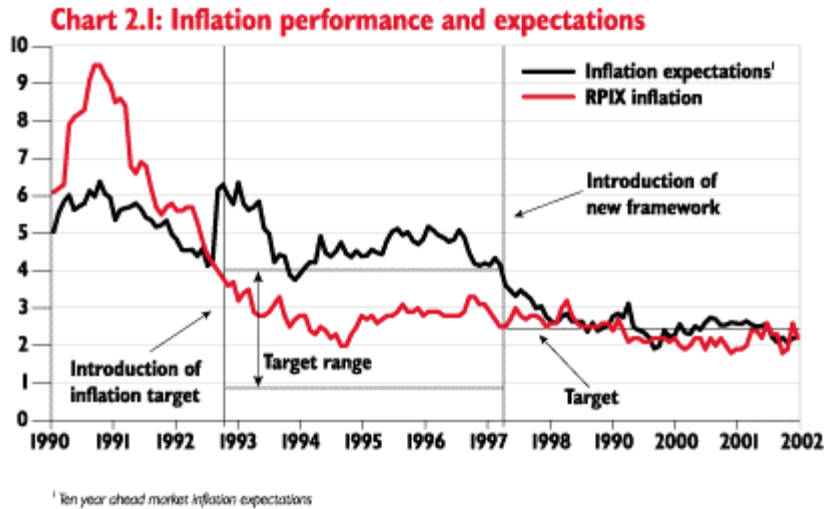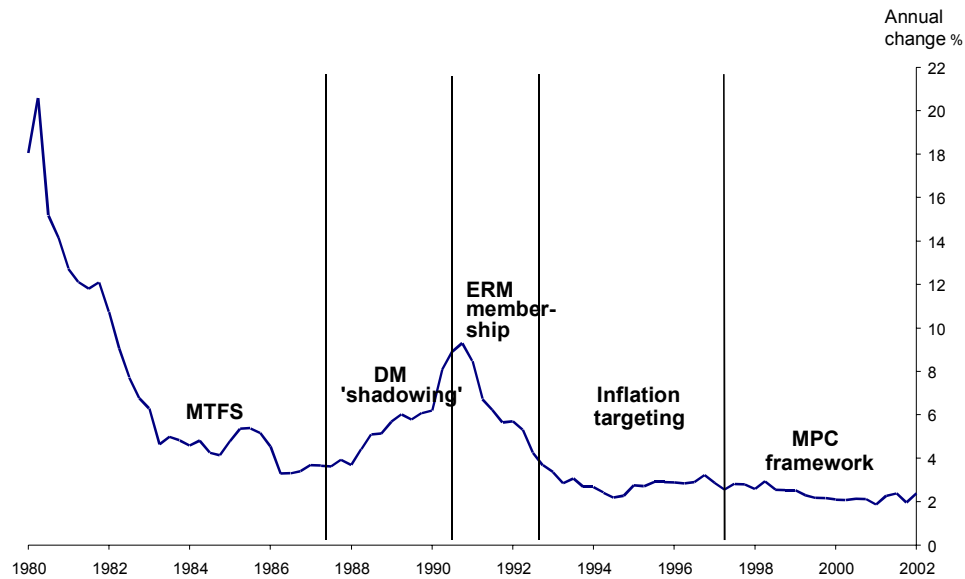
Source: HM Treasury (2002), *Budget 2002*.

Chart 2.1, taken from HM Treasury (2002), shows much more clearly the effect of the new arrangements. There was a marked effect on inflation expectations at the time of the announcement of the new regime, suggesting that institutional change had indeed had a substantial effect on the credibility of macroeconomic policy. Other evidence, not

detailed here, confirms a slower but highly favourable effect on public expectations and anticipations. And, as noted above, the more qualitative impression is that the reaction function in the UK has come to be increasingly well understood and that the regime change commands a degree of public support.

5. Some issues

All this suggests that the UK system can be seen as a monetary regime of the right sort, embodying a reaction function (using the term generally) of the right type. To revert to an earlier analogy, the boat has a helmsman and the objectives are clear. This is a very big change. But a caveat is again necessary. Most previous attempts at redesigning UK macroeconomic policy were also put forward as solutions to the problem of combining inflation control with economic stability—and failed. Why should the new system fare differently? The answer, I believe, is that the system is better-designed, since it incorporates not only some of the major lessons from history, but also the major insights that have come from theoretical and empirical research on monetary policy and monetary policy rules.

None of this, of course, means that the system could not be improved or that difficulties have not arisen. Some difficulties concern the reaction function, such as how policy should react to exchange-rate movements, which have been large, or asset-price changes, which have also been large. Some relate to uncertainty, both regarding the data and about how the economy functions. Some relate to forecasting—both as to how it should best be done, and the relationship between the forecast process and policy formation. I have some remarks about all these later in this address. I also want to say something about the interaction between monetary policy and other policies—especially fiscal policy—since it would be a great mistake to think of a well-functioning monetary system as, in some sense, closing the debate over macroeconomic policy and the policy mix. On the contrary, a well-functioning monetary policy is likely to throw the spotlight onto other aspects of overall policy design.

III. Rules versus discretion

The debate over rules versus discretion has been going on for a very long time—but, for present purposes, a convenient starting point is Friedman's (1968) advocacy of a fixed (3–5% per annum) growth for the money supply. Clearly, one aspect was the advocacy

of the money supply as the medium-term nominal anchor of the system. The other, more negative, aspect was to eschew activist short-term stabilisation via money supply changes. In modern (or semi-modern) dress, we would say that the policy would set up an interest-rate reaction function against price and output disturbances—the interest-rate responses depending on the demand for money function. But would it be a good reaction function in the sense I have been describing? There are a number of reasons, with long historical pedigrees, why it might not be, even if the paradigm of the money supply as the policy instrument is accepted. As is well known, Keynes, in the *General Theory*, argued that the 'self-regulating' mechanism of price flexibility may work badly, and may even be unstable if all that policy does to anchor the system is to fix the money supply. If price rises trigger increases in inflation expectations, real interest rates could even fall in the short run, a perverse response.[9] An extreme version of this type of story is the familiar hyper-inflation model of Cagan (1956). If we think of the monetary base as the control instrument, potential instabilities could be magnified by pro-cyclical movements in the velocity of circulation of money or of the supply of commercial bank deposits. Patinkin (1969) argues that the inter-war Chicago tradition (as represented, for example, by Henry Simons) favoured counter-cyclical monetary policy for these reasons.[10] There is a danger that money supply rules would fail to meet the 'Taylor principle': that is, expressed in the form of interest-rate reaction functions of the type studied empirically by Clarida, Galí, and Gertler (1998), the monetary policy arrangements should have the property that real interest rates rise with any increase in inflation.[11] There is a clear danger too that the nominal anchor function would be compromised if the demand-for-money function was unstable over time—which turned out to be the case for the principal aggregates targeted.

The Friedman paradigm was influential in the widespread adoption of monetary targets in the 1970s. One reason was that the central bank practice of operating on nominal interest rates risked producing falls in real interest rates, a perverse and destabilising response, in

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[9] Keynes, in Chapter 19 of (1936), was more concerned with the problem of real interest rates rising during price deflation—a pathology now familiar in Japan.

[10] Friedman (1967) and King (1997b, p. 85) also discuss Simons' views on monetary policy. It should be noted that Simons specifically rejected a monetary policy framework based on targeting future inflation. He advocated targeting current values of a cyclically-sensitive price index: 'The index must be highly sensitive; otherwise, the administrative authority would be compelled to postpone its actions unduly after significant disturbances or (Heaven forbid!) obliged to use discretion in anticipating changes.' (Simons, 1948, p. 329).

[11] The idea that non-inflationary stability can be achieved by fixing the money supply is still extraordinarily influential. Hicks wrote in 1967: 'We still have a Currency School, seeking in vain—but one sees why—for a monetary system that shall be automatic.' (Hicks, 1967, p. viii). This is much less true now, largely reflecting the experience with monetary targeting.

the face of price shocks—such as occurred in the early 1970s. Switching to a fixed money supply rule would, it was claimed, lead to real interest rate rises—a better (though not necessarily optimal) response. In fact, however, the practical adoption of monetary targets also involved using the short-term interest rate as the instrument of control. There is really no dispute—nor was there in the early 1970s—that the central bank's control over money in developed financial systems is indirect, via the short-term interest rate.

With the interest rate as instrument, the reaction-function approach gives a coherent account of how monetary targeting works in practice. The reaction function involves the monetary authorities using the interest rate to meet a target for the quantity of money (the term 'money supply' is to be avoided). If the chosen aggregate really is related causally to the price level, this would provide an appropriate nominal anchor. But it is not necessary for there to be a causal link. Even if money is endogenously supplied (given the interest rate) by the private banking sector, the policy could work so long as the chosen aggregate were a good indicator of the state of the economy and so long as, in the longer term, the quantity of 'money' was closely related to the final objective (the price level, for example)—that is, so long as there were a reasonably stable money demand function. The system could even work if the monetary target were completely meaningless causally in determining prices (e.g., if the chosen target were notes and coins in the hands of the public, which are supplied on demand). The interest-rate reaction function would be doing the work, with the monetary aggregate performing the role of *indicator*.

The abandonment of monetary targeting in most countries reflected the bitter experience that monetary aggregates turned out to be a very poor basis for a monetary policy reaction function designed to provide a nominal anchor and to stabilise the economy. For the UK, Nigel Lawson, in his autobiography, noting that the chosen target aggregate (Sterling M3) proved 'treacherous', sounds an appropriate note of regret: 'We did not abandon the monetarist guiding light. It was the light that abandoned us.' (Lawson, 1992, p. 987). Other reaction functions, such as those based on targeting the exchange rate, also failed, sometimes spectacularly as with the ejection of the pound sterling from the European Monetary System in 1992.

Cecchetti (2000), amongst many others, is sceptical, even scathing, about monetary targets. He finds no use for them, preferring instead a policy of targeting inflation itself (though this does not, of course, rule out the possible statistical usefulness of various

monetary aggregates as part of the overall process of assessing likely future developments in inflation). In fact the abandonment of monetary targeting did not lead, as Lawson had feared, to a wholesale return to government discretion and judgement, but progressively to the adoption of inflation target-type regimes based on interest-rate reaction functions and 'constrained discretion' of the general type I have been discussing. This does not represent the abandonment of the objectives of monetary rules. On the contrary, the recognition of the need for a medium-term nominal anchor has, if anything, been strengthened. The automatic function of 'money' as nominal anchor has had to give way to policy targets for inflation itself and the instrument of policy is seen as the short-term interest rate rather than the money supply. Automatic responses to shocks have been replaced by a policy-determined feedback system. Finally, with the reintroduction of Keynesian stabilisation concerns, there is recognition that the reaction function needs to be designed to provide the medium-term nominal anchor at minimum cost in terms of output-gap and price fluctuations.[12]

I have already referred to the other main strand of the rules literature, stemming from the seminal article by Kydland and Prescott (1977). The problem, which applies equally to a strict monetary target and to inflation or price-level targets supported by reaction functions, is that such policies might not be 'credible'. In practice, there are many reasons other than time-inconsistency why this might be so—including perceptions of lack of competence or lack of instruments. The huge literature on time-inconsistency focuses, however, on one particular problem: the possibility that if the inflation target were achieved, the policy-maker would face a temptation to cheat, leading, in simple models, to an 'inflation bias'. One kind of solution to such a problem would be to remove discretion via commitment to a fixed money supply rule, with the danger, however, that other aspects of credibility would be compromised.[13] I have already noted that it is part of the policy consensus that the inflation bias problem is effectively removed by the delegation of monetary policy to an independent central bank with clearly specified objectives and responsibilities.

Assuming that this is so as far as the operation of monetary policy is concerned, the split UK system, with the target set by the government, is interesting. In principle, as noted

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[12] Recall that Friedman's argument against short-term stabilisation, or a counter-cyclical money supply policy, was unknown and variable lags—a form of model uncertainty.
[13] The lack of discretion in the face of shocks might then lead to serious instabilities, lowering the credibility of the system. Locking the steering wheel on a vehicle is not a good way of committing to a destination.

above, the time-inconsistency problem could continue to apply due to the government's control over the target itself, or, more generally, the government could renege and be seen to be likely to renege, by abandoning the system itself. I argued, above, that such behaviour was constrained, and can be seen to be constrained, by the reputational and political losses involved in opportunistically changing the target or weakening the system. This, however, is subject to the major caveat that such costs must actually be present. Arguably, they will be present and highly constraining, if the system itself is publicly understood and commands general support—and not otherwise. The practical point here is that a constituency of general support for non-accommodating policies and inflation control is necessary for the system to work as intended. This is another aspect of transparency and accountability, which needs to be taken extremely seriously by central banks and governments alike.

IV Some issues

Thus, arguably, the system in the UK is well designed, both institutionally and in terms of some of the main lessons from the policy rules literature. It may not have been fully 'tested in adversity'—though it has survived some pretty major shocks since inception. That said, there are a number of issues of continuing concern. The following is a selective account of some of them.

A. Asset prices: the stock market and house prices

What might be described as the prevailing central bank consensus on this issue is well set out by Vickers (1999). He argues that (*a*) asset prices should not be part of the definition of the target for inflation or of the loss function of the monetary authorities; (*b*) that asset prices contain considerable information relevant to forecasting the future state of the economy; and (*c*) that in an inflation forecast targeting regime, 'it is neither necessary nor desirable for monetary policy to respond to changes in asset prices, *except to the extent that they help to forecast inflationary or deflationary pressures*' (Bernanke and Gertler, 1999, p. 115: emphasis added by Vickers).

This baseline view, which the late Rudi Dornbusch labelled 'the received wisdom' (Dornbusch, 1999, p. 129), has been challenged by Cecchetti *et al* (2000, 2002), who argue that it is consistent with inflation-forecast targeting for monetary policy to react to contain bubbles or other departures from the fundamentals. These authors are also

reasonably optimistic that such departures can be identified in practice—they suggest that the problem is probably no worse than the problem of identifying the natural rate or NAIRU. Clearly, the question of whether boom/bust cycles in asset prices should be headed off by monetary policy is highly topical—focussing, obviously, on the behaviour of the stock market in the US and, to a lesser extent, on the house price boom in the UK. Moreover, there have been spectacular episodes in the past where boom/bust cycles have been associated with major instability and economic problems—notably, as far as stock-market prices are concerned, the Great Crash in the US in the inter-war years and, more recently, the asset price bubble in Japan in the late 1980s with its deflationary aftermath which is still continuing. (See, for example, Borio and Lowe, 2002). And as far as house prices are concerned, the UK boom of the late 1980s and subsequent bust is still regarded as an exemplar of bad macroeconomic policy.[14] There is no doubt that asset-price movements of the boom/bust type are perceived as a problem by policy-makers and, unfortunately, there is no particular reason to believe that the potential problems would simply go away just because a successful inflation-targeting regime had been established. There is an issue, however, as to whether the monetary authorities should alter their behaviour as a result.

Suppose we think of the problem, in stripped-down terms, as involving the anticipation of a large positive shock followed by a large negative shock with the negative shock (roughly) balancing the positive shock—so that the negative shock is larger, the larger the preceding positive shock. (Such a pattern would result, for example, from some stock/flow adjustment process.) The baseline position is that the consequences would be taken into account in the forward-looking procedures of the monetary authority and that the consequences for output and price instability would then be minimised in terms of some loss function. That is the end of the story as far as interest rates are concerned.

Clearly, however, if there were some other policy instrument capable of lowering the magnitude of the first shock (and by construction therefore the second shock as well), it would be desirable that that policy should be used.[15] The task of the monetary authorities would be eased and, of course, short of completely successful offsets by the monetary authorities, the instability of the economy would be reduced and welfare would be

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[14] Similar experiences took place in several Scandinavian countries.
[15] It is perhaps notable, that, in his newspaper column, Krugman (2002), criticising Chairman Greenspan for having allowed the US stock market boom to develop to the point where a destabilising bust was likely, suggested that margin requirements to discourage speculation should have been introduced early on in the boom. He did not suggest that the interest-rate instrument should have been used.

increased. The first-best response—which may of course be unrealistic or costly for other reasons—is that sources of instability should be tackled at source, removing or lowering the magnitude of the negatively correlated shocks themselves. As a practical example, consider the house price boom in the UK. If the rising house prices are regarded as a problem because they are likely to reverse and pose problems in the future, there are many who would argue that a first-best solution is that the factors behind such destabilising behaviour in the housing market should be tackled directly rather than by interest rates.

From the inflation-targeting perspective, the interesting question is what should be done in the absence of alternative policies. As second-best, should interest-rate policy be diverted from its normal role, not to target an asset price, but to check some cumulative process early on—in effect, to lower the magnitude of the correlated shocks under discussion? The argument for so doing would be that the variances of inflation and output would be thereby reduced—which is perfectly consistent with standard interpretations of the loss function.[16] But there is a trade-off involved (Bordo and Jeanne, 2002). The reduction in the shocks likely to hit the economy, if it can be achieved (it is quite a big if), takes the monetary authorities closer to their objective. But the diversion of the instrument from its normal role takes them further away (effectively imposing additional variability on the economy). The first needs to be bigger than the second for the policy to be desirable.

One can see why much of the discussion in favour of central banks using interest rates in this way is conducted in terms of heading off bubble-type phenomena. The presumption is that the longer a bubble path goes on, the bigger the bust when it comes. There is an easy-to-make assumption that a timely upward move in interest rates, even though not justified in terms of the inflation target and the normal reaction function, would prick the bubble, lowering both the upward and downward aspects of the shock. Typically, it is further assumed that the upward movement of the interest rate is not too large and that it is short-lived (so the costs from this aspect of the policy are small) and the benefit in terms of shock reduction is large. Such arguments are usually helped by 20/20 hindsight. In practice, the difficulties in reliably identifying bubbles or other persistent departures

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[16] Vickers (1999, p. 434) notes that, since the variance matters, 'expected inflation somewhat under target with moderate inflation uncertainty might be better than expected inflation on target with high inflation uncertainty'.

from the 'fundamentals' are acute and the risks involved in such a strategy may be considerable (Greenspan, 2002b).

In my view, the most persuasive argument against using interest rates to moderate destabilising processes (even if they can be identified) is one of credibility and transparency. It is hard enough to establish a credible reaction function based on clear objectives with the interest rate being used to meet the inflation target and, consistent with that, to offset shocks—including shocks from the endogenous processes of the economy itself—as far as possible. If the interest rate has another role as well, being used to moderate the shock structure (e.g. by heading off bubbles from time to time), the reaction function is far less rule-like and predictable, and the system is likely to be less transparent and accountable. There may be cases where interest rates should be used to reverse some cumulative process. But the potential costs to credibility and transparency weigh heavily against.

This puts me (nearly) in the baseline camp familiar from the policy rules literature that the direct and indirect effects of asset prices on inflation should be taken into account, but that otherwise they should not normally be given special significance. I am sure, however, that the issue will continue to be the subject of research—and I do not regard it as settled. I think, however, that there is a bit more to be said, and I come back to this topic in my closing remarks.

B. *Open economy issues and the exchange rate*

The exchange rate can be treated as an asset price—so much of the above can be thought to apply to exchange-rate misalignments as well (Cecchetti *et al*, 2002). However, the UK context over the past decade illustrates the difficulties regarding 'misalignments' and 'fundamentals' rather well. In a nutshell, it is very hard to be at all sure what the equilibrium rate for sterling actually is, especially, it may be added, when the dollar versus the European currencies—since 1999, the euro—are swinging about as well. Chart 3 shows the sterling real effective exchange rate (unit labour cost basis) and against the US dollar and the DM (which, of course proxies the euro since 1999). Sterling declined substantially on exit from the ERM in 1992, which was widely seen as a reversion towards fundamental value. That hypothesis worked until about 1996, after which it rose very substantially—in fact to levels well *above* those pertaining to the ERM period—and, by and large, has stayed there since. Views about the 'equilibrium' have changed (perhaps as a lagged response to movements—or, perhaps more accurately,
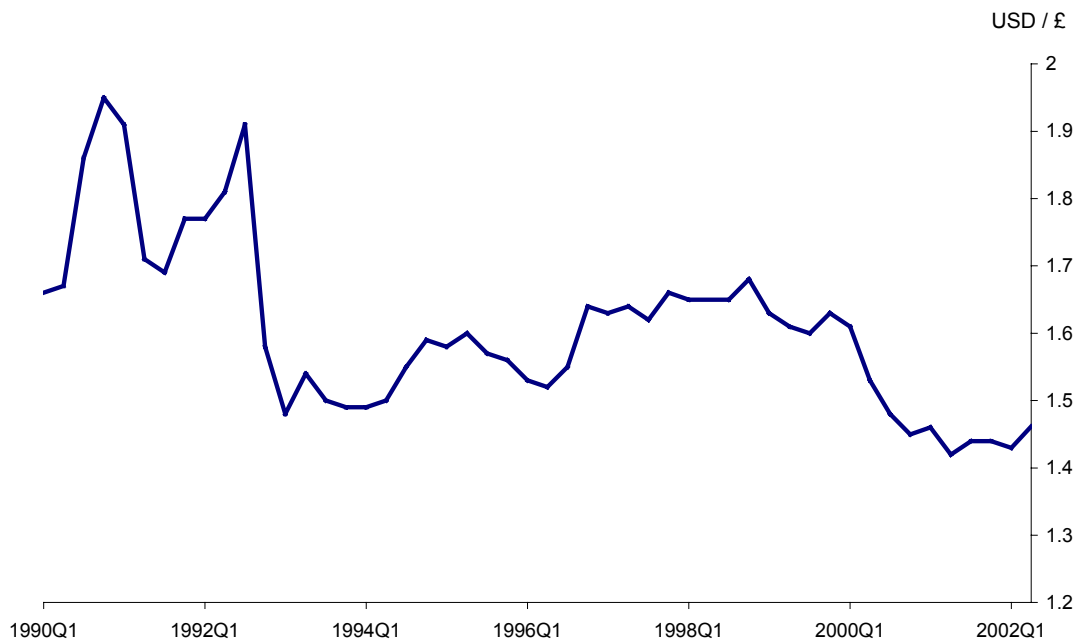
Chart 3.1: Sterling real effective exchange rate (unit labour cost based)
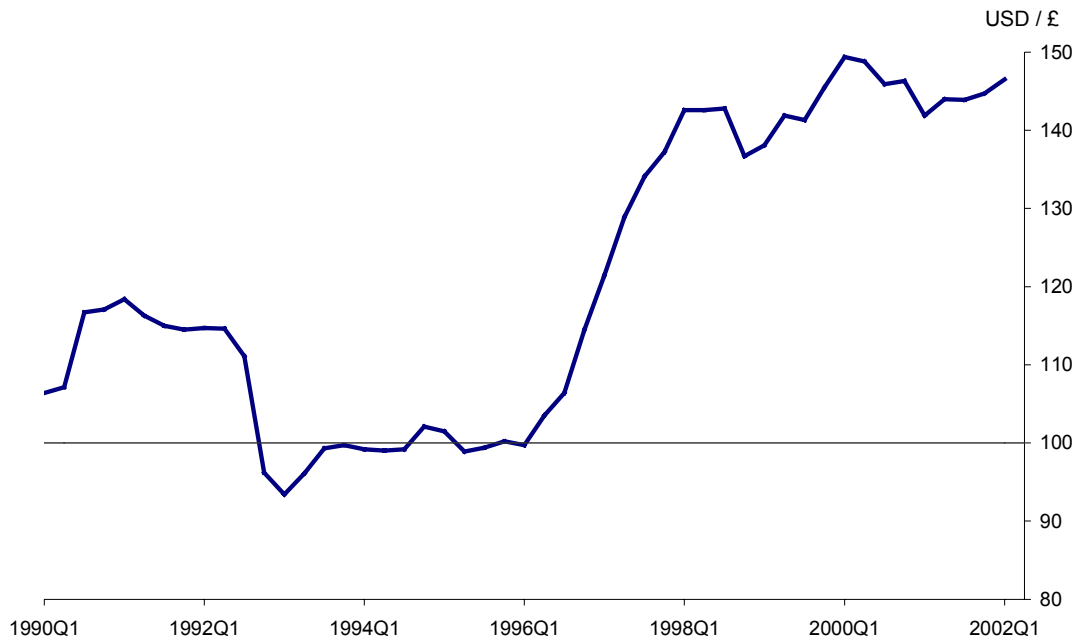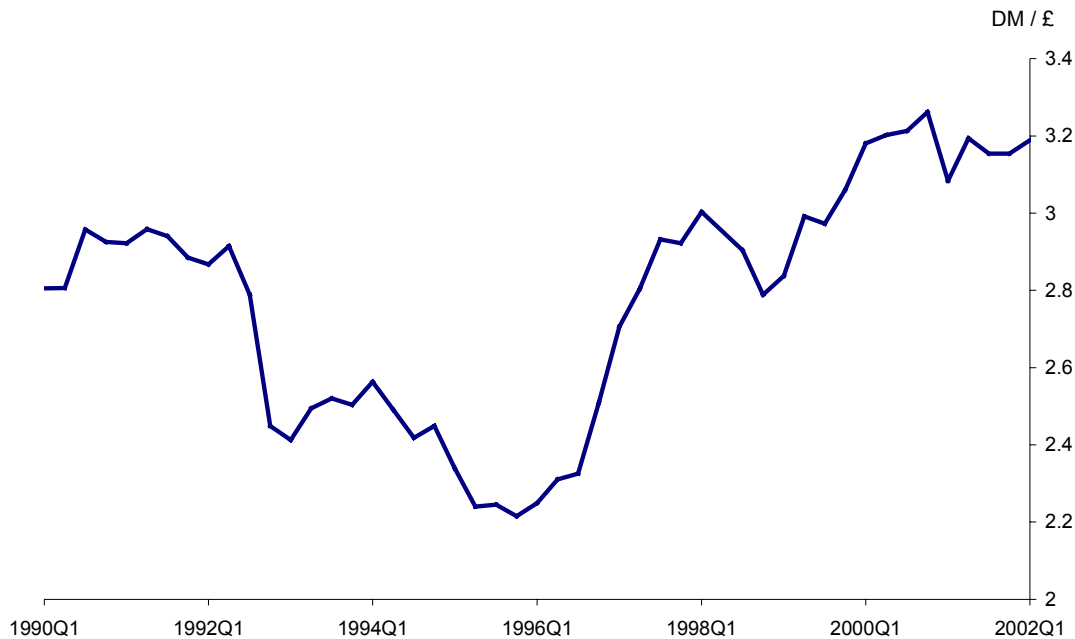

Source: *International Financial Statistics*.

Chart 3.2: Sterling/US dollar nominal exchange rate

Source: *IFS*.

Chart 3.3: Sterling/DM nominal exchange rate

Source: *IFS*.

non-movements—in the actual exchange rate), but there is very little in the way of good explanation of the changes that have occurred, and the changes were not generally predicted *ex ante*. What is more, predictions of reversion have proved false—so far. What does one do, given that one of the chief transmission mechanisms from monetary policy to the economy is (according, for example, to the Bank of England's macroeconomic forecasting model) through the exchange rate?

In fact, forecasts and assessments are based on 'technical assumptions'. For a start, some of the noise in exchange-rate movements is removed by basing the starting point of forecasts on the average during a 15-day window.[17] Second, forecasts are now made using a simple average of the path predicted by Uncovered Interest Parity (UIP) and a no-change assumption (the random walk hypothesis). The possibility of reversion—modelled as a probability each period of a step change downwards in the exchange rate—has, however, been a feature of the risks and skews presented in the fan-charts published

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[17] From time to time a different 'window', such as five days, has been used if the 15-day window is judged misleading.

in some recent *Inflation Reports*: *per se* this factor introduces an upward skew to the inflation forecast. All in all, this illustrates the practical point that interest-rate policy would be a great deal easier if we had better models of the exchange rate and a better handle on the elusive concept of its longer-term equilibrium value.

The question of how interest-rate policy should react to the anticipation that there might be a downward 'correction' of the exchange rate is not simple. Suppose that interest rates are exactly right on the assumption that the exchange rate remains (over the forecast horizon) where it is. Now impose an upward skew on anticipated inflation due the anticipation that the exchange rate might fall. This suggests that interest rates should be raised. But this risks prolonging the assumed overvaluation. A 'bubble-pricking' strategy would lean against the wind in the opposite direction, lowering interest rates in the short term against the anticipation that they would have to be raised when and if this caused the exchange rate to fall. All this raises the credibility issues referred to above— and suggests that a strategy of reacting to large exchange-rate movements only when they occur has considerable attractions.

Turning to the question of how policy should react to an exchange-rate change when it does occur, the answer should depend, conventionally, on why it occurred and on the model adopted (as well as, of course, on whether the change is expected to permanent or transitory). That is not terribly helpful and not very transparent. And yet, contingent policies are important in perceptions of the reaction function. The underlying question also relates to the rules literature in terms of whether the rule should include a term in the exchange rate (e.g. Ball, 1999) and in terms of what aggregate should be targeted. (Thus, Clarida, Galí, and Gertler, 2001, for example, suggest targeting domestic-goods price inflation, thereby excluding the import price component from the CPI, whereas Engel, 2002, suggests targeting the exchange rate.)

A natural way of approaching the issue is in terms of the procedures followed by the MPC. In broad terms, it is clear that an exchange-rate depreciation (assumed persistent) would feed through the Bank's forecasting procedures to import prices and thence, directly onto RPI inflation. The pass-through to import prices would lead (ignoring the dynamics) to a step-change upward in the price level. There would be further effects on aggregate demand—negatively in the short run because of the effect on real incomes and positively from expenditure switching effects. There would also be potential wage and price pressure as real wage falls were resisted and from effects on inflation expectations.

Thus, the prediction that an exchange rate fall would lead (other things being equal) to a compensating rise in real interest rates appears pretty safe on the basis of the target inflation rate set by the Chancellor and the known procedures of the MPC—including the characteristics of the Bank's forecasting model, which is published.

I have argued before (Allsopp, 2001) that, in the face of a real impact, such as the one described, the ideal strategy for controlling inflation is to 'accept' the price-level effect, whilst not accommodating the second-round effects via wage price pressure and via effects on inflation expectations. (See also Balls, 2001, and Meyer, 2002, who take a similar line for the UK and US respectively.) This is on the grounds that the 'level effect' is not really 'inflation'. Such a view is in line with Meltzer (1977, p. 183), who argues: 'a one-time change in tastes, the degree of monopoly, or other real variables changes the price level… [W]e require a theory that distinguishes between once-and-for-all price changes and maintained rates of price change.' It is also in line with those who argue, on New Keynesian grounds (with the assumption that price stickiness applies to domestically produced goods) that monetary policy should not attempt to insulate the CPI from short-run fluctuations arising from terms-of-trade movements (Clarida, Galí, and Gertler, 2001). It needs to be recognised, however, that policy of allowing level effects, whilst curtailing second-round effects, would be practically difficult and would require a considerable degree of explanation and transparency if credibility were to be maintained.

But are the effects as assumed? Kara and Nelson (2002), in a paper to be presented at this conference, demonstrate that the stylised facts for the UK are that, whilst there is considerable evidence that exchange-rate pass-through to import prices, there is no correlation with RPIX inflation. (There is much more in the paper—but they will speak for themselves). If this is the case, then it throws doubt on whether there would be a large effect on RPIX inflation from an exchange-rate fall, should it occur.

These questions of pass-through and of the appropriate design of policy in the face of exchange-rate changes are of immense practical importance and are under continual discussion. They are already being illuminated by what Taylor (2001, p. 263) has termed the 'new normative economic research', and it is certain that the results of this ongoing research will feed through to the practical implementation of policy.

C. Forecasting

Clearly, forecasts—interpreted generally to include the procedures and techniques that lie behind forward-looking assessments of the economy—are a key part of an inflation-targeting regime. I want to make a few brief remarks about two aspects of a very large subject. The first is about the consequences of non-stationarity—especially about the consequences of possible 'structural shifts' in key parameters. A number of authors in discussing policy rules have pointed to the large uncertainty about key parameters and data moments, such as trend productivity, potential GDP growth (or, in the labour market, the natural rate or NAIRU), and the neutral rate of interest. (See for example Kohn, 1999). Moreover, there is an influential and developing literature which uses policy rules to illuminate the consequences of (real time) errors of assessment in explaining past policy mistakes (including notably Orphanides, 2000, on the US, and Nelson and Nikolov, 2001, on the UK). The second is about procedure—how forecasting models and forecasts enter into the policy making process.

Hendry and his co-authors have made the point (e.g. Hendry and Mizon, 2000) that if the data generating process were stationary, one would not observe *systematic* forecast errors (though poor models would, of course, generate inefficient forecasts). They trace systematic forecast errors, which are observed, to 'deterministic shifts'—i.e. shifts in the unconditional means of key variables not accounted for by the existing forecasting model. They make a number of points of practical policy importance. The first, as is well known, is that these kinds of non-stationarities may justify *ad hoc* and informal forecasting techniques, as well as practical procedures such as intercept adjustments and over-differencing, which are certainly a major feature of real-world forecasting and assessment exercises. A second is that the forecasting performance of a model may be a poor and misleading criterion for selecting a policy model—and vice versa: that good models for policy analysis may not be good forecasting models.

Any practical forecaster knows the potential importance of 'deterministic shifts'. In an important sense, there is little that can be done about them—since they are unforecastable from within the model. If they do occur, forecasts will go wrong. There is, however, an extremely important question about how quickly they are detected and how quickly they are taken into account. In the MPC process, for example, a large proportion of the time is typically spent on the question of whether new data should be treated as 'noise' or 'news' and, if the latter, what should be done about it. The response might be an intercept

adjustment, or, it might lead, over a longer time period, to the re-estimation of important relationships, or even to the adoption of a new model as a forecasting/policy tool. This means that when it comes to understanding the practice of monetary policy, one is not concerned just with the process of forecasting and policy formation at a moment in time but also with the 'meta' reaction function which describes how the institution adapts and changes as information accrues, as mistakes are made, and as learning occurs—including the embodiment of the results of new research as they accrue (Allsopp and Vines, 2000).[18] As with other aspects of the 'reaction function', it is important that this aspect be transparent, and as far as possible, publicly understood, as well.[19]

Forecasting errors have been an important reason for major policy errors in the past – for example in the late 1980s in the UK,[20] There is also a developing debate as to whether over-optimistic or, for that matter, over-pessimistic assessments of productivity performance have been a feature of US experience since the mid-1990s. An important question, however, is whether a well-functioning system should operate to moderate the effects of possible systematic forecasting errors. In principle it should.

The basic point is that, with a high frequency policy-making process, targeted on future inflation, forecasting errors should reveal themselves, triggering appropriate reactions. In the ordinary course of events this means that policy errors, due to poor data or forecast mistakes, should not cumulate. A mistake made one month should not be repeated the next—and, arguably, so long as the error is not great, does not matter very much. With systematic errors, the process is more complicated and it is useful to illustrate what I have in mind in the simple case of a shift in a parameter such as the equilibrium unemployment rate. Suppose it has shifted down. Undetected, this leads to too high an interest rate, and inflation should start to undershoot. If the same error is repeated, systematic undershooting would be observed—whilst forecasts further out would indicate, period by period, that the interest rate was appropriate. It would not lead, however, to cumulatively expanding error—as might be expected on the basis of the mis-assessment of the equilibrium unemployment rate, as the starting-point is updated each

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[18] Though formal analysis of such learning processes is difficult, it is not really that much more difficult conceptually than the process by which people learn to drive unfamiliar vehicles. But see Sargent (1999) on US monetary policy and inflation.

[19] Adrian Pagan is in the course of preparing a report on the processes and procedures of the MPC.

[20] Hendry and Mizon (2000) ascribe this to a 'deterministic shift' applying to the models of the consumption function then current. Of course, recognition of the problems may lead on to better models which 'explain' the deterministic shifts—e.g. in terms of previously omitted variables. Over-optimistic assessments of the productivity trend were another reason for policy error (Nelson and Nikolov, 2001).

month. Moreover, it should trigger responses, such as intercept adjustments and reassessments of model properties, which should work to curtail and eliminate the systematic error. The crucial point is that the forecasting system itself needs to react quickly and appropriately to the signals provided by the economy. The authorities are committed to an objective for inflation, not to a particular forecasting model or set of procedures (Svensson, 2002).[21]

A potential difficulty is that the economy may not give good signals. It has been suggested, on these grounds, that with successful policies of low inflation—leading to rather flat Phillips curve responses—policy needs to react to other indicators, for example to prospects for demand or unemployment (Begg *et al.*, 2002) A low-inflation environment with high inertia may also increase the likelihood of bubbles in asset prices and other cumulative phenomena because, with the authorities focussed on inflation, interest-rate responses appear unlikely to market participants.

It is clear that forecasting needs to be seen as a process and as one that adapts through time. The role of forecasts in the policy process varies greatly between different systems. In the US, a staff forecast and assessment is available to members of the FOMC and is one input into the decision making process.[22] In the UK, however, the MPC is responsible for the *Inflation Report* and the forecasts. The process is iterative—or back and forth (Vickers, 1998)—between Bank of England staff and the MPC. It is well recognised that nine MPC members are unlikely to agree on prospects for inflation, yet alone on the details, and they are intended to represent the centre of gravity of individual views.[23] The iterative and interactive process is widely regarded as an extremely important part of the formation of policy in the UK. Clearly, though, it raises intricate issues about the exact status of forecasts as well as other difficulties—issues detailed in a report by Don Kohn of the Federal Reserve (now a member of the FOMC) (Kohn, 2000).

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[21] Svensson goes on to argue, more contentiously, that inflation-targeting frameworks entail (or should entail) publicly-specified objective functions with explicit announcements of the functional form and numerical weights in the functions.

[22] One disadvantage of staff forecasts is that it is, in bureaucratic terms, difficult to make them public since the policy-makers might be seen to be disagreeing with their own staff. In the US, the full forecasts are published after five years.

[23] The explanation at the beginning of the *Inflation Report* reads:

'Although not every member will agree with every assumption on which are projections are based, the fan charts represent the MPC's best collective judgement about the most likely paths for inflation and output, and the uncertainties surrounding those central projections.'

With an interactive process such as that in the UK the choice of models and procedures is particularly important. (There is an ongoing programme of model development and a new model with radically-improved theoretical structure is close to completion). But how should models be chosen and what kinds of models should be used? In practical terms, there may be a tension between theoretical sophistication and the needs of the interactive process of forecasting and assessment - which can be seen as mirroring the point made above that the best forecasting model may not be the best policy model—and vice versa.

D   Interaction with other policies

The establishment of a monetary policy reaction function clearly does not mean that other aspects of policy are unimportant in inflation control and in stabilisation. Quite the contrary, it remains the overall stance of macroeconomic policy that matters. I concentrate here on some obvious aspects of the interaction with fiscal policy.

First, it is now part of the consensus that there is not much hope of establishing a credible monetary policy reaction function if fiscal policy is out of control—e.g., in the sense of involving an explosive debt/GDP ratio. The Governor of the Bank of Canada argues, for example, that, in Canada, the new monetary arrangements only started to work as intended with major changes in the fiscal framework (Dodge, 2002). He also supports the view that, in a single country with monetary and fiscal arrangements being designed together, coordination difficulties should not arise—a view also put forward by the UK Treasury (Balls and O'Donnell, 2001). None of this means, of course, that coordination difficulties between monetary and fiscal policy-making institutions could not arise under different circumstances—and it begs the question of what an appropriate fiscal framework should look like.

I would argue that, in broad terms, there is, as for monetary policy, a developing consensus over some aspects of fiscal policy. First, it is widely agreed that there needs to be some fiscal closure rule or feedback device to rule out explosive debt/GDP trajectories in the longer term—though the form that commitment should take is highly contentious, as is illustrated by the debates over the Stability and Growth Pact in the EU (Allsopp, 2002). In the UK, the Medium Term Financial Strategy (MTFS) of the 1980s set out targets for public borrowing intended to be 'consistent' with the objectives for the growth in the £M3 monetary aggregate. The current fiscal framework, on the other hand, involves the commitment that the debt/GDP ratio should be controlled at a sustainable

and prudent level, which is usually interpreted as a target for the debt ratio of less than 40%. Second, there is (in practical terms) agreement too that fiscal policy should have a stabilisation role in the short term, usually involving the pragmatic compromise of allowing the automatic stabilisers to work 'over the cycle'; whilst discretionary fiscal action is frowned upon—on the grounds that it has, in the past, frequently proved to be destabilising. There are other aspects of fiscal policy that are important. For example, forecasts often embody the assumption that public expenditure is cash-limited—i.e, set in nominal terms—an institutional structure implying real expenditure reductions in the face of upward price shocks.

Thus, whilst the 'fiscal policy reaction function', like the interest-rate reaction function, combines longer-term commitment with a role in short-term macroeconomic stabilisation, it remains, in policy discussions, a relatively underdeveloped concept. For short-term forecasting and assessment, fiscal policy is, not surprisingly, normally treated as an exogenous input.

Bean (1998b) has suggested that, in a system such as that in the UK, the fiscal authorities are effectively in the position of a Stackelberg leader, free to set fiscal policy but constrained by the monetary policy reaction function (which operates at high frequency compared with fiscal policy). Formal coordination is not necessary so long as the interest-rate reaction function is predictable. This means that fiscal policy cannot generate surprise inflation and deals with a potential time-inconsistency problem. There could however, be a coordination problem relating to the policy mix—if, for example, the fiscal authorities saw advantage in a loose fiscal policy combined with higher interest rates (and a higher exchange rate) than otherwise (Allsopp and Vines, 2000).

Clearly, the optimal monetary policy reaction function needs to take account of the fiscal system in operation. For example, if automatic stabilisers are allowed to operate, and if these help offset demand shocks, less work needs to be done by the monetary authorities.

Formal analysis of fiscal policy rules is also relatively underdeveloped compared with that of monetary policy rules—reflecting the consensus referred to earlier that it is monetary policy that that should be assigned to the twin aims of providing a nominal anchor and stabilisation. It was, of course, not always so. Under the Bretton Woods system, with monetary policy outside the US assigned to meeting the exchange rate objectives, the stabilisation role was assigned to fiscal 'fine-tuning', which fell into

disrepute, partly because the evidence suggested, in the UK at least, that it was frequently destabilising (Dow, 1964), and partly because the system failed to provide a nominal anchor against rising inflation. Optimal fiscal policy is likely, however, to become an increasing concern within countries who are members of EMU. It is interesting in this respect that a recent Swedish report by a group of experts (Committee on Stabilisation Policy, 2002), studying the implications of possible EMU entry, recommends giving a substantial public role regarding stabilisation decisions to a fiscal policy council.[24] The arguments used draw heavily on the monetary policy rules literature. In principle (though there may be strong objections in practice), fiscal instruments could be used to support a non-accommodating policy against inflation as well.

All this suggests an important role for fiscal policy in stabilisation and inflation control. Policy in the Lawson era in the UK was, in fact, often described as 'as much fiscalist as monetarist'. Does this give support to the so-called fiscal theory of the price level—the subject of the Bennett McCallum's extremely interesting paper for this conference? In my view, it does not. The kind of model that would be used to discuss the interaction of fiscal and monetary policies in a practical policy setting, should, I would argue, have the following kinds of characteristics—as a sort of minimum kit for policy relevance. It needs to have an overlapping-generations structure (starting from Samuelson and Diamond rather than Ramsey), so that fiscal policy has potentially non-trivial effects in the long run. In the short run, it would need to recognise the existence of liquidity or cash flow effects—or, perhaps, rule-of-thumb behaviour as embodied in descendants of the McKibbin/Sachs (1991) model. And it should embody an interest-rate reaction function. In such a structure, there is no paradox at all in the existence of fiscal effects on the price level. The paradox in the fiscal theory of the price level is not that prices depend on fiscal policy, or even that the price level may follow the course of national debt, but that this is combined with control of another quantity such as base money— which, under the fiscal-theory hypothesis, does not determine prices.

V Concluding Remarks

I have argued that monetary policy in the UK has succeeded in setting up a reaction function which is recognisably of the appropriate type. I have also suggested that the new system should be reasonably robust, largely because its design reflects both the lessons of history and some of the main insights from the policy rules literature.

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[24] For the UK, Wren-Lewis (2000) has suggested that policy could be improved in the UK if control over some fiscal variables was assigned to the MPC.

Performance so far has been good—indeed, remarkable by historical standards. However, though the system has survived some considerable shocks, there remains an important sense in which it has not been tested in adversity. So far, the accent has been on stabilisation. The MPC has not yet been called on to react to a major increase in inflationary pressure, threatening the nominal anchor objective, which would involve decisive and, presumably, unpopular action. Yet the perception that such action would be taken, if necessary, is a crucial part of the system. The hope, of course, is that the commitment to take such action if necessary makes it less likely that it will be necessary.

I have noted that, in normal times, the perceived reaction function should stabilise expectations of both inflation and of growth. The confidence that policy will work in a particular way alters the way the economy works (including perceptions of risk). To an extent, 'thinking makes it so', and the private sector does much of the work via the effect of the policy framework on expectations. A rather dramatic illustration of how the system can function is provided by experience since the end of last year. After the previous cuts, policy interest rates have remained completely unchanged this year in the US, the euro area, and in the UK. Whilst this looks like central bank inertia of an extreme kind, the anticipation of policy interest rate rises—which were strongly present with the bounce in the US economy at the beginning of the year—has gone away (especially following the large stock market falls across the world, though much of that probably reflected the same re-evaluation of prospects). In the process, the yield curve has shifted, and there has been a market-induced offsetting reaction, first to improving and then to deteriorating prospects. Effectively, monetary policy has eased, despite no change in policy rates. In my view, this shows a system that is alive and well, even though actual policy decisions have resulted in no change in official rate settings. The crucial point is that the private sector can anticipate stabilising policy reactions and, in broad terms, believes they will work as intended.

The system requires a high degree of credibility or trust—which could be threatened from several directions. Clearly, credibility would be threatened if the policy-makers were seen to be likely to cheat. Equally, however, it would be threatened if policy-makers were perceived to be incompetent, or to lack appropriate instruments. (This latter worry is one of the reasons why the possibility of deflation with nominal interest rates reaching their lower bound, as in Japan, is worrying.) The better the system functions and the more public understanding of how it is supposed to function, the more credible it is likely to become.

I have discussed a number of issues of current concern. One of these is asset prices. I have subscribed to the 'received wisdom' that generally it is neither necessary nor desirable for interest rates to respond to asset prices except to the extent that they contribute to inflationary or deflationary pressures, but with the recognition that there could be cases where diverting the interest-rate instrument to reducing particular kinds of shocks could be justified on second-best cost benefit grounds if destabilising shocks can thereby be reduced. Considerations of credibility—hard enough to establish anyway—weigh heavily against such policies. A far better strategy would be to tackle the destabilising dynamic processes, e.g. those involved in bubble-type phenomena, more directly with other policies.

There is a worry, however, that the perception that economic policy will *not* react to phenomena such as asset-price bubbles or exchange-rate misalignments might encourage the phenomena themselves. This is most likely to be the case if there is a perceived 'disconnect' between the phenomena and prospects for growth and inflation—since then the interest rate consequences implicit in the normal reaction function are, in effect, shorted out, making destabilising cumulative processes the more likely. There are historical instances, for example, where 'benign neglect' of the exchange rate (with the concentration of policy on the domestic economy) has appeared to lead to exchange-rate misalignments and instability. This is not to argue for giving a special role to asset prices in inflation targeting, still less should it be seen as an argument for altering the target. It should serve, however, to reinforce the point that the successful establishment of an inflation-targeting regime does not mean that all macroeconomic policy problems are dealt with. On the contrary, it is likely to highlight other aspects of the overall policy regime.

This is particularly true with fiscal policy. There is consensus that a credible monetary policy requires a credible fiscal framework to go with it. So far, however, research on fiscal policy reaction functions seems relatively underdeveloped.

Finally, if I were asked what would make the most difference to the procedures of practical monetary policy-making, it would be better and more reliable data and better understanding of key economic relationships. Given the uncertainties, the process of assessment and forecasting is bound to be judgemental—and in that sense, not rule-like. But if the goals are clear and the process is open and transparent, it is, to a large extent predictable, which is what matters for the stabilisation of expectations.

References

Alesina, Alberto, Olivier Blanchard, Jordi Galí, Francesco Giavazzi, and Harald Uhlig (2001). 'Defining a Macroeconomic Framework for the Euro Area', *Monitoring the European Central Bank* 3, CEPR.

Allsopp, Christopher (2001). 'Economic Imbalances and UK Monetary Policy', *Bank of England Quarterly Bulletin*, Vol. 41(3), 484–494.

Allsopp, Christopher (2002). 'The Future of Macroeconomic Policy in the European Union'. External MPC Unit Discussion Paper No. 7.

Allsopp, Christopher, and David Vines (2000). 'The Assessment: Macroeconomic Policy', *Oxford Review of Economic Policy*, Vol. 16(4), 1–32.

Ball, Laurence (1999). 'Policy Rules for Open Economies'. In J.B. Taylor (ed.), *Monetary Policy Rules*. University of Chicago Press. 127–144.

Balls, Edward (2001). 'Delivering Economic Stability'. Oxford Business Alumni Annual Lecture, Merchant Taylors' Hall, London. 12 June.

Balls, Edward, and Gus O'Donnell (eds.) (2001). *Reforming Britain's Economic and Financial Policy*. Palgrave.

Batini, Nicoletta, and Andrew G. Haldane (1999). 'Forward-Looking Rules for Monetary Policy'. In J.B. Taylor (ed.), *Monetary Policy Rules*. University of Chicago Press. 157–192.

Bean, Charles (1998a). 'The New UK Monetary Arrangements: A View from the Literature', *Economic Journal*, Vol. 108(451), 1795–1809.

Bean, Charles (1998b). 'Monetary Policy under EMU', *Oxford Review of Economic Policy*, Vol. 14(3), 41–53.

Bean, Charles, and Nigel Jenkinson (2001). 'The Formulation of Monetary Policy at the Bank of England', *Bank of England Quarterly Bulletin*, Vol. 41(4), Winter, 434–441.

Begg, David, Fabio Canova, Antonio Fatas, Paul De Grauwe, and Philip R. Lane (2002). 'Surviving the Slowdown', *Monitoring the European Central Bank* 4, CEPR, London.

Bernanke, Ben S., and Mark Gertler (1999). 'Monetary Policy and Asset Price Volatility'. In *New Challenges for Monetary Policy: A Symposium Sponsored by the Federal Reserve Bank of Kansas City*. Federal Reserve Bank of Kansas City. 77–128.

Bernanke, Ben S., and Frederic S. Mishkin (1997). 'Inflation Targeting: A New Framework for Monetary Policy?', *Journal of Economic Perspectives*, Vol. 11(2), 97–116.

Blinder, Alan S. (1998). *Central Banking in Theory and Practice*. MIT Press.

Bordo, Michael D., and Olivier Jeanne (2002). 'Boom-Busts in Asset Prices, Economic Instability and Monetary Policy'. CEPR Discussion Paper No. 3398.

Borio, Claudio, and Philip Lowe (2002). 'Asset Prices, Financial and Monetary Stability: Exploring the Nexus'. BIS Working Paper No. 114.

Cagan, Philip (1956). 'The Monetary Dynamics of Hyperinflation'. In M. Friedman (ed.), *Studies in the Quantity Theory of Money*. University of Chicago Press. 25–117.

Cecchetti, Stephen G. (2000). 'Making Monetary Policy: Objectives and Rules', *Oxford Review of Economic Policy*, Vol. 16(4), 43–59.

Cecchetti, Stephen G., Hans Genberg, John Lipsky, and Sushil Wadhwani (2000). *Asset Prices and Central Bank Policy*. Geneva Report on the World Economy 2. CEPR and ICMB.

Cecchetti, Stephen G., Hans Genberg, and Sushil Wadhwani (2002). 'Asset Prices in a Flexible Inflation Targeting Framework'. NBER Working Paper No. 8970.

Clarida, Richard, Jordi Galí, and Mark Gertler (1998). 'Monetary Policy Rules in Practice: Some International Evidence', *European Economic Review*, 42, 1033–1067.

Clarida, Richard, Jordi Galí, and Mark Gertler (2001). 'Optimal Monetary Policy in Open versus Closed Economies: An Integrated Approach', *American Economic Review* (*Papers and Proceedings*), Vol. 91(2), 248–252.

Committee on Stabilisation Policy (2002). *Stabilisation Policy in the Monetary Union*. Swedish Official Government Report, 12 March.

Dodge, David (2002). 'The Interaction between Monetary and Fiscal Policies'. Donald Gow Lecture, School of Policy Studies, Queens University, Kingston, Ontario, 26 April.

Dornbusch, Rudiger (1999). 'Commentary: Monetary Policy and Asset Price Volatility'. In *New Challenges for Monetary Policy: A Symposium Sponsored by the Federal Reserve Bank of Kansas City*. Federal Reserve Bank of Kansas City. 129–135.

Dow, J.C.R. (1964). *The Management of the British Economy, 1945–1960*. Cambridge University Press.

Engel, Charles (2002). 'The Responsiveness of Consumer Prices to Exchange Rates and the Implications for Exchange-Rate Policy: A Survey of a Few Recent New Open-Economy Macro Models'. NBER Working Paper No. 8725.

Friedman, Milton (1967). 'The Monetary Theory and Policy of Henry Simons', *Journal of Law and Economics*, Vol. 10(2), 1–13. Reprinted in M. Friedman, *The Optimum Quantity of Money and Other Essays*. Aldine, 1969. 81–96.

Friedman, Milton (1968). 'The Role of Monetary Policy', *American Economic Review*, Vol. 58(1), 1–17.

Greenspan, Alan (2002a). 'Chairman's Remarks: Transparency in Monetary Policy', *Federal Reserve Bank of St. Louis Review*, Vol. 84(4), 5–6.

Greenspan, Alan (2002b). 'Economic Volatility'. Speech given at the Federal Reserve Bank of Kansas City Symposium on 'Rethinking Stabilization Policy', Jackson Hole, Wyoming. 30 August.

Hendry,-David-F., and Grayham E. Mizon (2000). 'Reformulating Empirical Macroeconomic Modelling', *Oxford Review of Economic Policy*, Vol. 16(4), 138–159.

Hicks, John R. (1967). *Critical Essays in Monetary Theory*. Clarendon Press.

HM Treasury (2002). *Budget 2002*. Stationery Office.

Kara, Amit, and Edward Nelson (2002). 'The Exchange Rate and Inflation in the UK'. Manuscript, Bank of England.

Keynes, J.M. (1936). *The General Theory of Employment, Interest and Money*. Macmillan.

King, Mervyn (1996). 'How Should Central Banks Reduce Inflation?—Conceptual Issues'. In *Achieving Price Stability: A Symposium Sponsored by the Federal Reserve Bank of Kansas City*. Federal Reserve Bank of Kansas City. 53-91.

King, Mervyn (1997a). 'The Inflation Target Five Years On', *Bank of England Quarterly Bulletin*, Vol. 37(4), November, 434–442.

King, Mervyn (1997b). 'Changes in UK Monetary Policy: Rules and Discretion in Practice', *Journal of Monetary Economics*, Vol. 39(1), 81–97.

King, Mervyn (2002). 'The Monetary Policy Committee Five Years On', *Bank of England Quarterly Bulletin*, Vol. 42(2), Summer, 219–227.

Kohn, Donald L. (1999). 'Comment: Forward-Looking Rules for Monetary Policy'. In J.B. Taylor (ed.), *Monetary Policy Rules*. University of Chicago Press. 192–199.

Kohn, Donald L. (2000). 'Report to the Non-Executive Directors of the Court of the Bank of England on Monetary Policy Processes and the Work of Monetary Analysis'. 18 October. Reprinted in *Bank of England Quarterly Bulletin*, Vol. 41(1), Spring 2001, 35–49.

Krugman, Paul (2002). 'Passing the Buck', *New York Times*, 3 September.

Kydland, Finn E., and Edward C. Prescott (1977). 'Rules Rather than Discretion: The Inconsistency of Optimal Plans', *Journal of Political Economy*, Vol. 85(3), 473–491.

Lawson, Nigel (1992). *The View from No. 11*. Bantam.

McCallum, Bennett T. (1995). 'Two Fallacies Concerning Central-Bank Independence', *American Economic Review*, Vol. 85(2), 207–211.

McKibbin, Warwick J., and Jeffrey D. Sachs (1991). *Global Linkages: Macroeconomic Interdependence and Cooperation in the World Economy*. Brookings Institution Press.

Meade, James E. (1951). *The Theory of International Economic Policy, Volume 1: The Balance of Payments*. Oxford University Press.

Meltzer, Allan H. (1977). 'Anticipated Inflation and Unanticipated Price Change', *Journal of Money, Credit, and Banking* Vol. 9(1), 182–205.

Meyer, Laurence H. (2002). 'Rules and Discretion'. Speech at the Owen Graduate School of Management, Vanderbilt University, Nashville, Tennessee. January 16.

Nelson, Edward, and Kalin Nikolov (2001). 'UK Inflation in the 1970s and 1980s: The Role of Output Gap Mismeasurement'. Bank of England Working Paper No. 148 and CEPR Discussion Paper No. 2999.

Orphanides, Athanasios (2000). 'The Quest for Prosperity without Inflation'. ECB Working Paper No. 15.

Patinkin, Don (1969). 'The Chicago Tradition, the Quantity Theory, and Friedman', *Journal of Money, Credit, and Banking*, Vol. 1(1), 46–70.

Posen, Adam S. (1993). 'Why Central Bank Independence Does Not Cause Low Inflation: There Is No Institutional Fix for Politics'. In R. O'Brien (ed.), *Finance and the International Economy. Volume 7. The Amex Bank Review Prize Essays: In Memory of Richard Marjolin*. Oxford University Press. 41–54.

Rogoff, Kenneth (1985). 'The Optimal Degree of Commitment to an Intermediate Monetary Target', *Quarterly Journal of Economics*, Vol. 100(4), 1169–1189.

Rotemberg, Julio J., and Michael Woodford (1997). 'An Optimization-Based Econometric Framework for the Evaluation of Monetary Policy', *NBER Macroeconomics Annual* 12, 297–346.

Sargent, Thomas J (1999). *The Conquest of American Inflation*. Princeton University Press.

Simons, Henry C. (1948). *Economic Policy for a Free Society*. University of Chicago Press.

Svensson, Lars E.O. (1997). 'Inflation Forecast Targeting: Implementing and Monitoring Inflation Targets', *European Economic Review*, Vol. 41(6), 1111–1146.

Svensson, Lars E.O. (2002). 'What Is Wrong with Taylor Rules? Using Judgment in Monetary Policy through Targeting Rules'. Manuscript, Princeton University.

Taylor, John B. (1993). 'Discretion versus Policy Rules in Practice', *Carnegie-Rochester Conference Series on Public Policy*, Vol. 39(1), 195–214.

Taylor, John B. (1997). 'America's Peacetime Inflation: The 1970s: Comment'. In C.D. Romer and D.H. Romer (eds.), *Reducing Inflation: Motivation and Strategy*. University of Chicago Press. 276–280.

Taylor, John B. (1999). 'The Robustness and Efficiency of Monetary Policy Rules as Guidelines for Interest Rate Setting by the European Central Bank', *Journal of Monetary Economics*, Vol. 43(3), 655–679.

Taylor, John B. (2000). 'Alternative Views of the Monetary Transmission Mechanism: What Difference Do They Make for Monetary Policy?', *Oxford Review of Economic Policy*, Vol. 16(4), 60–73.

Taylor, John B. (2001). 'The Role of the Exchange Rate in Monetary-Policy Rules', *American Economic Review* (*Papers and Proceedings*), Vol. 91(2), 263–267.

Vickers, John (1998). 'Inflation Targeting in Practice: The UK Experience', *Bank of England Quarterly Bulletin*, Vol. 38(4), November, 368–375.

Vickers, John (1999). 'Monetary Policy and Asset Prices', *Bank of England Quarterly Bulletin*, Vol. 39(4), November, 428–435.

Walsh, Carl E. (1995). 'Optimal Contracts for Central Bankers', *American Economic Review*, Vol. 85(1), 150–167.

Wren-Lewis, Simon (2000). 'The Limits to Discretionary Fiscal Stabilization Policy', *Oxford Review of Economic Policy*, Vol. 16(4), 92–105.