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Inflation Targeting in Practice: Models, Forecasts, and Hunches

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Abstract

This paper reviews the role that model-based forecasts play in the monetary policy process in the United Kingdom, with particular reference to the Bank of England's new quarterly model and continuing research into other statistical approaches. The Bank's models provide a consistent framework for considering alternative scenarios and risks but judgement always plays a large role in constructing forecasts. It is hard to say precisely how important forecasts are in driving policy decisions, but there is some evidence that the rethink of key issues during the forecast round has been a source of policy news. Forecasts also play a central part in communicating the Monetary Policy Committee's thinking to the outside world. But forecasts are highly fallible. So the MPC's forecast centered approach to inflation targeting has gone hand in hand with a determined effort to illustrate the wide range of uncertainties around its central projections. (JEL E40)

Introduction

Five and a half years ago in his Monnet lecture Charles Goodhart [Goodhart, 1999] was able to talk with some confidence of the features that particularly distinguished the UK's approach to inflation targeting. Today with over 20 countries, in every habitable continent, formally operating some variant of inflation targeting and many more adopting some parts of the framework, all actively sharing experience, and best practice, I suspect that most aspects of our approach would find a counterpart somewhere else in the world. But Charles's focus on the Monetary Policy Committee's (MPC) personal engagement in producing a published inflation forecast still seems to me to capture the essence of the UK's approach.

Today I want to talk about the role that forecasting has come to play in helping the MPC to take and communicate its decisions. In what sense does the Committee really own the published forecasts that go out under its name? How much use do we make of models, and what models do we use? How far do our forecasts appear to drive interest rate decisions? And is there any evidence that this has helped to make policy more predictable? Finally I want to end by commenting on some of the issues raised by forecasts as a means of communication.

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Why the MPC Has Always Been Involved in Forecasting

The MPC's early involvement in the forecast process is firmly rooted in the kind of committee it is, as well as the nature of the remit it has been given. The objectives of UK monetary policy have been expressed in terms of an annual inflation target since 1992, but responsibility for achieving the target initially lay with the Treasury, acting on the Bank's advice. In 1997, as part of a wide ranging restructuring of the Bank of England's role, decisions about interest rates were delegated to the Bank's new MPC. Its nine members—five internal Bank officials and four external members chosen for their relevant knowledge and experience—are individually, and publicly, accountable for meeting the inflation target.

The Government remains responsible for setting the annual inflation target, within the context of legislation that requires the Bank of England to achieve "price stability and subject to that to support the government's objectives for output and employment." Under its current remit, the MPC is required to achieve 2% consumer price inflation 'at all times.' If inflation deviates from target by more than 1 percentage point, the MPC has to write a public letter to the Chancellor to explain why and what it is doing to bring it back.

These arrangements remain relatively novel and unusual in UK constitutional terms. Prior to 1997, the longstanding objection to Bank of England independence was concern that such arrangements would be inconsistent with Ministerial duty to answer to the House of Commons on major matters of policy. A high level of transparency and openness about MPC decisions has been a critical aspect of meeting expectations of parliamentary and public accountability as well as an effective way of enhancing the credibility of monetary policy.

In fact, greater openness about monetary policy was part of the package of changes that were made to restore credibility after the UK's exit from the ERM in 1992. The Bank played its part by introducing a new quarterly *Inflation Report*, which by 1997 had won widespread respect for its objectivity and professionalism. Against this background, the 1998 Bank of England Act required the new Monetary Policy Committee to sign off the Bank's *Inflation Report*. In practice, the MPC's sign off has been far from a formality, though the *Inflation Report* formally remains the Bank's report.

It is not that surprising that a committee of experts whose external members are based in the Bank and who devote at least 60 percent of their time to monetary policy should get deeply involved in preparing and debating the forecasts that they sign off. It may be more remarkable that nine economists, laboring under the burden of individual accountability, have, so far, succeeded in signing off 31 editions of the *Inflation Report* and found ways of dealing with the inevitable range of views.

The Nature and Role of the Forecast

Nowadays, the forecast has two related roles in the monetary policy process. First, it helps the Committee to set monetary policy by organizing, informing, and focusing its discussions. And second, it provides transparency about the Committee's thinking and plays a key part of its public communication strategy.[1]

Helping the MPC Make Decisions

Monetary policy needs to be forward looking because interest rates act with a lag. No monetary policymaker can avoid taking a view on the future. That view needs to be

coherent and disciplined, and informed by the best information available. But it also needs to reflect a realistic appreciation of the massive uncertainties inherent in any forecast.

The MPC spends many hours discussing the projections that go into the *Inflation Report* and the text that accompanies them. Although the process has been somewhat streamlined since Charles's day (when the committee spent a gruelling 10 meetings a quarter on the forecast on top of the usual monthly decision meetings) the forecast round is probably still the largest single commitment of the Committee's time.

Why? An important reason is that the forecast is not just an occasion for agreeing on a set of projections for the inflation outlook. It has come to provide an organizing framework for assessing all the relevant information and an opportunity for a deeper discussion of economic developments. Since I have been on the Committee, we have spent at least half of our allotted forecasting time debating on longer term issues, such as the effect of structural change in the labor market and the relationship between house price inflation and consumption. Sometimes the outcome of those discussions has had a material influence on our thinking about risks, even when the direct impact on the central projections has been relatively minor.

What role do formal economic models play in the forecast? No set of economic projections—least of all one owned by a committee of nine experts—can ever be the outcome of a purely model-based operation. Judgement always plays a large role—although different people frame their judgements in more or less model-based ways. But it is difficult to make a forecast without using models. They provide an organizing framework for ensuring intellectual and accounting consistency in generating baseline projections and for considering alternative scenarios and risks.

What sorts of models does the Committee find useful? In his peer review of the Bank's use of economic models [Pagan, 2003], Adrian Pagan suggested that economic modeling may involve a trade off between theoretical consistency (good economics) and data coherence (a good fit). Our goal should be to ensure that we are positioned on the efficient frontier between the two.

Any model we use should in principle be on this frontier—but we want to be able to move along the frontier and use different sorts of models for different purposes. For example, if, as I have suggested, we want to use models to facilitate discussions about fundamental economic issues, we clearly need models with rich economic structures—structures that reflect the Committee's views on the way the economy works. The Bank's new Quarterly Model (BEQM) [Harrison et al., 2005] has been developed with this function very much in mind. But we also use other and smaller models with rich economic structures to look at specific issues as part of our suite of models.

We also want to quantify the likely impacts on inflation and output of a range of pieces of data news as accurately as possible. The numbers matter, so empirical performance is important, too. We have worked hard at ensuring that BEQM does well in this dimension, but we have also, within our suite, been developing more statistically based models. We may use these models either on their own—as stand alone forecasting tools—or to inform the judgements that we make in using BEQM.

Let me say a few words about both the main model and the suite. The motivation for the BEQM project was to help with the intellectual framework role of the forecast. Without losing empirical performance, we wanted to improve upon the previous main model's articulation of the underlying structure of the economy to make it more explicitly consistent with the Committee's beliefs.[2] This was made possible in the light of recent advances both in economic understanding—particularly the emphasis on providing coherent micro foundations in macroeconomic models—and in sheer computational power (both in terms of computing power and the techniques applied).

BEQM is a large-scale model by the standards of most academic research, but it is small scale compared with traditional macro-econometric models. Compared with the latter, it is also more of a general equilibrium model with an emphasis on internal consistency. Households and firms optimize—they are forward-looking and they use available information efficiently. Unlike our previous model, things add up: flows add to stocks, profits are allocated, and so on. There is a high degree of simultaneity in the way the model is solved. It no longer makes sense, nor is it at all easy, to consider the model equation by equation.

This provides a greater degree of discipline on Committee members and staff, who are now forced to confront the full implications of their judgements more explicitly. If someone wants to change one of the economic relationships, they need to say why, and acknowledge the possible implications for other behavioral relationships. If, for example, we want to assume that the trend rate of labor productivity growth has changed, the model requires us to recognize that there are implications for both demand and supply. Faster productivity growth will increase productive capacity, but income will also grow faster. So what might that mean for demand now?

This is a definite advance—providing the general equilibrium mechanisms in the new model do in fact reflect our ideas about how the world works. But it also makes for a more demanding discussion. There are no easy fixes, and it can be difficult to accommodate views that differ from the model's paradigm. As an example, the model is firmly rooted in the rational expectations tradition. And we have assumed that monetary policy is credible. Both are perfectly reasonable, arguably essential, modeling assumptions. The fact that the new model makes them explicit can be intellectually helpful. But it doesn't make it any easier to provide answers to questions about expectations and credibility. What if some agents base their decisions on simple rules of thumb? BEQM has features that allow us to accommodate such questions when we are forecasting—but in a more *ad hoc* way that requires a substantial degree of judgement.

We are still learning how to exploit all BEQM's possibilities. But it clearly represents a move towards the 'Pagan frontier,' offering a higher degree of theoretical coherence without losing empirical performance. A number of other central banks are working on similar models—the ECB, Bank of Canada, FRB, Norges Bank, and Bank of Finland—as well as the IMF. The international modeling community is an exemplary forum for the exchange of ideas and experiences, and we have learned—and will continue to learn—a lot from the experience of others.

No model can do everything. All models oversimplify drastically. The trick is to identify an appropriate degree of simplification for the task in hand. So the Committee has never been prepared to rely on one model. This has led to attempts to develop a suite of models.

The suite takes two forms. One is a range of models that are complementary to the core-forecasting model. These hold up a magnifying glass to particular parts of the economy and allow us to take account of the influence of a wider range of factors in more detail than could be accommodated in the main model. These (sub-) models might be geared towards analyzing particular policy issues (e.g., supply chain pricing models, the future development of household and corporate gearing, and productivity growth in the distribution sector). Or they might also provide the interface between our very short-term conjunctural analysis, and the two to three-year forecast.

Second, we have a set of statistical models. The MPC attempts to process a huge amount of information before each monthly decision. The Committee already uses some data-driven forecasts (for example, forecasts that uses many variables to forecast in an atheoretic way, statistical models to produce near term forecasts for key data such as

CPI, and small models that filter ONS first releases, to handle the inevitable data uncertainty associated with early releases [see Ashley et al., 2005]. But it is a herculean task to absorb and analyze all the data. So, responding to the needs of the MPC, but also to suggestions by Pagan, the staff is in the process of developing and evaluating more models geared towards empirical forecasting accuracy and finding ways of combining these forecasts in a statistically efficient way. This is very much work in progress, with the aim of helping the MPC to form judgements both about the most likely outturns and the uncertainty surrounding them.

Handling Uncertainty and Disagreement

Even armed with a range of economic models to aid structured discussion and enforce a degree of intellectual discipline, how is it possible for a group of nine individually accountable economists to reach sufficient agreement to publish a forecast which is described as reflecting their best collective judgement? An important part of the answer lies in the use of formal techniques to capture uncertainty and risk. These antedate the MPC. The Bank of England started publishing fan charts for its inflation projections in February 1996, following an early experiment with what might be called 'trumpet charts.'[3] The motivation was purely to illustrate the uncertainty inherent in all economic projections. While trumpets consisted of a single shaded area around a central projection, corresponding to average absolute forecast errors (see Chart 1), fan charts (see Chart 2) were graduated to show the full distribution of possible outcomes.[4]

Nowadays, each *Inflation Report* includes fan charts for inflation and output which reflect the Committee's views on the full distribution of possible outcomes. While the width of the fan bears some relation to the size of forecast errors over the past decade (the distribution of past forecast errors provide a benchmark calibration), its main features–the moments of the underlying distribution–change with each forecast to reflect the Committee's best judgement about the balance of risks around the outlook for

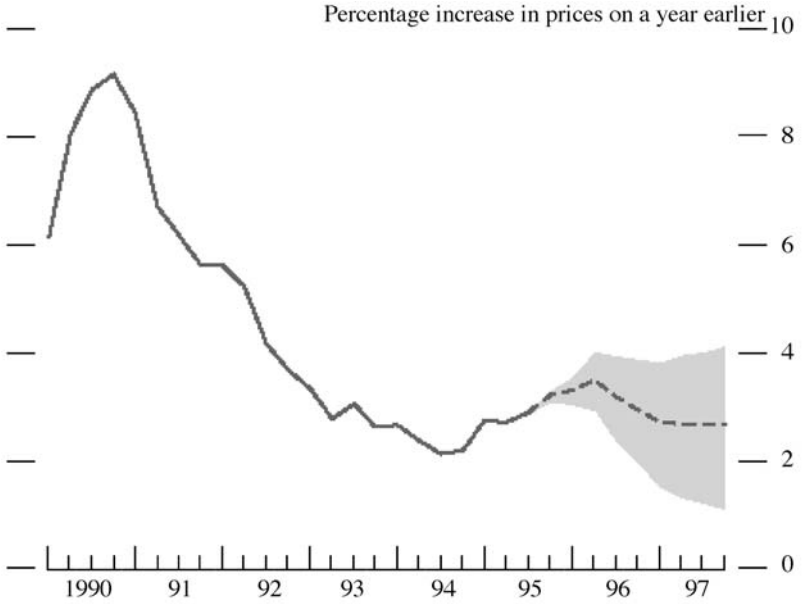

CHART 1. November 1995 RPIX Inflation Projection—Symmetric Error Bands.

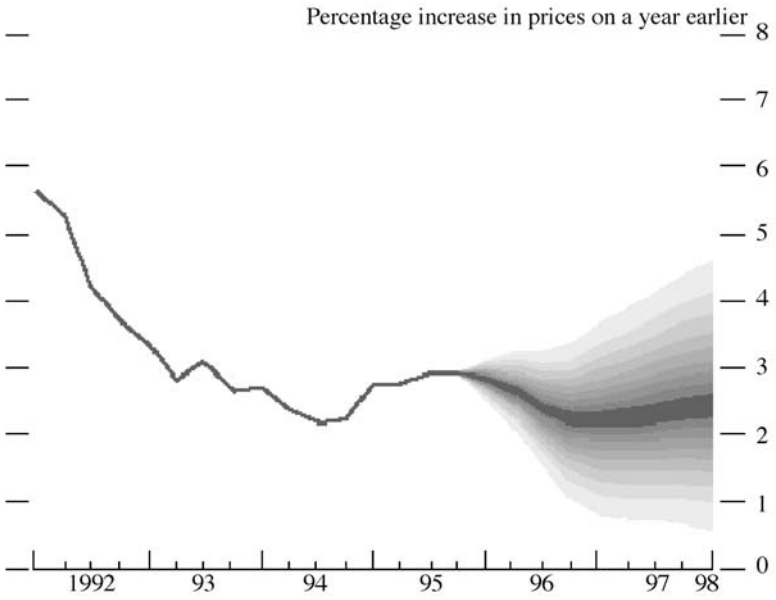

CHART 2. February 1996 RPIX Inflation Projection—Fan Chart.

inflation and output and the degree of uncertainty. While many other central banks now publish fan charts, the MPC is still relatively unusual in basing them on the policy-makers' subjective views about the distribution of risks rather than staff views or historical and statistical measures of past errors.

A key point is that The MPC's approach to constructing fan charts can help the members come to an agreement on the substantive issues, while retaining their individual views. This is because the risks are often where the major differences of opinion among members lie. And while the members may be able to agree on a collective view of the overall outlook including the degree of uncertainty and balance of risks, it might be for slightly different reasons. To be sure, there have been times when differences of view about the central projection have been too significant to be handled within the ambit of the fan chart and on those (few) occasions the *Inflation Report* has included material illustrating the minority view. But, as the MPC's preface to the *Inflation Report* notes, the fan charts reflect the Committee's best collective judgement about the most likely paths for output and inflation and the uncertainties surrounding the central projections, while recognizing that members may have slightly different views about the underlying assumptions.

Forecasts and Interest Rate Decisions

How influential is the forecasting process when it comes to the actual business of taking decisions about interest rates? One yardstick might be whether the MPC is more likely to change rates in *Inflation Report* months. There is no necessary reason why this should be so. Information accrues relatively evenly over the year, and the Committee goes through the same decision taking process every month. On the other hand, the MPC might be more likely to change rates after a systematic and full review of the inflation outlook rather than in response to the news on the month. On this argument, ready-reckoners may give a rough indication of what the impact of new data may be, but they are no substitute for a full analysis. So in non-*Inflation Report* months, the MPC may

sometimes decide to wait-and-see—to postpone a possible interest rate change until more evidence has accumulated.

As it happens, market economists have tended to think that interest rate changes were more likely in *Inflation Report* months. Since 1998, Reuters have asked a group of economists (initially around 20–30, now 40 or more) to attach probabilities to a range of different outcomes for interest rates, so we can calculate a mean and a mode expected interest rate change across individuals. Panel B in Chart 3 splits the months in which the mode is for a (25 bp) change into *Inflation Report* and non-*Inflation Report* months. According to this measure, markets have consistently thought that changes were more likely in *Inflation Report* months.

The data on interest rate changes provide mixed evidence. Over the period since 1997 as a whole, the Committee has displayed a preference for changing rates in *Inflation Report* months. But it showed no such tendency in its early years. The picture since 2001 is very different, with almost two thirds of rates changes taking place in *Inflation Report* months, compared with the one third that would be expected if rate changes were evenly spread over the year. And no fewer than six of the last eight rate changes have coincided with the publication of an *Inflation Report*. (See Chart 3 and Table 2 for details).

What, if anything, should be read into the MPCs apparent change in behavior? On the face of it, the evidence might suggest that the re-evaluation of the outlook undertaken during the quarterly forecast has become more influential. But there are a number of possible explanations.

Most obviously, it could be a reflection of the shocks that have come along in the last four years. These may have required fewer changes in the policy rate than in the pre-2001 period. Alternatively, the required adjustments in rates might have been bigger in the early days, and if the MPC had an inclination to change rates in small steps, perhaps because it had good reasons for proceeding cautiously, then larger desired adjustments might have required more frequent changes. Of the 16 changes in the first period, seven were back-to-back, while in the second period, only four out of the 14 changes happened in consecutive meetings.

The turnover in the Committee's membership since 2001 might provide a different kind of explanation. The present Committee contains only one member (the present

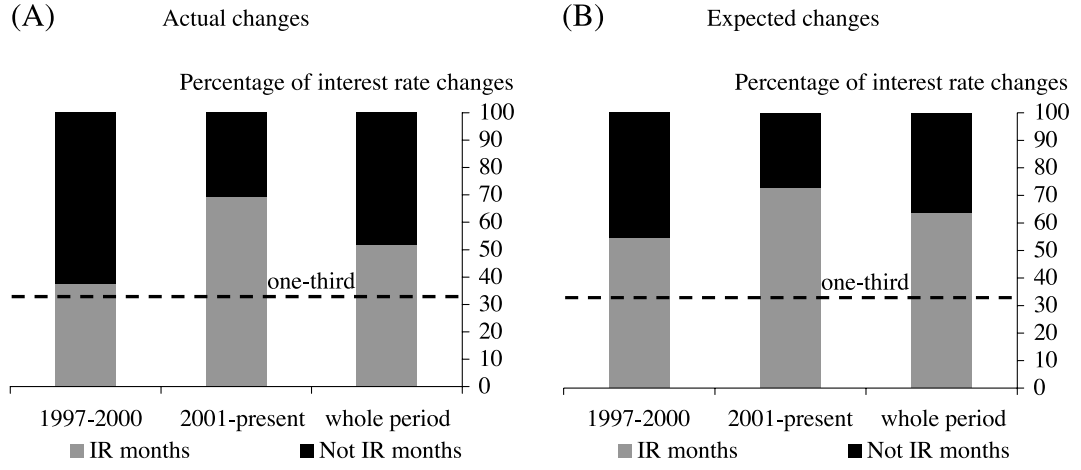

CHART 3. Proportion of Actual and Expected Interest Rate Changes Occurring in Inflation Report Months.

Governor) who has been there from the outset, and some of the early members served short terms. Might the latter day tendency towards changing rates only after a forecast reflect a generally less activist approach to setting rates?

Table 1 provides an unscientific guide to Committee members' degree of activism. It is arranged with the most activist members (identified as those voting proportionately most frequently for a rate change) at the top.[5] If personal preferences played no role, we might expect to see a relationship between activism and MPC vintage—if MPC members responded to the same shocks, or their behavior was affected by some other common factor, there would be clusters. Keen MPC watchers will no doubt find some support for the view that personality matters. But, in general, the members who voted for the most rate changes are associated with the earlier years of the Committee, consistent with the idea that the MPC may have needed to respond more frequently during that period.[6]

Another issue of interest is whether the publication of regular forecasts, which are seen to bear a close relationship to the decision taking process, has helped to make the policy decisions themselves more predictable? The test is whether markets are less likely to be surprised by interest rate changes in the recent period, given full knowledge of all the relevant economic news.

We ran some simple statistical tests on two measures of market surprises. One is based on the Reuters poll of economists. The surprise measure is the difference between the actual repo rate change and the mean expected repo rate change. The other surprise measure is a bit further out along the yield curve: changes in the implied three-month forward LIBOR rate.[7]

TABLE 1
MPC Members' Voting Statistics From January 1998 (*current members shaded*)[a]

	Percentage of months voted for a rate change (%)	Percentage of changes voted for that were in IR months (%)	Number of meetings attended since Jan. 1998	Time of membership
Willem Buiter	79	36	29	1997–2000
Sir Alan Budd	65	30	17	1997–1999
John Vickers	61	29	28	1998–2000
Charles Goodhart	52	36	29	1997–2000
Sushil Wadhwani	51	37	37	1999–2002
Christopher Allsopp	49	44	37	2000–2003
DeAnne Julius	46	47	41	1997–2001
Stephen Nickell	41	50	58	2000–date
Mervyn King	39	41	87	1997–date
David Clementi	37	43	57	1997–2002
Sir Andrew Large	34	40	29	2002–date
Ian Plenderleith	33	44	54	1997–2002
Kate Barker	33	53	46	2001–date
Sir Edward George	30	45	67	1997–2003
Richard Lambert	29	67	21	2003–date
Marian Bell	28	56	32	2002–date
Charles Bean	28	60	54	2000–date
Rachel Lomax	25	80	20	2003–date
Paul Tucker	24	63	33	2002–date

[a]Up to and including the February 2005 MPC meeting.

Both measures suggest that interest rate surprises have become significantly smaller in the post-2001 period than previously (Table 2, Panel C), consistent with improved policy predictability. But, intriguingly, there is also some tentative evidence that surprises in *Inflation Report* months tend to be relatively large.[8] What are we to make of that?

On closer inspection, this finding seems to relate to the decision in *Inflation Report* months—not the publication of the *Report* itself a week later, or the minutes the week after that (Panel E shows that the market reaction to the policy decision is, on average, significantly bigger than the reaction to the *Report* and the minutes). This might imply that it is the re-think during the preparation of the *Inflation Report* that counts. But, once announced, the decision itself (and the accompanying press notice, if rates have changed) provides most of the information the market needs to understand the Committee's approach. This too would be consistent with a fairly high degree of policy predictability.

But let me stress one important point. The observed tendency for interest rate changes to coincide with the publication of an *Inflation Report* does not imply that interest rate changes are tied in any mechanical way to the central projection for inflation. The assessment of risks is always a material factor in determining policy, as well as an important aspect of the presentation of the forecast. For example, in our latest *Inflation Report*, we published a central projection which showed inflation rising gently but steadily above the 2 percent target, assuming a nearly flat profile of interest rates out to three years. But the *Report* noted that the balance of risks was to the downside and singled out some key near term risk areas, such as the household sector. This provided a nuanced background to the MPC's February decision to hold rates unchanged.

Forecasts and Public Communication

All inflation-targeting central banks use their forecasts as a communication tool. They provide a coherent statement of policymakers' thinking about the economic outlook and the policy stance. Together with the minutes of the policy meetings (in our case, published with individual votes after two weeks), this helps to discharge the Committee's democratic duty to explain itself, as well as supporting its credibility and helping to anchor inflation expectations.[9] The *Inflation Report* has always played a central role in the Committee's communication. And since August 2003, the Governor has fronted the regular *Inflation Report* press conference, and the MPC's appearances in front of the Treasury Select Committee have been (loosely) linked to the *Inflation Report* cycle.

This brings me to a much-debated question: how much information should a central bank provide? Academics have tended to press the case for more transparency, while practicing central bankers have been more cautious (though much more predisposed to openness than they would have been 20 years ago). Don Kohn [2005] argues that "more is not necessarily always better, and at each step of the way central banks have needed to take account of the potential costs as well as the benefits of greater transparency." In particular, it is argued that the publication of some kinds of information could make it more difficult for policymakers to do their job, with discussions of the possible path of future interest rates being seen as particularly hazardous, if they appear "as a firmer pre-commitment than they were intended to be."[10]

Arguably, these should not be first order issues for central banks with a transparent inflation-targeting framework. The objectives of policy are clear, and outside commentators should have access to enough information to work out the future direction of rates for themselves. Nevertheless, there has been a closely related debate about how transparent an inflation-targeting central bank should be about the interest rates on which its

TABLE 2
Interest Rate Surprises

A. Are Rates Changes Evenly Spread Over the Months of the Year?

	Rate Changes		
	IR Months	Non-IR Months	χ^2 Statistics
Whole period	15	14	4.41**
1997–2000	6	10	0.13
2001–present	9	4	7.54***

B. Are Rates Changes Expected to be Spread Evenly Over the Months of the Year?

	Expected Rate Changes		
	IR Months	Non-IR Months	χ^2 Statistics
Whole period	14	8	9.09***
1997–2000	6	5	2.23
2001–present	8	3	7.68***

C. Are Interest Rate Surprises Getting Smaller?

	Observations	Average Magnitude of Rate 'Surprise' (bp)
Reuters measure:		
1998–2000	30	11.0
2001–present	50	7.6
Difference		−3.3**
LIBOR measure:		
1997–2000	43	5.4
2001–present	50	3.6
Difference		−1.8*

D. Are Interest Rate Surprises Larger in *Inflation Report Months?*

	Average of 'Suprises' Variable (bp)		
	IR Months	Other Months	Difference
Reuters measure:			
Whole period	10.6	7.9	+2.7*
1998–2000	12.6	10.0	+2.6
2001–present	9.5	6.6	+2.8
LIBOR measure:			
Whole period	5.9	3.7	+2.3**
1997–2000	5.5	5.3	+0.2
2001–present	6.3	2.2	+4.0**

E. Market Reactions in *Inflation Report Months*

	Average Magnitude of 'Surprise'/Market Reaction (bp)			Difference Between Reaction to Policy Decision and IR Publication	Difference Between Reaction to Policy Decision and MPC Minutes Publication	Observations
	Policy Decision	Inflation Report Publication	MPC Minutes Publication			
LIBOR measure:						
Whole period	5.9	3.0	2.8	+2.9**	+3.1**	31
1997–2000	5.5	3.4	2.4	+2.1	+3.1**	14
2001–present	6.3	2.7	3.1	+3.6**	+3.2**	17
Difference	0.7	−0.8	0.7			

Notes: Test are for significance based on *t*-test for difference between two sample means, except for Panel (A) and (B), which is a test for whether rate changes are distributed 1/3 in IR months. The critical values for Panel (A) and (B) are derived from Monte Carlo simulations. Excludes the special MPC meeting following 11 September 2001. ***significantly higher/lower than zero at 1% level, **5% level, *10% level (one-tailed tests). Libor measure: based on the change in implied 3-month Libor forward rate derived by linear interpolation of adjecent short sterling futures contracts. Changes in implied forward rates normally taken from: 11:30am to 12:30pm for interest rate announcements; 10:00am to 12:00am for IR publication; and 9:00am to 10:30am for minutes publication. Reuters measure: Difference between the actual repo rate change and the mean expectation of the economics.

forecasts are based. An obvious reason why commentators might want more direct information about the MPC's preferred or policy consistent path is to get direct evidence on the interest rate strategy. (How quickly will rates rise? What are the advantages of a wait-and-see approach?)

The MPC has long published forecasts on two different interest rate assumptions. On one—the constant rate assumption—interest rates are held constant over the entire forecast horizon. On the other, interest rates evolve in line with rates expected by financial markets. Until August 2004, the presentation emphasized the forecast based on constant rates. Since last August, we have reversed the presentation to emphasize the market rate assumption.[11]

The constant interest rate path is obviously a stylized assumption, which conveys limited information about future policy intentions. The message is that the MPC makes interest rate decisions a month at a time, and that it has not made up its mind about what future path of rates will be consistent with the inflation target. The market interest rate path, too, is a conditioning assumption, not the MPC's prediction about future rates. The difference is that, to the extent that the market rate curve embodies the market's guess about where the MPC will take rates, forecasts predicated on the market rate are more easily interpreted as a comment on that view.

So how much significance should be read into our change of conditioning assumption? Did the switch to market rates represent a tentative step towards providing more guidance on the future direction of policy?

The fact that interest rates were historically very low in 2003 and early 2004 has some bearing on the matter. Many academics, notably Lars Svensson, have argued persuasively that the use of an unrealistic conditioning assumption makes it more difficult for the public to interpret the MPC's reading of the economic outlook. As Charlie Bean [2004] has pointed out, this is certainly true if interest rates are some way off normal levels or, if for other reasons, they are expected to increase or decrease substantially over the forecast horizon—and the longer the time horizon of the forecast, the more force this argument has.

Our decision to shift the focus of the presentation to market rates was coupled with a decision to publish forecasts for three years rather than two, as was previously the case. This did not reflect a change in policy horizon–we are required to meet our 2 percent target at all times. But it did provide useful context for interpreting the gradient of inflation forecasts at the two-year horizon and, hence, a clearer indication of future policy if the economy evolves in line with the central projection.

Against this background, we saw the shift to using a market rate assumption was a very modest step towards greater transparency. At a technical level, it is a non-trivial task to translate any market rate yield curve into a conventional forecasting assumption which is a genuine reflection of market expectations of future official interest rates.[12] And markets are themselves uncertain about the path of future rates, so we publish a fan chart for market interest rate to help quantify that uncertainty based on options prices (Chart 4).

Clearly, there is a big difference between a conditioning assumption and a commitment, not least because there is a big gap between anyone's current guess at where rates might need to go to meet the inflation target, conditional on the data available at any point in time, and where the MPC will actually take rates given the information it may have in the future. But the MPC was conscious of the risk of misinterpretation, so the transition was made gradually—with the Governor reflecting on the market curve in his remarks at the February and May *Inflation Report* press conferences and the MPC referring to the market curve in the minutes during the spring. By the time the switch

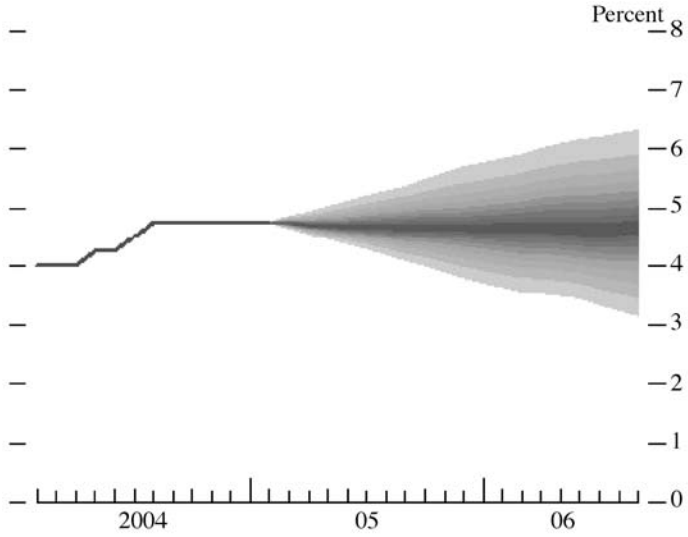

CHART 4. Market Beliefs About Future Interest Rates—*Inflation Report* February 2005.

was introduced in the August *Inflation Report*, MPC and markets understood the nature of the conditioning assumption, and the change itself was seen as the marginal improvement that it is.

Other inflation targeting central banks have evolved their own ways of communicating. At one extreme, the Governor of the Reserve Bank of New Zealand publishes his own forecast of future interest rates—though he is the sole decision taker in that regime. And at the Norges Bank, staff produce material that explicitly sets out possible strategies for interest rate decisions in the form of a range of interest rates for the next three to four months, and invite the interest rate setting committee to endorse them and provide a commentary on market expectations of future interest rates. As Charles Goodhart has argued, it is difficult, as a practical matter, to imagine a committee of nine individually accountable experts doing that.

Institutional and political arrangements matter. What works in one environment may not work elsewhere. And central banks need to employ consistent modes of communication and language if they are to be well understood. Abrupt changes in what is communicated, and how, always carry risks of confusion. But even the best-designed system needs to evolve. Greater transparency always involves learning both by policymakers and by those who seek to interpret their actions. The degree of monetary policy transparency in the UK now would have been regarded as quite unthinkable 15 years ago. I see no reason to suppose that we have reached the end of the road yet.

Conclusions

Published forecasts have come to play a key role in formulating and communicating interest rate decisions within the UK approach to inflation targeting. The strength of this approach is that—flawed and inadequate as all projections inevitably are—a good forecast paints a picture that is worth a thousand words. And that counts, both when it comes to organizing the debate between nine experts and when it comes to explaining the basis of policy to a non-expert public.

But forecasts are highly fallible, so our forecast centered approach to inflation targeting has gone hand in hand with a determined effort to illustrate the wide range of uncertainties around any central projection and a systematic attempt to factor the Committee's own judgements about the risks into decision taking. That, for me, is a key reason for resisting recent calls by the IMF and others for the Bank to "publish numerical projections for a broader range of key variables." Detail is seductive, but it can also be highly misleading, and a committee that spent its time debating the details of the forecast rather than using it as a tool to address big picture issues would be at risk of losing its way. Forecasts are indispensable, but they should be handled with care.

Footnotes

[1]Charles gives five arguments for having an IR that is the responsibility of the MPC itself: transparency, discipline, a better-informed MPC, better forecasts, and accountability (in that order). I think they fit within my taxonomy.

[2]For a description of the previous model, see Bank of England [1999].

[3]I am indebted to Mark Allan and James Bell for this nice descriptor.

[4]For a further description of the fan chart methodology, see Bank of England [2002], pp. 48–49 and Britton et al. [1998].

[5]We have excluded the first seven months of the MPC's existence to allow for the possibility that the first rate changes were reflecting necessary adjustments to reach what the MPC thought was the right level of interest rates.

[6]There are, of course, also other possible explanations, e.g., if a member has views which are consistently adrift of the rest of the Committee, leading them to believe that rates are significantly too low or high, then they may repeatedly, and unsuccessfully, vote for a change without being activist in the sense of wanting to change rates frequently in response to news.

[7]More precisely, this is an implied three-month Libor forward rate at a constant horizon of three-months, where the constant horizon is calculated by linear interpolation of adjacent futures contracts. The results are largely invariant to using six or twelve-month horizons.

[8]This could, of course, be entirely driven by the expectation that there would be no move in non-*Inflation Report* months. In the extreme, if the distribution of surprises in those months is degenerate (i.e., so that no one expected a change in rate and this was what actually happened), then the statement that surprises are bigger in *Inflation Report* months is no different from the statement that rates are only expected to change in these months. The closer the distribution comes to being degenerate, the more weight should be attached to that interpretation. But both the average surprise and its variance are significant.

[9]As Mishkin [2004] puts it "... having secretive central banks is inherently undemocratic ... basic democratic principles require that the central bank be accountable for its actions: this requires that the public understands what the central bank is doing. In addition, democratic principles indicate that the preferences of policymakers need to be aligned with those of the society at large."

[10]Mishkin has sympathy for this view, noting that "when new information comes in and the central bank changes the policy rate from its projected path, the public may see this as reneging on its announced policy or an indication that the central bank's previous policy settings were a mistake. Thus, even when the central bank is conducting its policy in an optimal manner, deviations from its projected path may be viewed as a central bank failure and could hurt the central bank's credibility."

[11]See Bank of England [2004], pp. 42–43.

[12]For further details on this issue, see Brooke et al. [2000]. For further information and data, please see the Bank of England website www.bankofengland.co.uk.

References

Ashley, J.; Driver, R.; Hayes, S.; Jeffrey C. "Dealing with Data Uncertainty," *Bank of England Quarterly Bulletin*, Winter 2005, published on 14 March 2005.

Bank of England. *Economic Models at the Bank of England,* 1999.

—. *Inflation Report*, May 2002.

—. *Inflation Report*, August 2004.

Bean, C. "Some Current Issues in UK Monetary Policy," *Bank of England Quarterly Bulletin*, Autumn 2004.

Britton, E.; Fisher, P.; Whitley, J. "The Inflation Report Projections: Understanding the Fan Chart," *Bank of England Quarterly Bulletin*, February 1998.

Brooke, M.; Cooper, N.; Scholtes, C. "Inferring Market Interest Rates from Money Market Rates," *Bank of England Quarterly Bulletin*, November 2000.

Goodhart, C. "Recent Developments in Central Banking: Some Special Features of the Monetary Policy Committee and of the European System of Central Banks," Jean Monnet Lecture, Dublin European Institute, 1999.

Harrison, R.; Nikolov, K.; Quinn, M.; Ramsay, G.; Scott, A.; Thomas R. *The Bank of England Quarterly Model*, 2005.

Kohn, D. "Central Bank Communication." Remarks at the Annual Meeting of the American Economic Association, January 2005.

Mishkin, F. "Can Central Bank Transparency Go Too Far?" in *The Future of Inflation Targeting*, C. Kent, S. Guttman, (eds.), Sydney: Reserve Bank of Australia, 2004, pp. 48–65.

Pagan, A. "Modeling and Forecasting at the Bank of England," *Bank of England Quarterly Bulletin*, Spring 2003.