

The Interest Rate Conditioning Assumption*

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A central bank's forecast must contain some assumption about the future path for its own policy-determined short-term interest rate. I discuss the advantages and disadvantages of the three main alternatives:

- (i) constant from the latest level
- (ii) as implicitly predicted from the yield curve
- (iii) chosen by the monetary policy committee (MPC)

Most countries initially chose alternative (i). With many central banks having planned to raise interest rates at a measured pace in the years 2004–06, there was a shift to (ii). However, Norway, and now Sweden, has followed New Zealand in adopting (iii), and the United Kingdom has also considered this move. So this is a lively issue.

JEL Codes: E47, E52, E58.

1. Introduction

A central bank's forecast must contain some assumption about the likely future path for its own policy-determined short-term interest rate. Most of those central banks that have publicly reported their procedures in this respect have in the past assumed that interest rates would remain unchanged from their present level, e.g., in Sweden, until recently,¹ and in the United States (at least most of

*My thanks are due to Peter Andrews, David Archer, Oriol Aspachs, Charlie Bean, Jarle Berge, Hyun Shin, Lars Svensson, Bent Vale, Mike Woodford, my two referees, and the members of the Bank of England seminar on August 3, 2005, for helpful comments. The views, and remaining errors, in this paper remain, however, my own responsibility.

¹It was reported, e.g., in the *Financial Times* Lex column, January 30, 2007, in the article entitled "Central Bank Forecasting," that Sweden had joined the group (plus New Zealand and Norway) giving conditional forecasts of the expected future path of their own policy-determined interest rates.

the time) (for Sweden, see Berg, Jansson, and Vredin 2004, and Jansson and Vredin 2003; for the United States, see Boivin 2004, Reifschneider, Stockton, and Wilcox 1997, and Romer and Romer 2004). The United Kingdom was amongst this group from the Bank of England's first Inflation Report, at the end of 1992, until May 2004; then in August 2004 it shifted to the use of the forward short rates that are implied by the money-market yield curve.² But Deputy Governor Lomax stated (2007) that the Bank of England was considering joining the small group of countries (New Zealand, Norway, and Sweden) that are explicitly reporting their own expectations for the future path of interest rates. So, in this paper the focus will be on the question of how a monetary policy committee (MPC) does, and should, choose (condition) a future time path for its own policy variable, the officially determined short-term interest rate.

There are two main purposes for such forecasting exercises: the first is as an aid to the policy decision itself, which is to choose the current level of official short-term interest rates; the second is to communicate to the general public both an explanation of why the official rate was changed and an indication of how the MPC views future economic developments. The manner in which these two purposes may be linked depends in some large part on the institutional detail of the manner in which each individual MPC has been established.

For example, prior to its being given operational independence in May 1997, the Bank of England's inflation forecast in its Inflation Report (starting in 1993) was intended to be an aid to the choice of interest rates taken by the Chancellor of the Exchequer (see Goodhart 2001b). Since the decision remained with the Chancellor, however, the Bank felt that it should not be seen to be pushing the Chancellor to follow any particular path for interest rates. So its forecast was conditioned on a neutral assumption, that interest rates remained constant (in nominal terms) from whatever level they had previously reached.

²In fact, it used *both* conditioning assumptions for many years before 2004, but the constant interest rate assumption was given clear precedence. Since August 2004, it has continued to use both conditioning assumptions, but now the money-market rate curve is given the greater emphasis (see Lomax 2005).

In order to provide a basis for such inflation forecast(s), which then forms one of the main inputs into the current interest rate decision, the only strong requirement is that the conditioning assumption for the future path of short-term policy rates is not too patently out of line with what the decision makers, and the markets, believe will actually happen. For simplicity, most MPCs initially chose constant future policy interest rates, from the latest available level, as their main framing assumption. Occasionally, such an assumption would have been grossly at odds with perceived reality, as in the case of the United States from 2004 until early 2006, when the explicit position of the Federal Open Market Committee (FOMC) was for there to be a “measured increase” in policy rates over time. In that case, the Greenbook conditioning assumption, which has also been *usually* for constant rates,³ is widely believed to have been changed, but the degree of secrecy, and length of lag before publication (five years), means that we will not have confirmation of this for some time.

Of course, in addition to the basic conditioning assumption, MPC members can ask for alternative scenarios to be run, involving differing conditional time paths. There can be as many such simulations run as the resources, time, and technical skills of the Bank staff allow. But, for the purposes of communication, only *one* forecast is generally published, albeit now often including probability distributions (fan charts). On all this, see Edey and Stone (2004).

A crucial distinction, however, lies between those MPCs that just publish a “staff forecast” giving the forecast conditioned on the staff’s own (standard) interest rate assumption, and those where the forecast is issued under the aegis of the MPC, or a decision-making Governor. Examples of the former are the European Central Bank (ECB) and the FOMC; examples of the latter are the United Kingdom’s MPC, Norway, Sweden, and New Zealand.

Requirements for the former are less restrictive than for the latter. Thus, MPCs presenting a staff forecast need not even update that forecast to incorporate the actual subsequent decision. The publication of a staff forecast, on a standard conditioning assumption, then simply reveals a key input into the decision-making procedure.

³This was not always so. It was upward sloping in 1994.

It is, in a sense, a simulation, not a true forecast, and should be interpreted as such.

The situation is different when what is to be presented is a forecast for which the MPC (Governor) actually takes responsibility. This crucial change in context was not, perhaps, fully appreciated when the Bank of England was given operational independence, and the UK MPC was formed, in May 1997. Then the constant interest rate assumption, which had been appropriate in the earlier regime, was simply continued, without much consideration or public discussion.

2. Arguments against a Constant Interest Rate Assumption

The strongest single argument against the assumption of a constant future nominal short-term interest rate path in a proper forecast, as contrasted with a “staff forecast,” or simulation, is that this is often *not* what the central bank itself nor the money market expect to happen. The money-market yield curve is only occasionally approximately flat out to the forecast horizon (which for the purpose of this exercise we take to be eight quarters ahead).⁴ Perhaps even more important, there have been periods when a central bank has been clearly signaling that it expected future changes in its policy-determined interest rates. The expectation of a “measured” rate of increase in U.S. interest rates in 2004–05 is a case in point. But such signaling was also apparent in the United Kingdom in early 2004. It is, to say the least, inconsistent to have the central bank give one message in words and then base its published forecast on quite a different assumption.

Even when it is just a staff forecast, or simulation, rather than an MPC forecast, too glaring a deviation between conditioning assumption and actual expectations reduces the role of such a simulation, either as an input into policy decisions or as a means of communication with the public. If the staff forecast should be based on a

⁴In August 2004 the MPC in the United Kingdom extended the horizon recorded in the forecasts (for inflation and output growth) to three years, but the surrounding text tended to indicate that the two-year horizon remained the chief focus of attention. Again, see Lomax (2005).

conditioning assumption for the future path of policy rates significantly different from that expected by the decision makers, it will be harder for the latter to reach a sensible, informed view for the current decision on policy rates. It would then also be somewhat more difficult to explain that latter decision to the public in terms of expected future inflation (and output gaps), even if the staff forecast is not published. The difficulty would become much more acute if the staff forecast was then to be published. With MPC forecasts being published, any serious deviation between the actual expectations of the MPC and the conditioning assumptions for the future path of policy rates could lead to major problems in communicating with the public.

In particular, when the policy interest rate is cyclically high—or low, as it patently was in many countries after 2001—extrapolating the current level of interest rates into the future will give implausible results and cannot therefore be either a sensible basis for internal decisions or a fruitful means of communication with the private sector. Adolfson et al. (2005, 1) used a DSGE model to simulate monetary policy in the euro area and found that “in the latter part of the sample (1998:Q4–2002:Q4) . . . the constant interest rate assumption has arguably led to conditional forecasts at the two-year horizon that cannot be considered economically meaningful during this period.”

3. Should an MPC Forecast the Future Time Path of Its Own Official Rate?

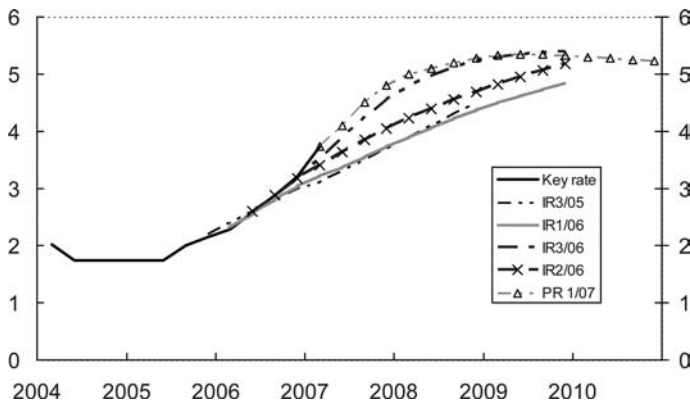
The main alternative in the academic literature, which several economists have been advocating (e.g., Svensson 2003, 2004 and Woodford 2004), is to base the conditioning assumption on a specific nonconstant *forecast* made by the Bank or by its MPC. But this also has its drawbacks. While an MPC might be quite willing to agree and to endorse a *general* direction of likely future change (as in the FOMC “bias” reports or the ECB’s standard vocabulary), it would generally be much less happy to commit itself to a specific, quantitative path, although this is what *has* been done in New Zealand, and its relatively untroubled acceptance there influenced Svensson, who wrote a report on their procedures (Svensson 2001). This has also been done since 2006 in Norway, and since 2007 in Sweden. Lomax (2007) reported that the UK MPC was also considering this step.

In New Zealand the responsibility for hitting the inflation target rests on the Governor of the Reserve Bank personally. So he (as yet there have been no female Governors there) can also decide upon the form and nature of the published forecast, including the conditioning assumptions. It is difficult enough for an MPC to agree on the selection of the policy rate to hold until the next meeting, when the range of feasible and sensible options is quite limited (and that range has been greatly reduced by the implicit, but now general, convention that interest rate changes should always be in multiples of 25 basis points); it would be a quantum leap more difficult to get such a committee to agree on a single path for the next n quarters, when the potential range of feasible/sensible options widens dramatically (see Mishkin 2004). The procedure for adopting a specific forecast future path for interest rates is made easier when a Governor has sole responsibility (New Zealand) or the relevant committee is small, as in Norway (where the Governor usually has a decisive role) and Sweden.

Assuming that an MPC could agree, or find a procedure for agreeing, on such a forecast for the time path of future interest rates (Svensson has suggested taking the median of individually decided preferred paths), this would almost certainly have to be published. In view of the current ethos of transparency, it would hardly be acceptable to state that the forecast was based on a nonzero conditioning assumption, but that the public is not to be told what this was (though on some occasions the Federal Reserve staff have based their Greenbook forecasts on a nonconstant rate assumption without any clear indication of what that assumption was being available to the public, since such forecasts are protected from public inspection by the five-year lag in publication).

If an MPC's nonconstant forecast was to be published, there is a widespread view, in most central banks, that it would be taken by the public as more of a commitment and less of a rather uncertain forecast than should be the case. That concern can, however, be mitigated by producing a fan chart of possible interest rate paths, rather than a point estimate, and/or by publishing additional scenario paths. No doubt, though, measuring rulers and magnifying glasses would be used by private-sector observers to extract the central tendency. Examples of recent published forecasts for Norway and New Zealand are given in figures 1 and 2. Once there was a

Figure 1. Key Policy Rate and Projections of the Key Rate Since Autumn 2005 in Norway



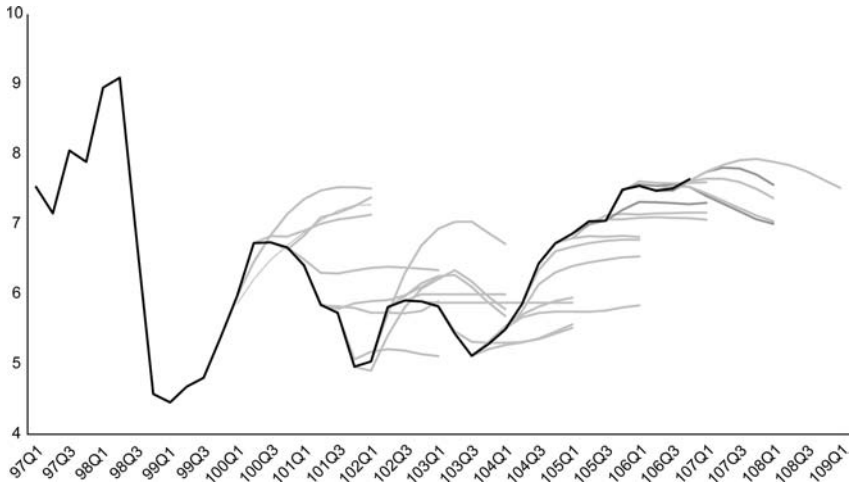
Source: Norges Bank.

published central tendency, then this might easily influence the private sector's own forecasts more than its own inherent uncertainty warranted, along lines analyzed by Morris and Shin (1998, 2002, 2004).⁵ Likewise, when new, and unpredicted, events occurred and made the MPC want to adjust the prior forecast path for interest rates, this might give rise to criticisms, ranging from claims that the MPC had made forecasting errors to accusations that they had reneged on a (partial) commitment.

Lars Svensson and some other academics respond that this worry implies that MPCs regard participants in financial markets as unsophisticated and incapable of understanding the concept of a conditioning assumption. Moreover, there have been few, if any, recorded problems in New Zealand; some recent Norwegian concerns are discussed later on here. Moreover, it could be argued that having to explain the reasons why it has deviated from its prior forecast could be a good discipline for the central bank. But these countries have small financial systems, clearly dependent on international developments; reactions there may differ from those in larger countries. Be

⁵There has been a continuing debate between Svensson and Morris, Shin, and Tong on the necessary conditions under which transparency may, or may not, be damaging to social welfare. See Svensson (2005) and Morris, Shin, and Tong (2005).

Figure 2. Key Policy Rate and Projections of the Key Rate Since March 2000 in New Zealand



Source: David Archer.

that as it may, most members of MPCs have been reluctant to move to a specific forecast for a future time path for interest rates.

One of my (anonymous) referees added that the appropriate path of the policy rate can also depend, in part, on a wide range of other financial variables (equity prices, risk spreads, currently the likelihood and effect of a “credit crunch,” and so on) or, depending on the sophistication of the model used, risk premiums on the various assets (equities, corporate bonds, and so on). Thus, to allow the public to make sense of the projected policy path, the central bank might, at least at times, have to provide information on these other variables. So, for example, in the late 1990s, some of the (publicly released) Greenbooks noted that the projected path for policy was fairly flat because of an assumed leveling out in stock prices. Is that really something that the central bank would like to say publicly? Moreover, such financial variables could easily turn out differently than anticipated (e.g., the 1987 NYSE crash or the 2007 credit-market freeze), but the central bank would likely intend in such circumstances to offset the effects on the real economy by adjusting policy. So, in a sense, the policy assumption is more tentative and more subject to change than the projections for output and inflation.

A related, but reverse, argument is that it would not be the private sector, but *the MPC itself* that might place too much weight on an explicit forecast path. Thus, having given a forward projection, an MPC might feel pressured to stick to it, even when circumstances had changed. This was the gist of an editorial in the *Financial Times* (December 7, 2006, p. 20) entitled “Giving a Wrong Signal.”⁶ This editorial included the following passage:

However, the market is far more interested in detecting any hints that Jean-Claude Trichet, the ECB president, might give regarding monetary policy in 2007. Mr Trichet’s communication strategy has reached a level of comical transparency: a mention of “vigilance” signals a rise in the following month, while “monitoring closely” means it will happen two or three months hence.

Such signposting does have some merits. But pre-announcing interest rate decisions also entails an obvious loss of flexibility. And in the increasingly uncertain global outlook of 2007 this flexibility will be needed. . . . The economic outlook is uncertain. Mr Trichet should make sure his language reflects this.

4. Using an Implied Market-Based Forecast for Future Official Rates

Caught between the lack of credibility (at least on some occasions) of a constant rate assumption and the problems of adopting an MPC chosen time path for interest rates, the move by the UK MPC to adopt the estimated future path *as estimated by the market* for its

⁶Ehrmann and Fratzscher (2007) report that the Federal Reserve’s policy directives before 1999, when they were unpublished and for internal use only, were a much less accurate predictor of subsequent policy moves than after May 1999, when they “were targeted at an external audience” (see especially footnote 7, p. 189). While there may be several other reasons for this, such behavior is consistent with the possibility that publication of future plans acts as a commitment device for carrying them out later. Exactly how far it is desirable for an MPC to commit itself to a future path for interest rates, in a world of uncertainty, remains uncertain. For arguments in favor of some such commitment, see Woodford (2003, ch. 7); for arguments against, see Issing (2005), as quoted by Ehrmann and Fratzscher (2007, 222–23).

conditioning assumption could be seen as a brilliant compromise that got around the worst features of both the other two alternatives. Given the normal assumptions of rational expectations and efficient markets, the market's forecast ought to be credible, yet its adoption in the forecasting procedure required no decision procedure in the MPC itself and committed them to *nothing*, a master stroke indeed. The change in procedure did not at the time cause much discussion or elicit any criticism (that I saw). There may, however, be some drawbacks to this new approach, which need to be considered. One issue is the dynamic implications of adopting a market forecast; a second is how far the market forecast has had a good track record. The latter remains the subject of my further, ongoing research, which Wen Bin Lim and I intend to undertake.

Yet another of the criticisms raised against the *constant* interest rate forecast is that, if maintained too long, it would lead to Wickseilian instability. Indeed in medium-run simulations at the Bank of England extending much beyond the prior two-year horizon, the constant two-year rate assumption had to be linked into a Taylor-type reaction function to prevent nonsensical trends developing as the horizon passed beyond two years. But, up to the two-year horizon, there did not seem to be any practical, empirical problem with this assumption, as also noted in Edey and Stone (2004).

On the other hand, the assumption of constant forward policy-determined interest rates imposed a strong discipline on the MPC that may be considered to be strongly beneficial (see Goodhart 2001a). Because of the UK MPC's inbuilt dislike of reporting inflation failing to come back close to target at their focus horizon of seven or eight quarters hence, this assumption virtually forced the MPC to take immediate, and sufficient, action to counter and remove any perceived threat to inflation stability as soon as it appeared. This behavioral trait was documented in several recent papers (Goodhart 2004, 2005). In my view, the main cause of endemic inflation in earlier decades had been the syndrome of "too little, too late" in a context of great uncertainty, a trait which could be viewed as a version of time inconsistency. So any procedure that, more or less, forced the decision makers into prompt corrective action was to be supported and encouraged.

What will be the dynamic implications for the new market-based forecasting mechanism? It is, to say the least, an incestuous

exercise. The market is trying to guess what the authorities will do, and their guess is then incorporated as the conditioning assumption to the initial forecast on which, in part, the MPC bases its decision.

Clearly there are no problems when the MPC's current decision has been (largely) predicted by the market and the resultant forecast shows inflation reverting satisfactorily to target. But what if the MPC's forecast should indicate (given the current decision *and* the implied money-market yield curve) that inflation would still be tending to overshoot (undershoot) the target, especially, but not only, at the key horizon?⁷ Then (as emphasized by Bank of England economists) the *publication* of that deviation would influence *expectations* of market participants in the desired direction and lead to an appropriate rise (fall) in *future expected* rates and hence in longer-term interest rates. Then, movements in longer-term interest rates will affect the economy more widely. Thus, goes the argument, the Bank now has effectively two instruments—its current interest rate decision *and* its separate ability to influence expected future interest rates.⁸ The latter is not, however, an instrument that the

⁷Owing to lags in the transmission mechanism whereby interest rates affect the economy, any attempt to vary such rates to bring inflation back to target quickly would lead to (instrument) instability. Instead, the authorities tend to focus on a crucial longer horizon for restoring inflation to target. In the United Kingdom, that key horizon has been about seven or eight quarters from the forecast date.

⁸This is closely similar to the analysis in Gürkaynak, Sack, and Swanson (2005, 86–87), in which they state the following:

Do central bank actions speak louder than words? We find that the answer to this question is a qualified “no.” In particular, we find that viewing the effects of FOMC announcements on financial markets as driven by a single factor—changes in the federal funds rate target—is inadequate. Instead, we find that a second policy factor—one not associated with the current federal funds rate decision of the FOMC but instead with statements that it releases—accounted for more than three-fourths of the explainable variation in the movements of five- and ten-year Treasury yields around FOMC meetings.

We emphasize that our findings do not imply that FOMC statements represent an *independent* policy tool. In particular, FOMC statements likely exert their effects on financial markets through their influence on financial market expectations of *future* policy actions. Viewed in this light, our results do not indicate that policy actions are secondary so much as that their influence comes earlier—when investors build in expectations of those actions in response to FOMC statements (and perhaps other events, such as speeches and testimony by FOMC members).

Bank can vary at will. If the Bank's forecast was ever suspected of being manipulated to achieve a market effect, it would lose all credibility. The Bank is forced to give its best, most truthful, forecast. Indeed, moving from a "one-instrument regime" (only operating on short-term interest rates) to a "two-instrument regime" (operating on both short-term interest rates and future interest rate expectations) might allow the central bank to vary the short-term rate less than otherwise. This is a point that has been emphasized by Woodford (2003 and 2005, for example).

That is an argument that I accept, *up to a point*. If the resulting deviation of inflation from target, as shown in the Inflation Report, is large, especially at the key horizon of seven or eight quarters hence, and/or continuously worsening, it would raise public queries as to why no action had already been taken to deal with the perceived inflationary (deflationary) threat. While it may be possible to give answers to this, the extent to which the MPC has been prepared to allow forecast inflation to deviate from target, especially at the crucial horizon of around seven or eight quarters, has been historically small.

However, this is not an argument that the Norges Bank has found acceptable. They state that the main reason for switching to a specific forecast path in 2006 was that the path of future rates implied by the market yield curve was then too flat and low to be consistent with a return to normal conditions.⁹ The Bank believed that future policy rates would, and should, be rising. Rather than publish a forecast based on market rates implying an increasing boom and incipient inflationary pressures, based on a market rate forecast, they preferred to publish a forecast of their own conditional expectations. This was an important factor in their decision to base their forecast and published Inflation Report on their own future expected path for policy rates.

5. Market Reactions to Surprises in the Forecast

Moreover, with a market-based forecast, what happens if the MPC's current decision surprises the market, in the sense that it has not (or

⁹This information is from a personal discussion on January 25, 2007.

has only partly) been previously expected? Clearly an unexpected change in direction will have greater impact than an unexpected change in timing. As Svensson and Woodford emphasize (e.g., Woodford 2005), it is not the overnight or one-month interest rate that mainly affects the economy, but the longer-term expected time path of interest rates. Surely any such surprise will affect future expected interest rates. The Bank forecasters will have to build into their forecasts some market reaction to that surprise, in order to guide the MPC as to whether enough has been done.

As Woodford (2005) notes:

Another problem with the current procedure of the Bank of England is that it is unclear how the MPC is intended to determine the correct current repo rate in the event that the interest-rate path expected by the markets is judged to imply projections inconsistent with the Bank's target criterion. Would an attempt be made to determine the current repo rate that would lead to an acceptable projection, under the assumption that *the path of the repo rate after the current month would follow the path anticipated by the markets?* This would typically require an extreme adjustment of the current repo rate, as a change in the repo rate for only one month would have to change the path of inflation over the following two years by enough to get the projected inflation rate two years in the future on track. A more sensible approach would surely involve adjusting the entire path of interest rates to one that the MPC would view as more sound, rather than acting as if the committee expected itself to behave in the future in the way currently anticipated by the markets, even though it was planning to depart substantially from the markets' expectation in the short run. But in this case, projections would have to be produced on the basis of an assumption about future policy other than the one corresponding to market expectations. The idea that the MPC would be able to avoid taking a stand (at least in its internal deliberations) on a reasonable future path of interest rates, by insisting on using the markets' forecast in its projections, is not tenable.

Most often, however, in practice markets can, and do, anticipate *current* policy decisions reasonably well (see especially Lildholdt and Wetherilt 2004 for the United Kingdom). So this concern may be

viewed as largely hypothetical. Moreover, if the problem was perceived as serious, then it could be largely met by also publicly revealing the adjustments made by the forecasters to the money-market yield curve to take account of estimated reactions.

Alternatively, and even simpler, since the inflation forecast is not published for a number of days after the MPC decision has been made, the forecasters could base their ex post forecast on the ex post reactions of the market to that decision. Admittedly, the choice of date(s) at which to measure the ex post reaction would be arbitrary, but then so too is the choice of dates on which to estimate the ex ante future path of rates. Moreover, should the market's reaction *not* be what the Bank/MPC wanted or expected, then the same argument as before—that the resulting published deviation of inflation from target should help to guide the market's expectation revisions—should presumably hold.

Even if the forecasters made *no adjustments* to take account of the current “surprise” decisions, so long as that was publicly known, then the published time path of inflation in the Inflation Report would give the market some idea of how the Bank expected that they *should* adjust their expectations; that is, if the current decision, followed by an unchanged path of future interest rates, led to inflation overshooting the target in the Inflation Report, then the market would be being guided to revise upward its expected future time path for interest rates.

A current concern is that few commentators seem to understand exactly on what basis the money-market yield curve used in the Bank of England's Inflation Report forecast *has* been constructed. Indeed, I have been led to understand that the ex ante forecast, *unadjusted* for the surprise element in the interest rate decision, continues to be used. This is reasonable so long as the surprise in the decision was minor, but what if it was not? Perhaps on such an occasion, the Bank/MPC would give some additional guidance.

But, in any case, and as noted earlier, there are limits to the extent of such “guidance” that the Bank of England can give by publishing a future deviation of inflation from target. In particular, a combination of a current surprise rise (fall) in the policy rate (perhaps to influence a current asset price boom or bust), together with a future forecast (mean) undershoot (overshoot) of inflation from

target might be hard (but not impossible) to justify to the general public. It would probably be much harder to justify a surprise rise to offset an asset boom than a cut during a bust, as events in the second half of 2007 indicate. However, the question of whether the authorities respond asymmetrically to asset-price fluctuations (up and down), and whether this may matter, is outside the scope of this paper.

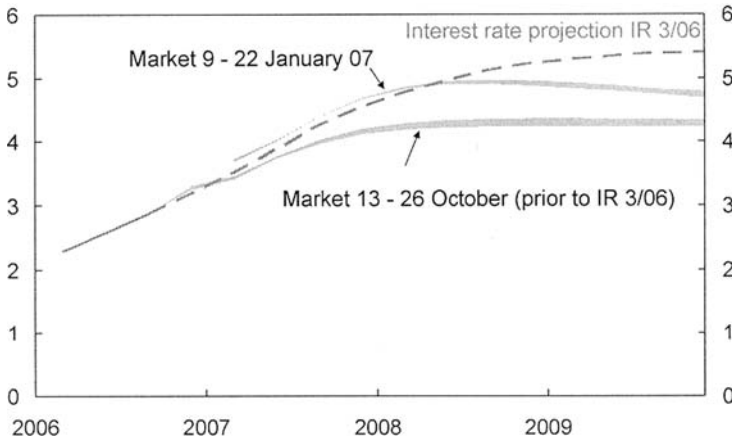
Just how serious these potential problems might ever become or—if they were perceived as serious—what steps might be taken in mitigation, is an issue that is beyond the scope or competence of this note. My gut feeling is that they probably would not be that serious in practice, but it does need careful watching. Be that as it may, I hope to have demonstrated that the UK MPC's current procedures on this front are not without their own inherent problems.

There are, also, somewhat similar problems with the use of a specific conditional policy forecast. How should the forecasters, for example, respond if the implied market yield curve does *not* then immediately move into line with the forecast set out by the MPC? The working assumption that is usually made is that the money-market yield curve will exactly, indeed slavishly, adjust to the MPC's prognostications. But this need not be so. Indeed, such a deviation is documented in a chart produced by Deputy Governor Bergo in a speech presented at the Foreign Exchange Seminar of the Association of Norwegian Economists, at which I was present (see Bergo 2007). This is shown as figure 3. When the Norges Bank interest rate projection of autumn 2006 was published, very short-term market forward interest rates did fall into line, but longer ones *did not*.¹⁰ Another nice issue that has arisen

¹⁰The Deputy Governor noted the following:

It is now almost three months since the previous Inflation Report was published. Since that time forward rates have increased and approached Norges Bank's interest rate path. Forward rates somewhat further out are still lower than our forecast. The reason may be that market participants have a different perception of the interest rate path that is necessary to stabilise inflation at target and to achieve stable developments in output and employment. Alternatively, the market may have the same short-term interest rate expectations as Norges Bank, but because of extraordinary conditions long-term bond prices are being pushed up and, consequently, long-term bond yields are being pushed down.

Figure 3. Norges Bank's Interest Rate Projection and Forward Rates



Source: Norges Bank.

in Norway is whether the Norges Bank is being time consistent in its own policy projections. This is addressed separately in the appendix.

There are questions about what such a discrepancy might imply and also how, if at all, it should be fed back into the next forecast. Should the forecasters give zero weight to the market (which, after all, now has the Norges Bank's prior policy forecast in its own information set and therefore has as much, or more, information than the MPC)? And, if not zero weight, what weighting in the MPC's forecast should be given to the discrepant forecasts?¹¹

¹¹This presumably depends on relative forecasting ability. That is dire, both for the central bank (see the chart in the *Financial Times*, January 30, 2007, on the NZ record) and for the market (for the United States, see Carriero, Favero, and Kaminska 2003, Diebold and Li 2003, Duffee 2002, Rudebusch 2002, and Rudebusch and Wu 2004; for Japan, see Thornton 2004). Wen Ben Lim and I intend to do further work on this for the United Kingdom. Perhaps for horizons longer than two quarters ahead, the constant interest rate assumption is not too bad after all.

Perhaps what the adoption of specific policy forecasts will do is to put more clearly under the academic microscope the (implicit or explicit) nature of the MPC's objective function and its time consistency. Academics will surely enjoy that exercise, but whether central bankers would also find that enjoyable is quite another question.

6. Conclusion

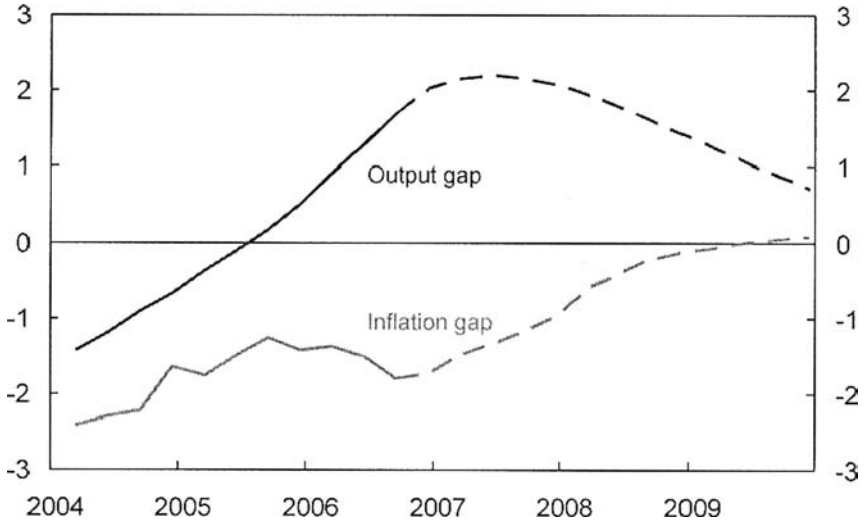
The constant interest rate (CIR) assumption had several beneficial aspects, one of which is an implicit humility about forecasting capabilities (official or market). But, under the influence of the recession of 2001–02, interest rates moved to such an exceptionally low level in many countries that the only plausible forecast/expectation was that they would revert to a higher, more normal level. The discrepancy between the latter plausible expectation and the CIR effectively led to the latter becoming untenable.

So what we now have, for those MPCs that reveal the basis of their conditional forecasts, is a choice between a market-based forecast and a forecast specifically chosen by the MPC. In *both* cases there will be problems of how to deal with discrepancies between these two alternatives. The specific forecast of the authorities should be (slightly) more informative, but there are offsetting problems. These problems include how to reach agreement in a committee of equals and whether the perception by the private sector of the extent of commitment of the MPC to its forecast path is properly aligned. Either way, what is fundamentally needed is a careful and candid description in accompanying statements and inflation reports of the thinking of each MPC. A picture (or graph) may paint a thousand words, but even such pictures need supporting explanations.

Appendix

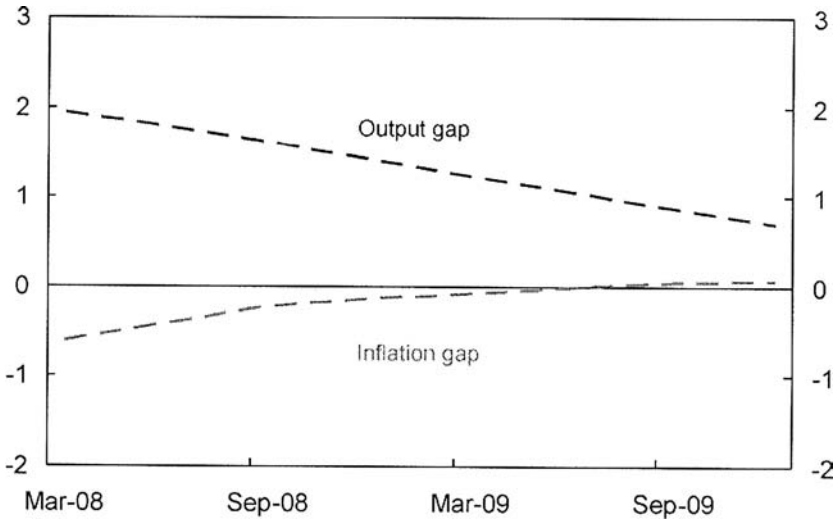
Consider the time paths for output and inflation produced in the Norges Bank forecast (March 2006), shown in figure 4, and then, assuming no shocks, just roll that same forecast forward to 2008 and 2009 (figure 5) (figures taken from the Deputy Governor's speech). In later years inflation is at target, but the output gap is still positive.

Figure 4. Trade-Off in Inflation Report, March 2006



Source: Norges Bank.

**Figure 5. Trade-Off in Inflation Report, March 2006
2008–09**



Source: Norges Bank.

If the loss function contains the output gap as an argument, this implies a time-varying coefficient upon it. The Deputy Governor commented as follows:

Let us now take a closer look at our projections in the previous Inflation Report. The inflation gap closes gradually from below, while the output gap closes from above. According to the Bank's view, these paths provide a reasonable trade-off between the objective of stabilising inflation at target and stabilising developments in output and employment.

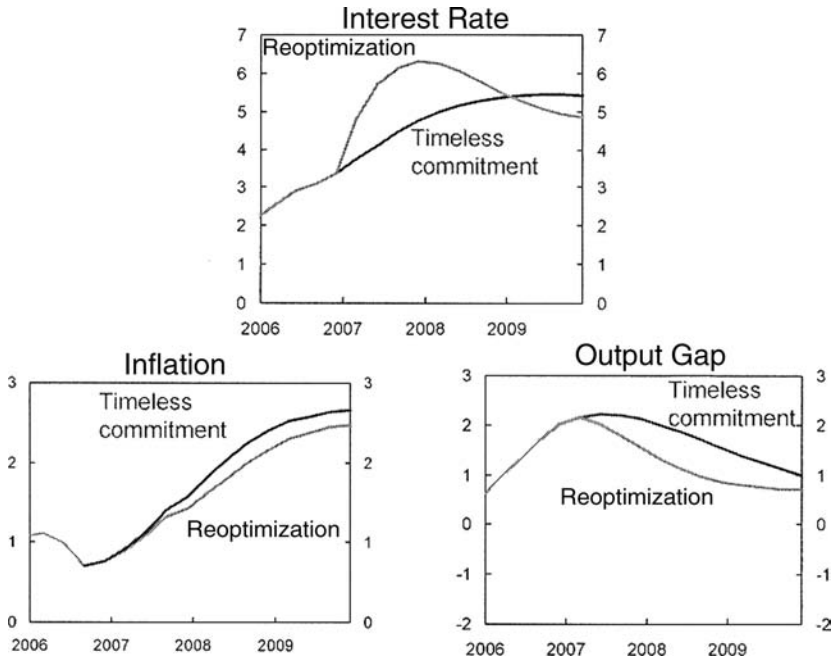
Let us now use a time machine and travel forward to 2008. This picture, which is the same picture as the previous one but for a shorter time period, gives an impression that we place less weight on the output gap. The picture becomes even clearer if we travel forward yet another year in time to 2009.

Inflation is now very near the target, while the output gap is still clearly positive. It may thus seem as if we are placing more weight on the output gap in the beginning of the period than at the end of the period. This suggests that the reference path in Inflation Report 3/06 is not consistent with a discretionary policy, where you make the best out of the situation in each period. Such a strategy would have involved a higher interest rate in order to provide a better balance between inflation and output towards the end of the projection period. Rather, it seems that the reference path has elements of commitment.

Let us therefore assume that we follow the response pattern we have committed ourselves to earlier. In the literature, one such strategy is referred to as commitment under a timeless perspective.¹² It is possible to calculate, within the confines of our models, an optimal interest rate path based on such a strategy.

In this example, we have been able to reconstruct (approximately) the reference path in Inflation Report 3/06 by minimising a loss function under commitment in a timeless perspective.

¹²See, for example, Woodford (1999). "Commentary: How Should Monetary Policy Be Conducted in an Era of Price Stability?" Paper presented at the Jackson Hole Conference, see <http://www.columbia.edu/%7Emw2230/jhole.pdf>.

Figure 6. Timeless Commitment versus Reoptimization

Source: Norges Bank.

To reconstruct the reference path, the weight on the output gap in the loss function, λ , has been set at 0.3. We also had to place a weight on changes in the interest rate in the loss function. This weight, which penalises large changes in the interest rate, can be defended based on considerations regarding robustness and financial stability.

That all sounds splendid, and academically very *à la mode*. The problem is that the alternative path of reoptimization (without commitment) using the same loss function, shown in figure 6, is extremely implausible. Would any central banker introduce a sharp, temporary spike in interest rates (in this case virtually doubling them), just to get output *lower* more quickly, and without that having much effect on getting, and keeping, inflation back to target?

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