

Evidence to Treasury Committee inquiry into 'The Monetary Policy Committee of the Bank of England: ten years on'

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Summary

This evidence looks at two main issues: the Bank's forecasting model (item 4.6 in the Committee's terms of reference), and the measure of inflation used in the inflation target (2.1). However I will suggest that the nature of the Bank's model has implications for the composition of the MPC (3.1), and I shall also comment on the transparency of the forecast (4.1). Discussion of the inflation measure will also include more general remarks about the amount of discretion allowed by the current system (2.5), the response to asset bubbles (1.3), and whether the Bank should be given additional instruments.

My main conclusions are as follows:

- 1) The Bank's model represents a considerable academic achievement, but it requires considerable expertise to use and interpret (paras 1-15 below)
- 2) The complexity of the Bank's model has implications for the expertise required of at least some external MPC members, which in turn may imply a change in the balance between internal and external members of the MPC. (paras 19-20)
- 3) The Bank could also adopt a more systematic approach to engaging the academic community in its model development (paras 16-18)
- 4) Transparency would be improved if the Bank published its own projections for future interest rates (paras 21-27)
- 5) There are arguments for focusing on output price inflation, or wage inflation, rather than consumer price inflation. (paras 28-35)
- 6) While it is too early to say how robust these arguments are, they emphasise the need to treat the 1-3% inflation range as a 'soft' target, that *should* be breached on occasion. (paras 36-40)
- 7) In theory, one such occasion could be the emergence of an asset price bubble. (para 41)
- 8) The Bank's role in stabilising the economy would be improved if it was given the ability to temporarily change a few selected fiscal instruments. (paras 42-47)

The Bank's Forecasting Model

1. At the turn of the century, the Bank embarked on an ambitious project to build a new macroeconomic model that would form the basis of its forecasting activity. In 2004 that model, BEQM, was completed, extensively tested, and used for the first time. A natural question to ask is whether BEQM, to borrow a phrase from the committee, is 'fit for purpose'. (Terms of reference, point 4.6.)
2. To answer this question, it is useful to provide some background about the nature of macroeconomic models, which are rather different from models in, say, engineering. (For those who want to skip this discussion, my assessment begins with paragraph 10.) The first decision the Bank had to make was what type of model to construct. When modelling an economy, there is a real tension between theory and macro evidence. In most scientific disciplines, theory and evidence work together: theories are developed to explain the data, and if evidence contradicts theory, theory adapts. This methodology is less applicable in macroeconomics for two reasons: first, macroeconomists cannot carry out experiments on a macro scale, and second, evidence from the past is generally indecisive.

The nature of forecasting models

3. As a result, different techniques to modelling the macroeconomy exist, and they differ primarily in the weight they give to historical evidence relative to theory. At one extreme, we can simply model the statistical correlations observed in the past among key macroeconomic variables, and forecast by projecting those correlations to continue. This technique (generally termed VAR modelling) makes almost no demands on macroeconomic theory, and instead focuses on the econometric techniques used to capture historic relationships. At the other extreme we have macroeconomic models that follow precisely a particular theoretical perspective, where parameter values are calibrated rather than econometrically estimated.¹ Such models go by the rather pretentious name of Dynamic Stochastic General Equilibrium (DSGE) models.
4. From the 1970s to the 1990s, the models used by governments and central banks to forecast the economy lay somewhere between these two extremes. They looked to macro theory to provide a basis for their equations, but they tended to be fairly eclectic in their choice and use of theory. Their equations were nearly always econometrically estimated, but theory was used to place restrictions on what was estimated. We can label these 'compromise' models Structural Econometric Models (SEMs)².
5. However, SEMs were increasingly criticised by academic economists: time series econometricians moved towards VARs, and macroeconomists adopted DSGE models. The criticisms from DSGE modellers essentially

¹ Calibration involves choosing parameter values from other sources of information than time series econometric estimation. This can include evidence from microeconomic, cross section studies about individual behaviour.

² The models I helped construct at the National Institute and elsewhere in the 1980s and 1990s were SEMs.

amounted to claims that SEMs allowed the data to compromise or distort theory, so that theory was not applied consistently. These claims had some force, for the very simple reason that econometric evidence often rejected the consistent application of theory. However those using DSGE models were able to ignore this difficulty, simply because these models were not econometrically estimated on an equation by equation basis.

The Bank's new model

6. In developing a new model to lie at the heart of its forecasting process, the Bank therefore had to make a critical choice at the very beginning: what type of macro model was it going to develop? Here the Bank took a bold decision, which was to develop a DSGE model suitable for forecasting. The decision was bold for two reasons: first, there were only a few examples of DSGE models used for forecasting around³, and second, to build such a model was academically ambitious.

7. The DSGE models built by academics are used for either policy analysis (e.g. 'what is the effect of changing interest rates?') or understanding broad features of macro experience. In both these cases, inconsistencies between aspects of the model and evidence can be ignored. For example, no attempt will generally be made to see whether the model's consumption function tracks the data on consumption. (Indeed, this is why SEMs, which did not ignore this evidence, were often forced to override theory). However, for a model to be useful in forecasting its individual equations must track the data.

8. To get round this problem, the Bank split BEQM into two (see Harrison et al, 2004). One half, its 'core', was an elaborate DSGE model. The other half, the 'non-core', was a set of data based econometric equations linking core values to the data. The core allowed the model to consistently apply theory in a rigorous way, while the non-core made it possible for forecasters to use the model.

9. While estimating the non-core equations is relatively straightforward, building the core was an extremely ambitious task for the following reason. Academic DSGE models tend to be small, in the sense of involving only a subset of macro variables. However forecasting models tend to be more elaborate, because forecasters want to incorporate a wide range of information. So the Bank needed to build a large DSGE model. This required considerable efforts to ensure theoretical consistency. To put it crudely, it would require hundreds of pages of algebra.

Fit for Purpose?

10. Hopefully the above discussion suggests an answer to this question has to have two parts: did the Bank build the right kind of model, and given that decision, is BEQM a good example of that class of model?

11. I believe the majority of academic macroeconomists would answer yes to the first question. By building a DSGE model, the Bank aligned itself with current mainstream academic practice. However, you would probably get a

³ Two important examples were the models maintained by the Bank of Canada and the Reserve Bank of New Zealand.

different answer from many eminent time series econometricians. They could argue that DSGE models almost always stray too far from the data, and that therefore any decisions based on these models could be misleading. BEQM guards against that problem to some extent through its non-core equations, but only partially.⁴

12. As the above discussion suggests, the Bank's decision could not satisfy everyone. However, although BEQM is at the centre of the Bank's forecasting activities, the Bank also employs a 'suite' of alternative models that can be used in the forecasting process.⁵ This suite includes data-based VARs. So alternative approaches to macromodelling are not neglected or ignored. Furthermore, as BEQM will be used for policy analysis as well as forecasting, it would have been a mistake to take a very data based approach in building this model. So in my view the Bank's decision to give a strong role to theory in its model building was correct, although with a caveat about resources that I note below.

13. Having taken that decision, is BEQM a good DSGE model? Here my answer is unequivocal.⁶ BEQM represents a considerable achievement, from both an academic point of view and from a policy maker's perspective. BEQM was built by a small team, but this team comprised exceptionally able individuals who complimented each other in the skills they brought to the exercise. The model building process was also very well managed. As I noted above, pages of algebra were required, and pages of algebra were produced. I was particularly impressed by the dedication the team showed in fulfilling the DSGE goal of consistently applying theory: invariably this made their task more difficult to achieve, and it would have been all too easy to cut corners, but few corners were cut.

14. My only mild criticism is that the Bank has been rather reticent in publicising its achievement. Although the Bank held a conference in early 2004 to 'launch' the model, details of the model were not made available at this conference, and only published considerably later. Whatever the reasons for this were, I think an opportunity to engage academic and other expertise in the detail of how BEQM is constructed was missed.

15. The Committee can therefore be reassured that the Bank's modelling is much more than 'fit for purpose' - it represents the 'state of the art' as far as current academic practice is concerned. However, by adopting the approach that they did, I think there are implications for other aspects of the Committee's inquiry which should be noted.

Putting the model in its place

16. As a result of the Bank's endeavours, BEQM is an extremely advanced, highly complex tool, both in terms of its detailed structure and from

⁴ The reasons why this is only a partial safeguard are somewhat technical: in particular, the non-core is 'recursive' to the core.

⁵ As I have no direct knowledge of the Bank's forecast deliberations, I cannot say how much these alternative models are used, how often conflict arises with the main model and how such conflicts are handled.

⁶ I should at this point declare an 'interest': the Bank employed me as an external advisor on the construction of BEQM, given my experience in constructing UK macromodels. However, my impact on strategic decisions about the model was fairly small.

a conceptual point of view. However, this does not mean that it necessarily produces good forecasts. Indeed, as I hope the above discussion suggests, it is the type of model that could, if mishandled, lead to serious forecast errors. This has two important implications.

17. First, the Bank itself needs to ensure that considerable resources are devoted to analysing and developing BEQM. Generating sensible forecasts with BEQM requires considerable expertise in terms of understanding how BEQM works. As a result, there is a danger that too small a team might get bogged down in the process of producing regular forecasts, and that as a result the model itself may decay. I know from experience that this is a real possibility.

18. Luckily, the Bank has large resources available. However, considerable skill is required in ensuring that these resources are applied to the maintenance and development of BEQM in an optimum way. In addition, I feel that outside academic expertise is underutilised at present. When H.M.Treasury was responsible for demand management, it had an Academic Panel to discuss its model and related issues. While this particular structure had some drawbacks, there is a danger that current academic arrangements at the Bank are too ad hoc. To put the point another way, the Committee needs to know which academics it can turn to who will have a good knowledge of the model (or suite of models) and who can give an independent account of its suitability.

19. Second, the complexity of BEQM has implications for the membership of MPC. I believe it is important that at least one of the external members of MPC has the expertise to be able to critically understand how BEQM works, so that the forecasts it produces can be properly assessed. From informal discussions at the Bank I know how important the presence of such an economist on the MPC can be in keeping Bank staff on their toes. In practice, I believe this means that at least one external MPC member should be an academic macroeconomist with a reasonable knowledge of DSGE models.

20. I also recognise that there are also good arguments for having external academic expertise in some other areas, such as labour markets, and I also recognise that it is important to have external members from other areas besides academia. This may suggest adding one or two more external MPC members. If it is felt that this makes the MPC too large, my own view would be that the number of Bank members could be reduced to compensate. While I know this suggestion would not be popular with the Bank, I can see no objective reason why Bank members should be in a majority on MPC, and I would have thought the Bank should be capable of ensuring that all views within the Bank get represented by its own members on MPC.

Forecast Transparency, and the interest rate assumption

21. The Bank provides a good deal of information about its forecast in the Inflation Report. For most readers of the Inflation Report this is probably sufficient. As the forecast comes from a model, then in principle the Bank could give much more information: not just paths for all model variables, but also a breakdown between equation projections and residuals (off-model judgement). This would throw considerable light on the detailed discussions that went on during the forecast, as well as the contribution of the model to

that forecast. However this detail would only inform the public debate if there were sufficient economists outside the Bank able and willing to interpret it. I have little idea whether this is the case or not, but if it was the case then I can see no reason why this detail should not be published.

22. One aspect of the Bank's forecast that I have always found puzzling is their assumption about interest rates. Every other variable in the forecast involves the Bank's best judgement about what will happen. The exception is interest rates, where the Bank substitutes the market's projection for its own. Ironically, of course, this is one area where the Bank clearly has more expertise than the market. Worse still, market projections may well be based on a quite different view about the rest of the forecast. In that sense, a forecast that uses them may be internally inconsistent.

23. So why does the Bank not publish its own projection of the future course of interest rates? More specifically, when it knows that the market's perception is incorrect, why does it hide this from the public? I have never heard a convincing reason for this lack of transparency. Furthermore, I think there will be occasions where it is positively advantageous for the Bank to indicate its own expectations.

24. This view was reinforced when I spent six months at the Reserve Bank of New Zealand in 2003/4.⁷ The Reserve Bank does precisely what I suggest, which is to publish a projected path for interest rates over the forecast horizon. This gives the public a clear indication of what the Bank thinks is the 'trend' level of real interest rates, and how long it expects any deviation from this trend to persist. In contrast, in the UK much wasted effort is spent by city economists pouring over the exact wording of MPC minutes in an attempt to guess just this.

25. One argument that I have heard is that it would be much more difficult to get the MPC to agree on a path for interest rates, rather than just make a decision about current rates. However, I think this argument reveals a more basic fear or misapprehension, which is that a published interest rate path will be seen as some kind of unconditional commitment (or decision) about what future interest rates will be. It clearly does not: it is a forecast, based on current information and the rest of the forecast. If, as will certainly happen, actual events do not follow the forecast, or new information arises, then judgements will change. In this respect, I cannot see why it is more difficult for the MPC to project future interest rates than it is to project future GDP.

26. Actually, having to explain why interest rates are not what they were projected to be has a distinct virtue. One of the concerns that macroeconomists have about monetary policy is that it will be revised over time simply because it is convenient to do so, rather than because the world has changed. (This is the problem of 'time inconsistency'.) Publishing a projected path for interest rates makes it more difficult for the Bank to behave in this way, which should add to its credibility.

27. Publishing interest rate paths also has another, extremely important, advantage, which the Reserve Bank of New Zealand does exploit. At present the Bank publishes a central projection, and a fan chart. It gives a verbal indication of possible uncertainties. However, it has no way of indicating how it will react to those uncertainties. What it could do is publish alternative

⁷ New Zealand's central bank was one of the pioneers of inflation targeting.

scenarios, or forecast variants, which illustrated what might happen in particular circumstances – for example, if oil prices behaved in a very different way to the central projection. This could provide invaluable information to the public. However, at present it cannot do this because it publishes just one path for interest rates, based on market perceptions.

The inflation target

28. The merits or otherwise of a formal inflation target has been extensively discussed in the academic literature. One view, which we might label as the 'pre-Bernanke US Fed view', is that an explicit inflation target is unnecessary: demand stabilisation involves both output and inflation, and it is best left to the central bank to determine how these two targets are managed. An opposing view is that explicit inflation targets are essential in providing a clear signal to the public.

29. I believe the current UK arrangements, which involve an explicit inflation target which is symmetrical, but which is enforced in only a mild way (through the letter arrangement) sit comfortably between these two views. However, we have yet to see whether the Bank regards the 1-3% target as a 'hard' target that it must do everything it can to hit, or a 'soft' target that can be missed in certain circumstances. I want to argue for the latter, using one particular issue. The issue is what measure of inflation should be targeted?

30. Adopting a consumer price target may seem natural enough, and so it may surprise Committee members that recent academic work views this as questionable, if not a mistake. Instead, current academic practice suggests targeting a measure of inflation based on output prices, with possibly some additional reference to wage inflation. Is this just an academic foible or fashion, or is there an important message here for practical policy? To answer this, I need to give some intuition as to where this academic result comes from, although I will try and go easy on the technical details. (A more technical account can be found in Kirsanova et al, 2006a.)

Inflation and relative price movements

31. The first question we need to ask is perhaps the most basic question of all – why is inflation costly? The 'man on the street' answer will generally involve falling real incomes, but of course inflation involves all nominal variables increasing at the same average rate, so real incomes will not change. One of the standard academic responses to why inflation is costly is that it leads to unwarranted movements in relative prices.⁸

32. The argument goes as follows. When preferences or supply conditions for particular products change, this leads to changes in relative prices, which in a properly functioning market is exactly what is required to bring demand and supply into line, and allocate resources optimally. However, if inflation is positive, prices will be changing to keep up with inflation, and inevitably individual prices will respond to inflation at different times. As a result, relative prices will change, without any reason in terms of preferences or supply

⁸ Another is that it makes holding money costly. As Friedman emphasised, this argument implies that the optimal level of inflation should be negative, so that nominal interest rates can be zero. However such a policy will make the economy vulnerable to deflationary shocks.

conditions. These relative price changes are what economists term 'distortionary': they imply movements in the relative output of goods that are unwarranted by underlying micro conditions, and as a result welfare will deteriorate.

33. For the consumer, such movements in relative prices are a nuisance, but their impact can be partially mitigated by changing the amount that is bought as relative prices vary. Although ideally I would like to eat an equal quantity of apples and pears, if the price of apples falls at least I can eat more apples. The overall benefits from consumption will not be greatly affected. However, workers typically cannot react in the same way. If they work in a firm that has seen demand for its product fall (because it has raised its price to keep up with inflation, whereas its competitors will not do so for some time), then employment in that firm will fall. The worker is unlikely to be able to make up the shortfall in hours worked by working those missing hours in another firm where demand is temporarily high. As a result, the quantity of labour supplied by individual workers will vary over time, and this will be costly (particularly if this involves spells of unemployment).

34. So the costs of inflation that follow from relative price changes will be mainly located in the labour market rather than with consumers. It follows that, from the point of view of national welfare, the relevant measure of inflation relates to what is produced in a country, and not what is consumed. As a result, the natural target from a welfare point of view should be some measure of output price inflation (like the GDP deflator) rather than the CPI. For the same reason, inertia in wage setting will lead to distortions in labour supply, and so controlling wage inflation may be important alongside output price inflation.

35. The academic literature that has quantified these costs of inflation is in its infancy, and so it is too early to tell how robust this argument is, or whether there are important counter arguments. As a result, I would not suggest changing the type of inflation target just yet. However, I think the discussion does emphasise some of the merits of a soft inflation target over a more strict version of inflation targeting, as well as throwing some light on other debates. (It also suggests that a very detailed discussion about the precise composition of any inflation measure is missing the wood for the trees.)

The importance of a 'soft' target

36. Differences between consumer price inflation and output price inflation are not normally large (as long as inflation is low), and are likely to be temporary and reversed, as they mainly reflect movements in the real exchange rate. Nevertheless, a consumer price inflation target that was rigidly enforced (as far as was possible) could lead to policy errors. For example, following an appreciation in sterling that reduced the cost of imported goods, the MPC might cut interest rates in an effort to stabilise the CPI, leading to rising output price inflation, and that could be costly. In practice this is unlikely to happen very often, in part because domestic retailers absorb a good part of any exchange rate change in profit margins.

37. However, the lesson I would draw from this example is that the Bank should look at other inflation measures besides the CPI, and be prepared to

breach the 1% bands in certain situations where the CPI was out of line with either output prices or wage inflation.

38. A very similar point arises with a more topical example, where CPI inflation increases because of sharp rises in commodity prices, such as the price of oil. An increase in the CPI that reflects higher oil prices, but which does not encourage an increase in the rate of change of unrelated prices, is largely harmless in my view, and should not lead to any policy response. If that leads to CPI inflation going over 3%, so be it – this is precisely the kind of flexibility that the current system should allow.

Allowing (and requiring) MPC discretion, and bubbles

39. The argument above can be made more general. It is widely agreed that a low average inflation rate is a good thing, and this can justify an explicit, but soft, inflation target. However, as macroeconomists we still have a great deal to learn about the welfare costs of business cycles, such as which measures of inflation are more important, the relative importance of inflation relative to output, and the interaction with other distortions. As a result, it would be folly to nail our colours to the wall prematurely on any of these issues.

40. Luckily, we have in the MPC an institution which is well designed, and which has established considerable credibility. As a result, we can afford to give the institution considerable discretion on these issues, as long as it is transparent in the judgement it makes. It should therefore feel free to breach the inflation target on a temporary basis, if it has good reasons for doing so. Indeed, if there are good arguments for the inflation target being breached, we should *expect* the MPC to do so, and we should not let it hide behind a rigid interpretation of the target.

41. This general argument is relevant to the debate about house and other asset prices, which the Committee raises. The argument here is mainly about bubbles. Asset prices are subject to fads or bubbles ('irrational exuberance'), and the question is whether monetary policy has any role in trying to avoid or 'prick' these bubbles. The official Bank line appears to be that movements in these prices are only relevant in so far as they impinge on the 2% target. This line can be interpreted in two ways. The first interpretation is that such asset price movements are essentially harmless, or unstoppable, or can only be prevented by causing problems equally as great. This is largely an empirical judgement, that others are better able to make. The second interpretation is that the Bank could stop these bubbles, in a way that might be generally beneficial, but it will not do so because its official job is to hit an inflation target. This second interpretation runs counter to my argument about discretion above. In my view, if a bubble arose that might cause serious costs in terms of the misallocation of resources, then the Bank should seriously consider whether it should try and remove this bubble, even if this meant temporarily missing the inflation target.

Additional instruments

42. One of the difficulties the Bank has in thinking about issues like asset price bubbles is that it has in practice only one instrument: the rate of interest. In the past I have argued that we should consider giving the Bank limited, short term control over a few fiscal instruments as well (Wren-Lewis, 2002). One role that these additional instruments could have is to dampen irrational exuberance.

43. However, the case for extending the Bank's role in this way is much more general. The Bank should be seen as the institution that has responsibility for short term macroeconomic stabilisation. Fiscal instruments differ widely in their impact and ease of use, but some at least can in principle be used for short term stabilisation. The conditions under which interest rates are the only instrument required to stabilise the economy are very stringent, and unlikely to apply in practice (Leith and Wren-Lewis, 2006). As a result, the economic case for giving the Bank additional instruments seems compelling. We should not allow the rather benign experience of the past ten years to allow us to neglect these advantages.

44. At present these fiscal instruments can only be used for short term stabilisation by the Chancellor. For the Chancellor to do so raises two problems. First, there are good economic arguments for giving the short term stabilisation role to an independent institution, and these arguments apply to the business of short term stabilisation, not to monetary policy per se. Second, having two institutions trying to do the same thing raises serious co-ordination issues.

45. Giving limited control of selected fiscal instruments to the Bank to change temporarily does not compromise either the government's microeconomic role in determining the tax structure, or its long term macroeconomic role of managing the public finances. I have argued elsewhere that there is a case for a new form of watchdog to monitor the latter, but this should not be the Bank (Kirsanova, Leith and Wren-Lewis, 2006b). Fortunately macroeconomic issues of stabilisation can be largely separated from long term issues of public debt management.

46. The political arguments against this proposal fail to distinguish why changing interest rates is fundamentally different from changing a tax rate, except for the labels we give them. Both have distributional consequences, but under my proposal these consequences would be short term. Both impact on the government finances, so no new arrangements are required to handle these (although various mechanisms could be put into place nonetheless).

47. Of course, we need to establish which tax rates the Bank would find useful to change. Fortunately, one of the many advantages of BEQM is that it includes a wide array of fiscal instruments (and can be easily adapted to include others), and so it represents an ideal tool to carry out such an investigation.

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