The Monetary Policy Committee's use of Optimal Policy Projections

1. The MPC's monetary policy remit requires it to maintain price stability, defined by the Government to be a 12-month increase in CPI of 2%. The remit recognises that inflation may deviate temporarily from the target on account of shocks, however. Since 2013, the remit has explicitly recognised that in these circumstances, bringing inflation back to target too rapidly could cause volatility in output and employment that is undesirable. The remit requires the MPC to consider, balance and explain such short-run monetary policy trade-offs. While the inflation target of 2% applies at all times, the remit recognises that it can be desirable to manage trade-offs between inflation and activity.

2. This trade-off management in the MPC's remit is consistent with an economics literature on 'flexible inflation targeting'. The positive relationship between inflation and the output gap, which captures the extent to which activity is above or below the economy's potential, encapsulated in the slope of the Phillips Curve lies at the core of this monetary policy trade-off. [1] The central bank can address inflationary pressures only by compressing output. This may be desirable when the economy is hit by demand shocks which push inflation and the output gap in the same direction. But it generates a crucial trade-off in the presence of supply shocks or cost-push shocks that can move inflation and output in opposite directions.

3. During the preparation of the MPC's forecasts, Bank staff produce model-based simulations, Optimal Policy Projections (OPPs), designed to explore this policy problem. [2] They seek to identify the best outcomes – in terms of inflation and the output gap – that monetary policy could achieve, and the policy path that would deliver them. And although there may not always be a trade-off between inflation and activity, the OPPs remain useful in such circumstances by helping to identify the optimal policy stance to return inflation to target and close the output gap.

4. This is inevitably a highly conditional exercise. The OPPs take the MPC's forecast as given, assume that it is known and believed by all, and explore whether adjusting monetary policy relative to the market curve on which the forecast is conditioned can improve economic outcomes. [3]

5. The OPPs are not a perfect guide to policy. Like all model-based exercises, they abstract from a number of important real-world policy considerations. For example, there is no role for uncertainty or risks, whereas, in reality, uncertainty about the outlook is likely to be an important factor in policy decisions. There is also no time variation in the monetary transmission mechanism, for example to capture

---

[1] Originally formulated by Phillips (1958), albeit as a relationship between wage growth and unemployment.
[2] OPPs have also been used by several other central banks, including the Federal Reserve which publishes the paths in its Tealbook B, the Norges Bank and the Riksbank.
[3] In using a different model to produce OPPs from that used to produce the MPC's forecast, the Bank's approach follows that of Svennson and Tetlow (2005).

possible changes in the way the economy works over time. And the OPPs do not consider interactions with other policymakers and tools.

6. The policy model that is used for the OPPs formalises the monetary transmission mechanism (MTM). It is a slightly simplified version of the DSGE model used in the production of the MPC's forecast, Compass, replacing rational expectations with bounded rationality. [4] While agents in this model still have perfect foresight of how the economy will evolve, they discount their knowledge of the future. This makes real interest rates in the distant future less relevant for current consumption decisions and therefore dampens the so-called 'forward guidance puzzle' that would otherwise arise. [5]

7. The OPPs take the MPC's forecast as given, and simulate optimal policy responses conditional on that forecast.[6] The policy problem is solved under the assumption that the policymaker sets policy in a time-consistent way, such that they re-optimise and decide on policy in every period. An alternative would be to assume that the policymaker can credibly commit to a state-contingent policy plan, and solve the problem only once for all periods. But in reality, it would likely be both infeasible and undesirable for the MPC to commit to such a plan, not least because it would tie the hands of future committees. [7]

8. The per-period loss function used to simulate the OPPs is:

$$L_t = (\pi_t - \pi^*)^2 + \lambda(y_t - y_t^*)^2 + \delta(\Delta i_t)^2$$

where the parameters are set such that the policymaker dislikes in equal measure the marginal effect of: a 1 percentage point deviation of annual inflation from target; a 1/ λ percentage point deviation in the output gap; and a 1/ δ percentage point change in the quarterly interest rate.

9. The final term in the loss function implies that policymakers prefer small policy rate changes to large ones. The inclusion of such 'smoothing' in the loss function leads to gradual changes in policy paths and rules out sudden policy reversals without explicitly needing to introduce non-linearity. This helps to generate policies that are both stable and predictable. Calibrating the weight on interest rate smoothing is difficult, and given the lack of a reasonable anchor, staff routinely show the MPC OPPs under a range of different assumptions.

10. The parameter attached to the output gap deviations, λ, captures the essence of the monetary policy trade-off and formally measures how wide an output gap the policymaker is willing to bear in order to keep inflation close to target. Previous Bank analysis has sought to identify the MPC's implied lambda over the inflation targeting

[4] In the spirit of Gabaix (2020). See Burgess et al (2013) for more details on Compass.
[5] See Del Negro, Giannoni and Patterson (2015) for a more detailed exposition of the forward guidance puzzle.
[6] For more details on toolkit and optimal policy solution, see Dennis (2007) and Harrison and Waldron (2021).
[7] See Broadbent (2022).

era, returning an estimate of 0.25 for the post-global financial crisis sample since 2008, and explored the reasons why it may vary over time. [8]

11. The OPPs can inform the MPC's decision-making in a variety of ways. [9] The OPPs can be useful for illustrating trade-offs in the forecast and demonstrating the likely path for rates that might be appropriate given a particular forecast. While this can only be an input for policymakers, given the number of strong assumptions that the OPPs rely on, it can be a useful discussion point, and help to inform communications. It provides another lens on the policy outlook to sit alongside the forecasts conditioned on the market curve and a constant path for Bank Rate.

[8] For more details, see Carney (2017).
[9] For past examples where OPPs have been used in MPC member speeches, see Saunders (2016), Tenreyro (2018) and Haskell (2019).