To raise or not to raise interest rates?

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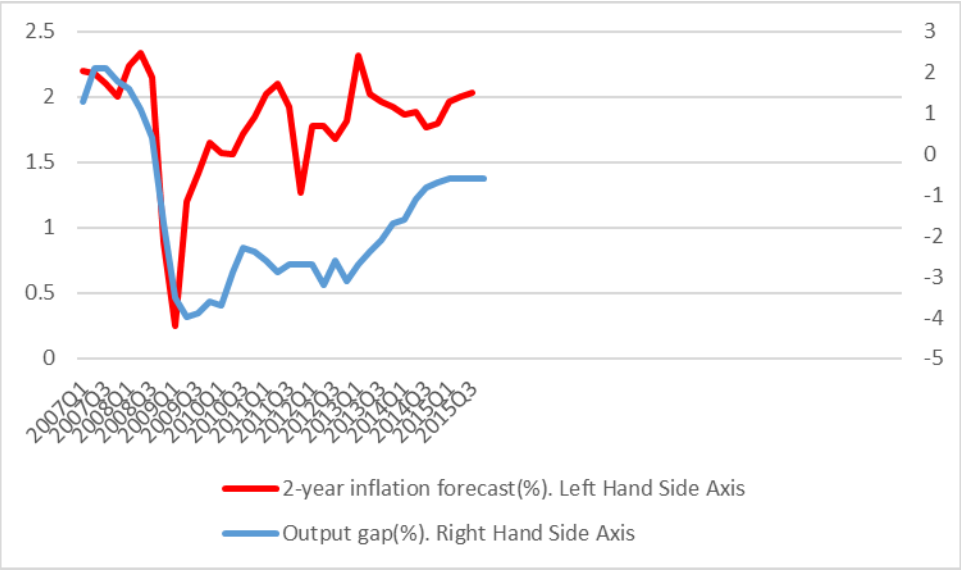
"*The current economic outlook in the UK as well as global market conditions justify a policy rate of 0.5%. In fact, if we are looking at the international environment for policy rate "hints", financial volatility rather than the federal funds rate is the variable to keep an eye on. Starting with small and carefully implemented Monetary Policy Committee (MPC) decisions, the policy rate will probably settle to around 2.8%, which is much lower than the 5% policy rate commonly observed prior to the financial crisis.*"

When will the Bank of England's Monetary Policy Committee (MPC) raise the policy rate and should it follow the lead of the Fed when (and if) the latter decides to hike?

To answer these questions, we rely on the 2–year average CPI inflation forecast (based on market expectations and available from the Bank of England's *Inflation Report*) and the Office for Budgetary Responsibility (OBR) output gap measure (that is, GDP output relative to equilibrium); the latter proxies spare capacity in the UK economy. Both of these variables are plotted in **Chart 1**.

Chart 1: 2-year inflation forecast and output gap



Notice that the 2-year inflation forecast is just above the 2% target whereas output appears to be just below equilibrium (the output gap is "only" -0.6%). What do these economic variables imply for monetary policy?

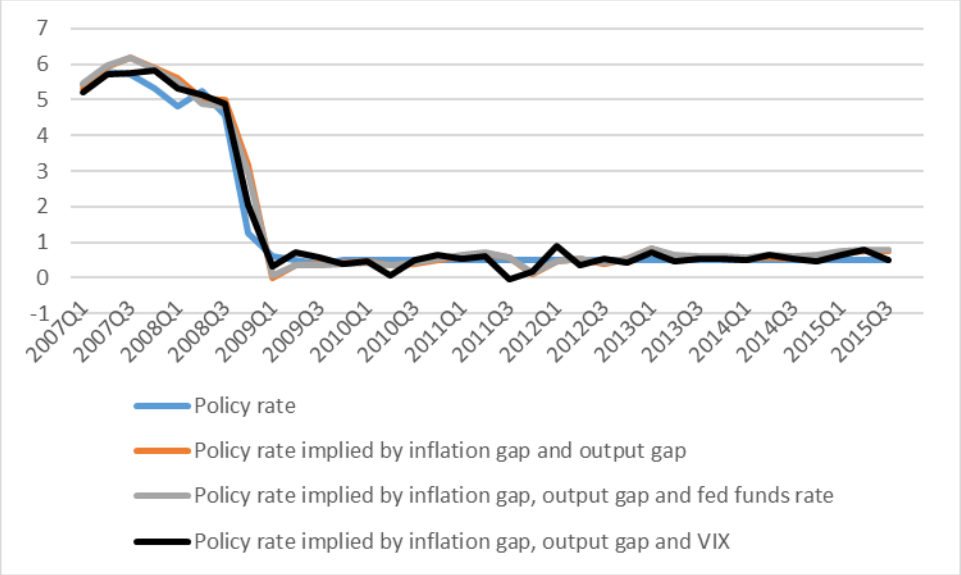
We run a so-called policy rule where the BoE policy rate responds to its past (the "smoothness" effect) and the variables reported in **Chart 1**. The idea is that when CPI inflation is expected to rise above the 2% target (in which case the inflation gap is positive) and/or output exceeds equilibrium (in which case the output gap is positive),

the MPC responds by raising the policy rate. Our policy rate rule is in fact non-linear in the sense that the MPC's response to inflation and output is allowed to be more aggressive when inflation and output are further away from the inflation target and equilibrium output, respectively.

The policy rate rule is then augmented to account for a possible reaction **either** to the federal funds rate **or** to market expectations of near-term volatility conveyed by S&P 500 stock index option prices (captured by changes in the Chicago Board Options Exchange VIX index). The idea is that either the MPC keeps an eye on policy setting behaviour by the Fed (that is, the MPC hikes when the Fed hikes) or that the MPC lowers the policy rate when global market volatility (captured here by the VIX index) is on the rise. These alternative rules are discussed in the **Appendix**.

Chart 2 plots the BoE policy rate together with the policy rate implied by alternative rules

Chart 2: BoE policy rate and policy rate implied by alternative rules



Notice the following:

1. The policy rule implied by inflation gap and output gap suggests a hike to 0.75% in the third quarter of 2015 whereas the policy rule implied by inflation gap, output gap and the federal funds rate suggests a hike to 0.80% in the third quarter of 2015. Hence, both rules suggests that the MPC should have already hiked by now!
2. On the other hand, the policy rule implied by inflation gap, output gap and changes in the VIX index suggests that the policy rate should indeed be what we observe today, that, is, 0.50%
3. So, which rule should we "trust" more? The policy rate which responds to inflation gap, output gap and changes in the VIX index fits the data "best" (in terms of explanatory power; see **Appendix**).

4. In other words, if we are looking at the international environment for policy rate "hints", financial volatility rather than the federal funds rate is the variable to keep an eye on!
5. Equally important, our preferred model (that is, the one accounting for financial volatility) suggests an equilibrium policy rate of 2.8%. In other words, it appears, in line with what most policy commentators expect, that when the MPC decides to start hiking (with small and cautious steps), the policy rate will eventually settle to around 2.8%, that is, much lower than the 5% policy rate we were used to observe prior to the financial crisis.
6. Needless to say, the main message of this blog piece is that a policy rate of 0.5% we observe today is about right *if, and only if*, one had to set policy by choosing among the rules described above. We have argued that a model in which the MPC keeps an eye on all inflation gap, output gap and the VIX provides a good description of how the policy rate has evolved over time.

What we have not answered yet is when the MPC intends to hike. Will this happen around the turn of this year as suggested by BoE governor Mark Carney? Based on our preferred model, the answer depends on (a) whether inflation expectations are revised upwards, (b) spare capacity in the economy disappears and (c) the recent global market volatility recedes quickly. If any of the above happens, then it is more likely than not that we will see a policy rate hike in the last quarter of 2015 or the first quarter of 2016.

Appendix

We estimate our policy rules using Ordinary Least Squares with heteroskedasticity and autocorrelation robust standard errors based on quarterly data over 1998-2015. In particular we estimate 3 rules:

$$i_t = \rho_i i_{t-1} + (1-\rho_i)\{\bar{i} + \rho_{\pi,1}(\pi_{t+8} - \pi^T) + \rho_{\pi,2}(\pi_{t+8} - \pi^T)^2 + \rho_{y,1} y_t + \rho_{y,2} y_t^2\} + error_t \quad (1)$$

$$i_t = \rho_i i_{t-1} + (1-\rho_i)\{\bar{i} + \rho_{\pi,1}(\pi_{t+8} - \pi^T) + \rho_{\pi,2}(\pi_{t+8} - \pi^T)^2 + \rho_{y,1} y_t + \rho_{y,2} y_t^2 + \rho_{fed} i^{fed}{}_t\} + \\ + error_t \quad (2)$$

$$i_t = \rho_i i_{t-1} + (1-\rho_i)\{\bar{i} + \rho_{\pi,1}(\pi_{t+8} - \pi^T) + \rho_{\pi,2}(\pi_{t+8} - \pi^T)^2 + \rho_{y,1} y_t + \rho_{y,2} y_t^2 + \\ + \rho_{vix}(vix_t - vix_{t-1}\} + error_t \quad (3)$$

where i_t is the BoE policy rate, $\bar{i}$ is the equilibrium nominal policy rate, assumed constant, $(\pi_{t+8} - \pi^T)$ is the deviation of the 2-year inflation forecast from the target, y_t is the output gap, $i^{fed}{}_t$ is the federal funds rate and vix_t is the CBOE volatility index.

Model 3 has a better fit (adjusted R-squared=98.0%; regression standard error=0.32) than model 1 (adjusted R-squared=97.0%; regression standard error=0.40) and model 2 (adjusted R-squared=97.2%; regression standard error=0.38).