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## Predicting Bank of England's asset purchase decisions with MPC voting records

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# **Predicting Bank of England's Asset Purchase Decisions with MPC Voting Records**

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## **Predicting Bank of England's Asset Purchase Decisions with MPC Voting Records**

### **Abstract**

We use MPC voting records to predict changes in the volume of asset purchases. We find, first, that minority voting favoring an increase in the volume of asset purchases raises the probability of an actual increase at the next meeting. Second, minority voting supporting a higher Bank Rate decreases the likelihood of further asset purchases.

Keywords: Asset Purchases, Bank of England, Monetary Policy, Monetary Policy Committee, Predictability, Voting Records.

JEL: D71, E43, E52, E58.

## 1. Introduction

On March 5, 2009, the Bank of England's (BOE) Monetary Policy Committee (MPC) judged that the Bank Rate could not practically be reduced below 0.5 percent. To provide the economy with a further monetary stimulus, the MPC decided to undertake a series of asset purchases (AP).

In line with the transparency standards for its Bank Rate decisions, the BOE publishes the voting record for asset purchase decisions approximately two weeks after each meeting. These records contain potentially valuable information concerning future asset purchase decisions. For instance, a minority of votes for a higher AP volume could indicate further loosening of monetary policy in the near future. This conjecture is supported by some literature that focuses on the voting records for *target rate decisions*. As shown by Gerlach-Kristen (2004, 2009), the (attributed) voting records of the BOE are informative as to future interest rate policy. Gerlach-Kristen and Meade (2010), Sirchenko (2011), and Horváth et al. (2012) obtain similar findings for the Federal Reserve, the National Bank of Poland, and five inflation-targeting countries. Minority votes help predict future target rates—even when controlling for financial market information and the mostly autoregressive nature of target rate changes.

However, the extant literature does not examine the predictive ability of votes on *asset purchase decisions*. Therefore, this paper addresses the following question: *Do the voting records of the MPC contain useful information concerning future asset purchases?* To answer this question, we use the methodology introduced by Gerlach-Kristen (2004) and employ an ordered probit model covering the sample period March 2009–February 2013. Answering this question is of particular relevance since AP changes are not easily predictable using standard techniques, for at least two reasons. First, the BOE increased the AP volume during the sample period despite the fact that actual consumer price index inflation rates and inflation forecasts were mostly above the BOE's inflation target.<sup>1</sup> Second, in contrast to the autoregressive nature of target rate changes, the increases in AP volume do not follow such a pattern, which makes predicting these purchases relatively more complicated.

The remainder of this paper is organized as follows. Section 2 introduces the data and the econometric methodology. Section 3 presents the empirical results. Section 4 concludes.

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<sup>1</sup> The BOE emphasizes that its objective—to meet the inflation target of 2 percent—remained unchanged. Source: <http://www.bankofengland.co.uk/monetarypolicy/Pages/qe/default.aspx>.

## 2. Data and Econometric Methodology

Our sample covers all AP decisions during the period March 2009–February 2013. Twenty-four of these 48 decisions were made unanimously. On the other 24 occasions, one or more MPC members favored a different volume of additional AP.<sup>2</sup> As measure of disagreement, we introduce the following variable:

$$(1) AP\ Skew_t = Average(\Delta AP_{t,i}) - \Delta AP_t$$

*Average*  $\Delta AP_{t,i}$  measures the mean of individual votes for a change in AP volume and  $\Delta AP_t$  indicates the committee's actual decision (both measured in bn £). The variable *AP Skew*<sub>t</sub> takes a positive (negative) value whenever the average lies above (below) the median. Such deviations could indicate a further loosening (tightening) of monetary policy in the near future.

Since the MPC continued voting on the Bank Rate during the sample period, it might be insightful to consider an additional explanatory variable that measures disagreement in target rate decisions:

$$(2) BR\ Skew_t = Average(\Delta BR_{t,i}) - \Delta BR_t$$

The variables are defined in an analogous manner. *BR Skew*<sub>t</sub> takes a positive (negative) value whenever the average lies above (below) the median (both measured in basis points). A positive value for this variable could signal against additional AP in the near future.

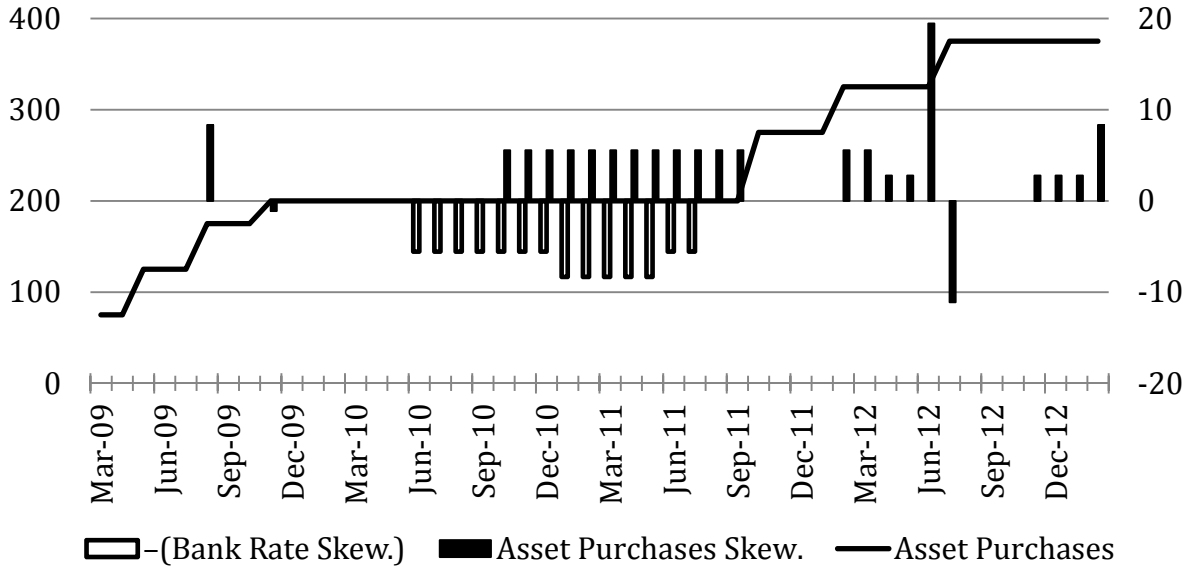
Figure 1 shows both measures of disagreement as well as the AP volume. Since a positive value for disagreement in Bank Rate decisions might deter the MPC from an increase in asset purchases, we multiply the indicator by –1 for illustrative purposes.<sup>3</sup> It appears that the indicator measuring disagreement in AP decisions precedes an increase in AP volume, particularly when one considers the disagreement in favor of a higher Bank Rate as an offsetting factor during the period June 2010–July 2011.

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<sup>2</sup> There was no vote to reduce the volume of asset purchases during the sample period. Figure 1 indicates that the “skewness” measure is negative on two occasions. However, in both cases, all MPC members voted for an increase in the volume of asset purchases. The minority was in favor of a less of an increase.

<sup>3</sup> Note that this transformation is conducted for illustrative purposes only in Figure 1; it is not employed in the econometric analysis later in this paper.

Figure 1: The Volume of Asset Purchases and Disagreement in the MPC



Notes: The figure shows the volume of asset purchases by the BOE (solid line, left scale) as well as the “skewness” indicators for disagreement in MPC voting concerning (i) the volume of asset purchases (solid bars, right scale) and (ii) the level of the Bank Rate (transparent bars, right scale). The latter indicator is multiplied by  $-1$  for illustrative purposes.

To provide a more formal analysis of the relationship between the changes in AP and both disagreement indicators, we estimate the following equation using an ordered probit model to account for the discrete nature of increases in AP volume:

$$(3) \Delta AP_{t+1}^* = a AP Skew_t + b BR Skew_t + c X + \varepsilon_t$$

$\Delta AP_{t+1}^*$  is the latent continuous variable representing the change in AP volume. We use a fourfold variable (0 represents no change in the AP volume; 25, 50, and 75 denote increases by £25bn, £50bn, and £75bn, respectively) to describe the change in monetary policy. The vector  $X$  contains control variables for lagged changes in AP volume and the yield curve slope. The residuals  $\varepsilon_t$  are assumed to follow a standard normal distribution, which implies that the probabilities of the different outcomes can be written as:

$$\begin{aligned} \Pr[\Delta AP_{t+1} = 0|z_t] &= \phi(\tau_{25} - z'_t \beta) \\ \Pr[\Delta AP_{t+1} = 25|z_t] &= \phi(\tau_{50} - z'_t \beta) - \phi(\tau_{25} - z'_t \beta) \\ \Pr[\Delta AP_{t+1} = 50|z_t] &= \phi(\tau_{75} - z'_t \beta) - \phi(\tau_{50} - z'_t \beta) \\ \Pr[\Delta AP_{t+1} = 75|z_t] &= 1 - \phi(\tau_{75} - z'_t \beta) \end{aligned}$$

$\phi$  denotes the cumulative standard normal distribution and  $z_t$  is our vector of explanatory variables. The ordered probit models are estimated by maximum likelihood

and the threshold variables are obtained simultaneously with the vector of estimated coefficients on the explanatory variables  $\beta$ .

### 3. Empirical Results

Table 1 presents the results for the ordered probit models.

Table 1: Changes in the Volume of Asset Purchases and the MPC Voting Record

	(1)	(2)	(3)	(4)	(5)
AP Skew <sub>t</sub>	0.075 ***	0.076 ***	0.077 ***	0.069 ***	0.087 ***
BR Skew <sub>t</sub>	-0.825 ***	-0.822 ***	-0.888 ***	-0.856 ***	-0.835 ***
Add. Variable		$\Delta(AP_{t-1})$ 0.003	$(3M-ON)_t$ 0.966	$(1Y-ON)_t$ 0.976	$(5Y-ON)_t$ 0.171
$\tau_{25}$	1.064 ***	1.081 ***	1.496 ***	2.154 **	1.335 **
$\tau_{50}$	1.197 ***	1.216 ***	1.639 ***	2.297 ***	1.470 **
$\tau_{75}$	2.136 ***	2.159 ***	2.615 ***	3.279 ***	2.402 ***
Observations	47	46	47	47	47
LR Statistic	302.9 ***	299.6 ***	357.2 ***	329.8 ***	292.1 ***
Pseudo Log-L	-19.73	-19.54	-19.02	-19.03	-19.57
Pseudo-R <sup>2</sup>	0.148	0.151	0.179	0.178	0.155

Notes: The dependent variable is the change in the size of the asset purchase program at the next MPC meeting ( $\Delta(AP_{t+1})$ ). \*/\*\*/\*\* denotes significance at the 10/5/1% level. Huber (1967)/White (1980) robust standard errors are used.

Model (1) shows that minority voting favoring an increase in AP volume indicates further asset purchases at the next meeting. Also in line with our expectations, the measure of disagreement in Bank Rate voting is negatively related to the provision of further monetary stimulus in the near future. When some MPC members favor a higher interest rate, this is an indication against additional AP at the next meeting. Both results confirm the impression from Figure 1 that the voting records contain useful information for predicting future changes in AP volume.

These results carry over if we control for lagged changes in AP (Model (2)). This is not surprising since changes in AP are not autoregressive in nature (see also Figure 1). Furthermore, our findings are robust to the inclusion of several measures for the yield curve slope (Models (3)–(5)).<sup>4</sup> The latter variables measure whether market participants are able to predict policy changes on the day before publication of the voting records based on some other information or simply on their own experience.

<sup>4</sup> These measures are the spreads between (i) three-month money market rates, (ii) one-year money market rates, and (iii) five-year government bonds and the overnight money market rates.



To obtain a quantitative measure for the predictive ability of voting records we calculate the average marginal effects for Model (1). If the “skewness” indicator for asset purchases rises, for instance, by £10bn, the likelihood of an unchanged AP volume at the next meeting decreases by 13 percentage points (pp). Correspondingly, the probability for an AP raise of £50bn increases by 8 pp. A raise of 1 bp in the Bank Rate “skewness” indicator increases the chances of the MPC staying put with respect to AP at the next meeting by 14.4 pp. Accordingly, the likelihood for additional £50bn of AP decreases by 9.3 pp.<sup>5</sup>

#### 4. Conclusions

In this paper, we use Monetary Policy Committee voting records to predict changes in the volume of Bank of England asset purchases. We use the methodology introduced by Gerlach-Kristen (2004) and employ an ordered probit model covering the sample period March 2009–February 2013.

We find, first, that minority voting favoring an increase in the AP volume raises the chances for an AP increase at the next meeting. Second, minority voting supporting a higher Bank Rate decreases the likelihood of further AP. In general, the voting records contain useful information for predicting future AP changes. Our results remain unchanged if we control for lagged changes in AP and for financial market expectations. Thus, publication of the MPC’s voting records contributes to better predictability of future monetary policy. This holds equally well in the context of AP decisions, as found in this paper, and Bank Rate decisions, as found in the previous literature.

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<sup>5</sup> As a robustness test, we also estimated a probit model where all increases in AP volume (£25bn, £50bn, and £75bn) were treated equally (results not shown) and the corresponding average marginal effects. If the “skewness” indicator for asset purchases rises by £10bn, the likelihood for a raise in AP at the next meeting increases by 14 pp. The corresponding marginal effect for a 1 bp increase in the Bank Rate indicator is –15.3 pp.

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