Do financial markets react to Bank of England communication?

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Communication by the Bank of England's Monetary Policy Committee (MPC) can convey information to market participants about the economic and policy outlook. In an inflation-targeting framework, clear communication by the central bank has an important role in explaining interest rate decisions and in helping to anchor inflation expectations. This article explores how financial markets react to different forms of communication by the MPC. The article finds that markets react to collective forms of communication such as the MPC Minutes *and* Inflation Report. *But reactions to what might be called individual forms of communication — speeches and testimony to parliamentary committees — are more difficult to discern. Compared with a similar study for the United States, the results for the United Kingdom are less pronounced.*

Introduction

In his speech 'Boring bankers: should we listen?' Richard Lambert (2004) highlighted the shift in recent years among modern central banks towards greater openness. And as Mervyn King (2000) notes, 'mystery and mystique has given way to transparency and openness'. Effective communication is important because it can help to anchor expectations around the inflation target and so help a central bank to achieve its objectives. Although central banks only set a short-term policy rate, policymakers want to shape expectations along the yield curve.

Previous Bank of England studies have investigated whether the move to inflation targeting in the United Kingdom has affected the reaction of financial markets to macroeconomic data releases and Bank of England policy announcements.[1] In this article, we investigate in more depth the extent to which financial markets respond to a wide range of communication tools used by the Monetary Policy Committee (MPC).

Specifically we look at:

- the *Minutes* of the monthly MPC meetings, published each month 13 days after the MPC interest rate meeting;

- the *Inflation Report*, published each quarter six days after an MPC meeting and which includes the MPC's projections for inflation and growth up to three years ahead;

- speeches given by MPC members; and

- evidence given to parliamentary committees (mainly the Treasury Committee).

We find that markets react to the publication of the MPC *Minutes* and the *Inflation Report*, suggesting that these forms of communication provide important information to market participants. We find that these two forms of collective communication typically provide more information to financial markets than individual forms of communication, such as speeches and evidence to parliamentary committees.

We focus on the reaction of financial markets not only on the days of communication, but also on periods as short as five minutes after communications, so as to capture their impact more clearly. We also control for other 'news' that affects financial markets — data releases and interest rate decisions. Again, this allows us to capture more effectively the reaction to communication.

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(1) See, for example, Lasaosa (2005), Clare and Courtenay (2001), Haldane and Read (2000), Moessner, Gravelle and Sinclair (2005). More recently, Bell and Windle (2005) looked at market reactions to MPC policy decisions, as well as to the publication of the MPC *Minutes* and the *Inflation Report*.

Assessing the impact of communications

To test whether financial markets systematically react to MPC communication, we need to identify the part of the communication that is 'news' to market participants. We take two steps to extract this information:

● First, we isolate the impact of MPC communication on market prices from the impact of other news released on the same day. We do this by controlling for the impact of macroeconomic data releases and monetary policy decisions on asset prices. This is achieved by measuring the outturn relative to the market expectations for data releases and policy decisions implied by surveys.[1]

● Second, we relate the unexplained variance of market prices to communication. If MPC communication has an effect on financial market prices then the variance of those variables should be higher following communication than it would be at times without communication. We test for the impact of communication on financial market prices across different days by looking at the measured variance of asset prices on communication compared with non-communication days.[2]

To capture the impact of communication we look at daily data and also at short time periods following communication. Formally, we would expect the coefficients on communication events to be positive and significant in a regression of the form below:

$$\varepsilon_{jt}^2 = \alpha_{j0} + \alpha_{j1}\ communication + \eta_{jt} \qquad \textbf{(1)}$$

where ε_{jt}^2 are the squared residuals from the regression of yield changes of asset price j after controlling for monetary and macroeconomic surprises; *communication* captures individual communication events, such as the publication of *Minutes*, the *Report* and so on. The *communication* variables are set to one on the days of communication and zero otherwise. We compare the variance of asset prices on communication and non-communication days, both over the whole day and

also for 5, 15 and 60-minute periods following communications.[3] We use data from June 1997 to December 2004 to test the impact of communication.

On some occasions, it is clear that MPC communications have moved market interest rates quite markedly. Two such examples were the publication of the February 1999 *Report*, and the *Minutes* of the October 2003 MPC meeting.

In February 1999, the MPC cut interest rates by a larger-than-expected 50 basis points. The February *Report* was published shortly after that policy decision and before the February *Minutes*. Publication appeared to have a large impact, as market participants updated their outlook for the path of interest rates. In October 2003, the split vote revealed by the MPC *Minutes* was seemingly interpreted by market participants as a trailer for the first rate increase in that tightening cycle. That increase materialised at the November 2003 meeting.

Charts 1 and 2 show a marked reaction to both of these communications. These charts plot the squared residuals from our regressions of changes in three-month interest rates implied by short sterling futures, described above.

The results are most striking with the intraday data, where few other spikes of a similar size are observed in the month around the communications. The results are less pronounced for daily data. This reflects other news — outside of the variables we are able to control for — also having an impact on market prices. Intraday data help us to isolate the impact of communication on financial markets more clearly.

The rest of this section discusses the results of our analysis in more detail. We look at four forms of communication: the MPC *Minutes*, the *Inflation Report*, speeches given by MPC members, and parliamentary testimony given by MPC members. Table A shows that the variance of three-month short sterling futures, a measure of volatility in the market, is higher on average on days when the *Minutes* and *Inflation Report* are published. It suggests that the variance does not increase on days of speeches and parliamentary

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(1) We describe the macroeconomic data releases we control for, our methodology for controlling for them and the financial market prices we look at in Annex 1. We focus on our results for measures of three-month interest rate expectations, as this is where we would most directly observe a reaction to Bank of England communication.
(2) This follows the methodology of Kohn and Sack (2003) and has the advantage of not requiring any priors about whether particular communications will push interest rate expectations up or down.
(3) Note that for our intraday analysis we have one observation per day in our sample. We compare the 5 (or 15 or 60) minute interval following the communication with the same 5 (15 or 60) minute interval on non-communication days. For the *Minutes*, for example, we compare the 9.30–9.35 window on days of the *Minutes* publication compared to the 9.30–9.35 window on the other days in the sample.

Variance of three-month interest rates implied by short sterling futures on specific communication days

Chart 1
February 1999 *Inflation Report*
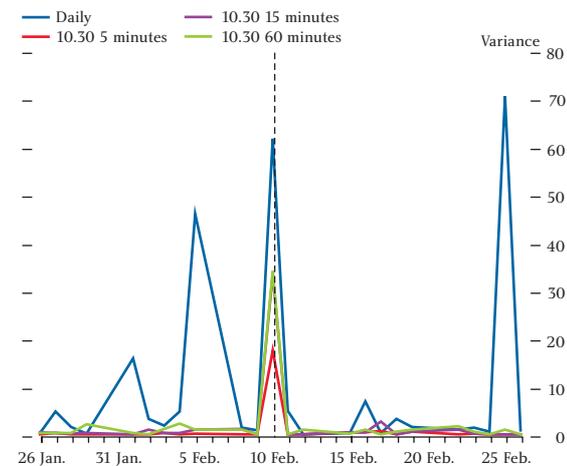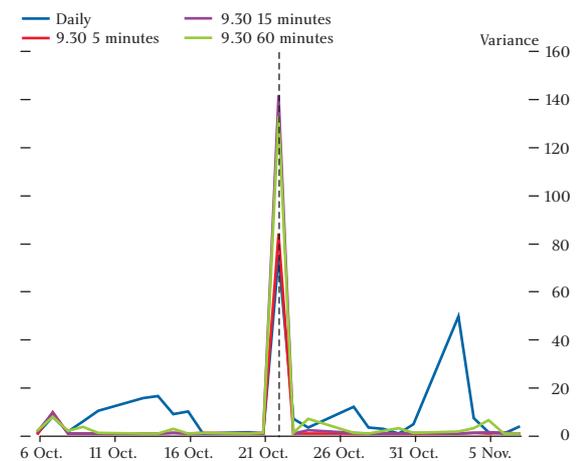

Chart 2
October 2003 *Minutes*

testimony. More detailed results are available in Annex 2.

MPC *Minutes*

The *Minutes* are the MPC's key vehicle for explaining the monthly policy decision. The *Minutes* set out the range of views of the Committee about the monetary policy stance, the risks surrounding that stance and the arguments underpinning the decision. They also reveal the individual votes by the MPC members. The *Minutes* are published at 9.30 am on the Wednesday 13 days after the interest rate decision.[1]

Our results suggest that markets react to the publication of the *Minutes*. Of the different forms of MPC communication the *Minutes* seem to have the greatest information content for financial market participants. Using daily data to compare days on which the MPC *Minutes* are published with all other days we find that publication increases the variance of three-month

interest rates implied by short sterling futures. This result is statistically significant at the 5% level (Table A).

Using intraday data, we find much stronger results. Five, 15 and 60-minute price responses for interest rates implied by short sterling futures (at all maturities) suggest that the MPC *Minutes* increase the variance of market prices (Table A).[2] This increase remains significant when the largest ten responses are excluded (an indication of robustness). This provides further confirmation that the MPC *Minutes* systematically contain important information for market participants.

Financial market volatility varies over time. To reflect this we also look at a comparison of communication days against the previous five working days — thus potentially capturing the importance of trends in market volatility. Using this comparison, we find that the impact of the *Minutes* release becomes stronger and more significant for a number of measures of interest rate expectations extending along the yield curve

Table A
Impact of official communications on three-month interest rates implied by short sterling futures

Comparison of variance on communication and non-communication days (basis points squared)

	MPC *Minutes*		*Inflation Report*		Speeches		Parliamentary testimonies	
	Non-*Minutes* days	Increase in variance on *Minutes* days	Non-*IR* days	Increase in variance on *IR* days	Non-speech days	Increase in variance on speech days	Non-testimony days	Increase in variance on testimony days
Daily response	13.959	8.470**	14.280	2.007	14.308	0.051	14.407	-5.592
5-minute response	0.859	6.413***	0.170	6.502***	–	–	–	–
15-minute response	1.103	8.122***	0.384	10.424***	–	–	–	–
60-minute response	1.771	9.995***	1.033	14.785***	–	–	–	–

Table shows changes in the variance of the error term relative to the average for the entire sample. *** indicates significance at the 1% level; ** at the 5% level; and * at the 10% level.
Speeches are those given by Governors George and King, including speeches by Mervyn King when he was Deputy Governor.

(1) Before October 1998 the *Minutes* were published after a six-week lag.
(2) The results for long gilt futures are in Annex 2.

(Table A1 in Annex 2). This result confirms the importance of the *Minutes* in influencing market participants' near-term policy expectations. The impact at longer horizons suggests that the *Minutes* may also help market participants understand how policymakers interpret and react to information.

The move to a faster timetable for publication in 1998 has increased the impact of the *Minutes* on financial markets. In October 1998 the MPC began to publish the *Minutes* within two weeks of the policy meeting, as opposed to the previous delay of six weeks from when the meeting took place. This change means that the *Minutes* are now available ahead of the next MPC meeting. We find that the response to publication only becomes systematically significant after the timetable was shortened. This suggests that timeliness of communication is important for market participants.[1]

Inflation Report

The *Inflation Report* is the MPC's key quarterly publication. The *Report* contains projections for output growth and inflation, depicted as fan charts that portray the uncertainties around the Committee's central view. The publication of the *Report* is accompanied by an hour-long press conference with three senior Bank of England officials: the Governor, the Chief Economist, and the Executive Director for Markets.

As with the reaction to the *Minutes*, we find that the variance of implied rates from short sterling futures reacts positively and significantly in the 5, 15 and

60-minute intervals after the release. Again, this result is robust to excluding the largest individual responses. However, the market reaction tends to be less clear when looking at daily data. This reflects the volume of other 'news' that becomes available during the day. Overall, these results suggest that interest rate expectations respond to the publication of the *Report*, but that the response occurs in a short period around the time of communication. It is subsequently harder to detect the response using daily data (Table A).

The results for the MPC *Minutes* and *Report* are also illustrated in a stylised way in Charts 3 and 4. The blue bars show the average variance of three-month interest rates implied by short sterling futures on days without the release of either MPC *Minutes* or *Reports* respectively. The red bars show the positive incremental impact on the variance that we attribute to these communications.

Speeches

MPC members give speeches to set out their views of the economic outlook and to explain policy decisions. These potentially provide information for market participants. Since many speeches occur after the close of markets in the United Kingdom and market participants will react to wire service headlines which appear at other times, we only analyse the reaction to speeches using daily data. We find very little evidence of a market reaction to speeches (Table A). Narrowing down the set of speeches covered to those most directly related to monetary policy and the economic conjuncture has no material impact on the results. And

Variance of three-month interest rates implied by short sterling futures on communication days, compared to non-communication days

Chart 3
Minutes

■ *Minutes* effect
■ Average variance on days without *Minutes*

Chart 4
Inflation Report

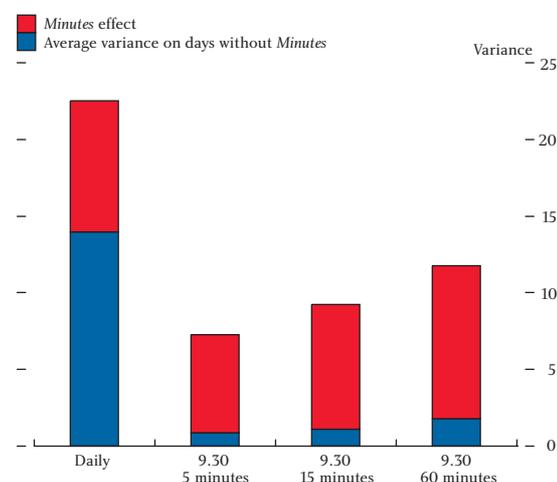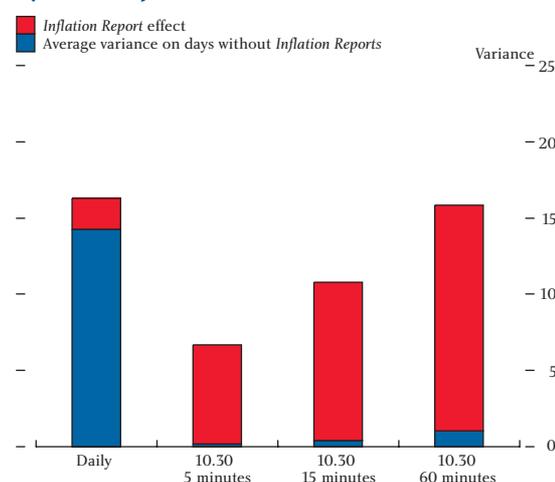■ *Inflation Report* effect
■ Average variance on days without *Inflation Reports*

(1) The results are available in Table A3 in Annex 2.

it makes little difference as to whether we consider the entire set of speeches by MPC members, or just those by the Governors.[1]

Testimony to parliamentary committees

The MPC regularly gives testimony to the House of Commons Treasury Committee after the publication of the *Inflation Report*. Evidence is also given to the Treasury Committee and to the House of Lords Economic Affairs/Monetary Policy Committee on other occasions.

Although an important part of the accountability of the MPC, the communications were not significant in terms of financial market reaction (Table A). The results for testimonies relating to the *Report* seemed weaker than for testimonies relating to other topics. This may not be surprising as the Treasury Committee hearings following the *Report* may not contain much incremental news relative to the *Report* itself. Overall the results suggest that the collective forms of communication — the *Minutes* and *Inflation Report* convey the most important information to financial markets.

Do market participants focus on particular summary statistics in the *Minutes* and *Inflation Report*?

In trying to form a view about the future direction of monetary policy, MPC watchers sometimes focus on the balance of votes on the MPC and on the shape of the inflation and growth projections presented in the *Report*. It could be that financial markets react to summary information contained in the MPC *Minutes* and *Inflation Report,* which act as a proxy for their news content. Does the voting record or the fan charts have any news content on top of what we have already observed?

A vote split among MPC members could be taken to represent greater uncertainty about the prospects for inflation or output growth. However, on occasions when the Committee was split, we could not systematically identify any greater variance in asset prices above that usually associated with publication. That might reflect market participants paying close attention to the *Minutes* as a whole, rather than a crude proxy for news. It might also reflect vote splits being non-trivial to interpret. As

suggested by Lambert (2004), the voting record without the supporting paragraphs for the policy decision does little to explain the reasons for the decision.

For the *Report,* we tested summary statistics describing the shape of the inflation fan chart — the MPC's central projection for inflation and the balance of risks around that projection.[2] Again, we found no strong systematic impact on the market reaction over and above the usual reaction to the publication of the *Report*. Market participants may attach more significance to the supporting analysis in the *Report* and to the comments given during the press conference. No single crude proxy tells the story.

International comparisons

Our key finding is that there is a significant response of financial market prices to the publication of the MPC *Minutes* and the *Inflation Report*. These collective forms of communications appear systematically to contain news of interest to market participants. Our strongest results come from our intraday data; by contrast, in the daily data, it is harder to find evidence of the importance of communication. This suggests that set against the day-to-day volatility of financial market prices, official announcements account for relatively little of those movements.

Compared with international evidence, our results suggest that the response to Bank of England communication is less pronounced than the response to communication from the Federal Reserve. In their analysis of Federal Reserve communication, Kohn and Sack (2003) find a significant response of interest rate expectations to Federal Open Market Committee (FOMC) statements accompanying interest rate decisions and to FOMC Chairman Greenspan's testimony to Congress. Specifically, using daily data, Kohn and Sack find large increases in the variance of asset prices in response to communications. These increases are statistically significant at the 5% level, and extend out to two-year forward rates. Greenspan's testimony to Congress is found to be significant at the 1% level out to four years ahead. There are several possible explanations for the more significant results for the United States compared with the United Kingdom.

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(1) By this, we mean speeches by Governors George and King, including speeches by Mervyn King when he was Deputy Governor.

(2) Specifically we tested whether there was any additional variance relating to the deviation of the modal inflation projection from target using constant and market interest rates; the width of the fan chart; the 'balance of risks' as evidenced by the skew in the fan chart; and the gradient of the inflation projection at the two-year horizon.

● First, all central banks have their own communication strategies, and so cross-country comparisons are difficult. Forms of communication that look similar might in fact serve different purposes. For example, there is no obvious US equivalent to the *Inflation Report*, which is one of the MPC's most important vehicles for communication. Similarly, the FOMC statements, which Kohn and Sack find have a significant impact on market prices above and beyond the policy decision itself, do not have a regular equivalent in the United Kingdom. Moreover, the biannual Congressional testimony in the United States is a more high profile news event than seemingly similar testimony in the United Kingdom, and so might receive more market attention. Our results for speeches — arguably the most comparable form of communication across countries — are in line with those of Kohn and Sack, where we, and they, do not find a significant response.

● Second, the Bank of England has an explicit and symmetric inflation target — the MPC only decides the manner in which the inflation target is met. By contrast, the Federal Reserve has more freedom to set its objectives as well as having control over the instruments of monetary policy. The volatility of US long bond yields, reacting to both data and communications, may be a reflection of investors revising their estimate of the implicit Federal Reserve inflation objective, as suggested by Gürkaynak, Sack and Swanson (2003). Correspondingly, our results for the United Kingdom suggest a more limited impact of communication on interest rate expectations beyond a one-year horizon.

● Third, MPC members are individually accountable for their votes, whereas the FOMC is more collegiate in style, with fewer dissenting voices. Therefore financial market participants could react more to communications from the FOMC, if they are taken to be more representative of a single prevailing view. The particularly strong US result for Congressional testimonies — which we do not pick up in the equivalent UK parliamentary hearings — might reflect a belief that the opinion of the Federal Reserve Chairman is particularly significant.

Ehrmann and Fratzscher (2005) compare the reaction of financial markets to communication from the Bank of England, European Central Bank and the Federal Reserve. They conclude that markets appear to react less to Bank of England communication than to communication from the other two central banks. However, their analysis exaggerates the difference between the impact of communication across countries. They focus on communication by individual members — speeches, interviews and testimonies — rather than the publication of collective communication, such as the *Minutes* and *Inflation Report*. For the Bank of England these latter publications are the most important forms of communication, as confirmed by our results. Further, because the vote at the policy meeting is revealed in the *Minutes*, market participants may gain a good understanding of the thinking of individual MPC members. Any subsequent speeches or interviews by MPC members may only expand slightly on known information.

Conclusions

Communication provides central banks with a means of explaining their decisions and thinking. This can be used to inform financial market participants about the economic and policy outlook. As such, communication offers an important avenue for policymakers to help investors understand their thinking. Communication complements the MPC's policy actions, by allowing some influence over expectations of interest rates beyond the immediate policy meeting.

Our analysis enables us to compare the impact of collective and individual forms of communication. Our use of intraday data also enables us to identify more accurately the impact of communication on financial markets than is possible with daily data.

Our strongest results are for the collective forms of communication — the *Minutes* and *Inflation Report*. The relatively strong impact on financial markets in response to these communications suggests that they contain significant information about the policy and economic outlook. By contrast, more individual forms of communication, such as speeches and parliamentary testimony, seem to convey rather less information to market participants.

Annex 1
Data processing and data description

Controlling for macroeconomic data releases and interest rate decisions

We control for data releases and interest rate decisions when measuring the impact of communication on financial markets to better identify the impact of communication. Market participants form expectations in advance for what they expect the data release or interest rate decision to be, and we would expect the surprise in the data relative to agents' expectations to move market prices. Controlling for data releases is particularly important because the publication of the *Minutes* and *Report* very often occur on the same day as UK labour market data are published. We label the surprise component of the ith macroeconomic release $mac^u_{i,t}$. To make the regression coefficients comparable across indicators, we standardise the surprises by their sample standard deviation for each macroeconomic series:

$$mac^u_{i,t} = (A_i - E_i)/\Omega_i \qquad\qquad \textbf{(A1)}$$

where A_i is the announcement value of the data, E_i is the expectation of the announcement and Ω_i is the sample standard deviation of surprises. Each $mac^u_{i,t}$ is set to zero on days where there is no data release for that macroeconomic indicator. Similarly, $baserate^u_t$ is our standardised monetary policy surprise variable.

We allow the change in each of the asset prices j under investigation — labelled Δy_{jt} — to respond to the unexpected component of the monetary policy decision and macroeconomic data surprises i, as per regression **(A2)** below:

$$\Delta y_{jt} = \beta_{j0} + \beta_{j1} baserate^u_t + \sum_{i=2} \beta_{ji} mac^u_{i,t} + \varepsilon_{jt} \qquad\qquad \textbf{(A2)}$$

For both our daily and intraday data, each regression contains one observation per working day over the sample. Correspondingly the intraday series, Δy_{jt} measures the x-minute reaction in yields or prices starting from the communication time. We estimate our regressions by OLS.

In controlling for UK and US macroeconomic surprises in daily data, we chose the subset of surprise variables that were significant at the 10% level in either the three-month short sterling regression, or the one to two-year forward rate regression. From UK data, this included releases of: average earnings/unemployment, first and second releases of GDP, industrial production, retail sales, RPI/RPIX; from US data, this comprises: consumer confidence, the first release of GDP, the Institute for Supply Management (ISM) index, non-farm payrolls and retail sales.

For intraday windows around 9.30, we also include trade data, the third release of GDP, provisional M0, provisional M4, PSBR, and producer prices — all significant at least at the 10% level in explaining the price response of short sterling or long gilt futures. As none of these data releases occur at 10.30, we do not include any surprise variables for intraday windows around the 10.30 release time.

Our macroeconomic surprise variables are constructed using data for expectations as calculated by Money Market Services International; and from September 2003 to December 2004, from Bloomberg.[1] For monetary policy surprises we use mean survey expectations derived from Reuters economists' polls.

Financial markets data

Our daily data consists of:

- three-month forward interest rates at constant three, six and twelve-month maturities implied by short sterling futures contracts;[2]

- ten-year spot yields from a yield curve fitted to risk-free government securities;

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(1) We switch surveys owing to data limitations: Money Market Services (MMS) data for survey expectations are not consistently available after September 2003, but typically have longer historic backruns. However, the Bloomberg poll surveys a similar group of economists, and is similar in the available back data.
(2) These are calculated from intraday short sterling data provided by Euronext.liffe.

- implied forward interest rates: respectively one to two, two to three, three to four, and four to five-year forwards; and

- the ten-year instantaneous forward rate.

Our intraday data covers the prices of implied three-month forward interest rates at three, six and twelve-month constant maturities.

Annex 2
Results tables

Table A1
Impact of official communication in daily data

	Var(ε) on non-communication days:	Increase in Var(ε) due to: MPC *Minutes*		*Inflation Report*		Parliamentary testimonies (all)		Speeches (EG & MK)	
		Relative to full sample	Relative to week before	Relative to full sample	Relative to week before	Relative to full sample	Relative to week before	Relative to full sample	Relative to week before
Short sterling futures:									
Three-month	13.984	8.470**	10.574**	2.007	5.252	-5.592	-6.088	0.051	0.073
Six-month	24.754	9.687	11.853**	3.216	10.211	-4.095	-4.526	1.608	3.036
Twelve-month	36.578	13.209	15.772*	-3.834	2.135	0.491	4.594	3.786	7.084
Government forward rates:									
One to two-year	29.585	10.342	14.896*	-6.238	-2.674	3.753	7.207	5.183	5.984
Two to three-year	28.783	4.657	9.806*	-6.590	-4.316	-4.050	-1.273	2.698	1.780
Three to four-year	28.791	2.885	8.277	-5.163	-5.009	-6.003	-1.618	-0.702	-3.978
Four to five-year	29.473	4.282	9.710*	-2.119	-3.588	-4.927	0.358	-3.361	-7.236
Instantaneous ten-year	23.966	10.062*	12.506**	10.412	12.127	10.231	16.072*	-4.313	-2.553

Table shows changes in the variance of the error term relative to the average for the entire sample, or the variance in the five days preceding the official announcement. *** indicates significance at the 1% level; ** at the 5% level; and * at the 10% level based on a t-statistic of the single restriction for the significance of the dummy regression. Full set of test statistics available from the authors on request.

Table A2
Impact of official communication in intraday data

	Var(ε) on non-*Minutes* days:	Increase in Var(ε) due to MPC *Minutes* (9.30 am)		Var(ε) on non-*IR* days:	Increase in Var(ε) due to *Inflation Report* (10.30 am)	
		Relative to full sample	Relative to week before		Relative to full sample	Relative to week before
Three-month short sterling futures:						
5-minute response	0.859	6.413***	6.450***	0.170	6.502***	6.523***
15-minute response	1.103	8.122***	8.090***	0.384	10.424***	10.458***
60-minute response	1.771	9.995***	9.893***	1.033	14.785***	14.995**
Six-month short sterling futures:						
5-minute response	1.166	8.632***	8.500***	0.302	9.593***	9.668***
15-minute response	1.689	11.637***	11.504***	0.632	14.366***	14.544***
60-minute response	2.942	14.449***	14.410***	1.675	23.405***	23.753***
Twelve-month short sterling futures:						
5-minute response	1.104	6.749***	6.723***	0.234	8.878***	8.845***
15-minute response	1.846	13.270***	13.348***	0.631	18.310***	18.396***
60-minute response	3.778	15.895***	16.214***	2.330	28.152***	28.558***

Table shows changes in the variance of the error term relative to the average for the entire sample, or the variance in the five days preceding the official announcement. *** indicates significance at the 1% level; ** at the 5% level; and * at the 10% level based on a t-statistic of the single restriction for the significance of the dummy regression. Full set of test statistics available from the authors on request.

Table A3
Impact of shortened publication schedule on the response to MPC *Minutes*

Increase in Var(ε) due to the publication of the MPC *Minutes* published with a lag of:

	Six weeks (June 1997 – September 1998)	Two weeks (October 1998 – December 2004)
Three-month short sterling futures:		
5-minute response	10.559	5.513***
15-minute response	9.336	7.851***
60-minute response	14.212	9.077***
Six-month short sterling futures:		
5-minute response	12.810	7.687***
15-minute response	11.625	11.617***
60-minute response	17.004	13.892***
Twelve-month short sterling futures:		
5-minute response	5.579**	6.958***
15-minute response	12.572	13.366***
60-minute response	18.733	15.273***

Table shows changes in the variance of the error term relative to the average for the entire sample. *** indicates significance at the 1% level; ** at the 5% level; and * at the 10% level.

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