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Forward Guidance or Cacophony

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Forward Guidance or Cacophony *

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Abstract

Until about more than a decade ago, central banks were traditionally run by individual governors. However that trend has changed and countries have started to establish monetary policy committees. Potential disadvantage of an individualistic committee (i.e., through voting) over collegial decision making is the possibility of confusing the markets by speaking with too many voices so the effects of central-bank's forward guidance are muted. This paper shows that a central bank run by a governor who is acting alone does a better job in terms of "forward guidance".

Keywords: forward guidance, voting, communication
JEL Codes: E58, D71, D78

*The views expressed herein are those of the authors and should not be attributed to the Central Bank of Turkey.

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1 Introduction

Until about more than a decade ago, central banks were traditionally run by individual governors. However that trend has changed and countries have started to establish monetary policy committees (MPCs). In his survey, Pollard (2004) showed that 79 out of 88 central banks switched from individual decision making process to a committee decision making process and the trend is profound and clear.

Blinder & Wyplosz (2004) argue that there are three different types of central bank Monetary Policy Committees (MPC); autocratically-collegial MPC, genuinely-collegial MPC and individualistic MPC. In the autocratically-collegial MPC version the governor dictates the group consensus and the Federal Open Market Committee (FOMC) under Alan Greenspan could be considered in this group. The second MPC version is called the genuinely-collegial MPC. With this version, members can argue their own views behind closed doors, but after MPC makes its decision, then members do not argue against it publicly and there may or may not be a formal vote. ECBs Governing Council is a good example for this version. The final version of MPC is referred to as the individualistic MPC. In this version, committee members not only express their views formally, but also vote in line with their views. The final decision of the MPC is made up of the majority votes. Majority of votes is the final decision of the MPC. The structure of the MPC of the Bank of England resembles this type. Blinder (2007) provides a nice discussion whether collegial decision making is superior to individualistic decision making in terms of communicating with the markets.

Although FOMC is considered autocratically-collegial MPC, it is not uncommon for MPC members to express their views publicly. Blinder (2004), Blinder & Wyplosz (2004) and Blinder et al. (2008) argue that there is a danger of cacophony if the individual committee members express their opposite views publicly. Obviously, in such a situation transparency could create noise in the markets rather than reducing it. However, by looking at country experiences Blinder & Wyplosz (2004) conclude that multiple voices could be manageable and should not be considered as a reason to retreat from transparency. On the other hand, recent US experience has shown that there are times in which views of committee members diverge so much that their announcements or speeches could create noise in the markets.

For instance, Federal Reserve Bank of Minneapolis President Narayana Kocherlakota issued a statement on June 24, 2013 regarding the actions taken at FOMC meeting which was held on the previous week. He dissented against FED policy even though he does not have a voting seat at the FOMC. Mr. Kocherlakota pleaded for a clear cut timeline about the actions and provided some suggestions for the committee to reduce policy uncertainty on the financial markets (Kocherlakota (2013)). After Mr. Kocherlakota's statement, OIS yield curves dropped (Figure 1).

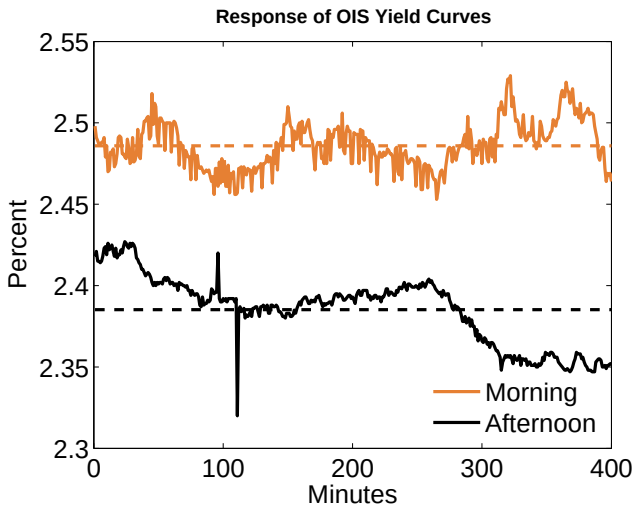

Figure 1: Response of OIS Yield Curves to Kocherlakota's statement on 06.24.2010, source: Bloomberg.

This study does not investigate how the market responds to each regional FED's announcements regarding the macro-economic situation. But as Mr. Kocherlakota's statement in Figure 1 shows, the market responds to information coming from a regional FED governor and thus a dissenting vote at an MPC meeting is likely to be seen as noteworthy.

Apart from successful monetary decisions, it is often argued that group decision making is better than the individual decision making and surely group decision making is more transparent. Since central bank transparency has a plethora of advantageous, there is no formal study whether committee decision making and being transparent about each member's views would bring a better outcome for the objectives of the central bank. This study tries to fill this gap within a theoretical framework by analyzing if "one man" decision making

should be preferred to guide the markets and provides some empirical evidence if the market has responded differently to "one man", unanimous and non-unanimous decisions.

In the theory developed here, there are two committee members where one of which is more informed about the current state of the economy. Their preferences are identical to the market's preferences. Depending on the committee members' announcements about the current state of the economy, the market takes an action. Our model proposes that "forward guidance" would be more effective if a central bank is governed by "one man", that is, the chairman acts alone. The chairman's announcement has more guidance power than a group decision even where each member makes the same announcement. In line with the theoretical results, we show that the efficacy of "forward guidance" is stronger for the periods when the FED governor acts alone to influence the behavior of the future federal funds rate.

2 Model

The model presented here is a variant of Benabou & Laroque (1992) and Morris (2001). Consider two committee members that are indexed by cm_1 and cm_2. Members announce their views about the current state of the economy and influence the decision of the markets. In each period, the optimal decision of the markets depend on the current state of the world $\omega \in \{0, 1\}$ and each state occurs with equal probabilities. Both committee members are partially informed about the current state of the economy and receive a signal $s \in \{0, 1\}$. Committee members differ in their ability to observe informative signals. It is assumed that with probability γ_1 the signal is equal to the true state for cm_1 and with probability γ_2 the signal is equal to the true state for cm_2. The signal is informative for both types and the first committee member cm_1 is assumed to be receiving better informed signal than the second committee member cm_2 but not perfectly, that is, $\frac{1}{2} < \gamma_2 < \gamma_1 < 1$. The members announce message m, 0 or 1. Given the members' messages, the market makes an inference and take an action $a \in \mathcal{R}$. After the action is chosen, the state of the world ω becomes public.

The market's utility in each period depends on the state of the world ω and its choice of action a. To make things simple, its utility is assumed to be a quadratic loss function $-(a - \omega)^2$. This functional form implies that the optimal decision of the market is to set

$a = \omega$ if it knows ω. Since ω is unknown in the current period, it sets its action a to the possibility of ω being 1. In the absence of committee members' announcements, the market would have set a to be $\frac{1}{2}$. Alternatively, the market may put different weights on period 1 and period 2 decisions. The total utility of the market would be given by:

$$-y_1(a-\omega)^2 - y_2(a-\omega)^2$$

where y_1 and y_2 are bigger than 0. Since this is a static game and there is no reputation or belief updating, there is no need to have a second period. So this paper will focus on one period static game. The preferences of committee members are identical to the market's preferences. The assumption in here is that both governors are trying to maximize the utility of the market while maximizing their utilities, thus types of the governors are the same.

This set up is an example of a cheap talk game (see Crawford & Sobel (1982)) in which the member's message does not directly influence its utility; rather it indirectly imbue its utility through influencing market's beliefs about the current state of the world. Every cheap talk game has equilibria where the players of the game ignore the messages. If the market does not infer any messages from the members' messages, then there will be no incentive for the members' to influence the expectations of the market and simply randomizes between sending 0 and 1. Such equilibria in which no information is conveyed is known as "babbling equilibria". The interesting case in cheap talk models is to focus on the informative equilibria where market learns from the member's messages. Now suppose that the market learns from the member's messages and makes his action. From the given preferences of the agents in the economy, both committee members have strong incentive to tell the truth about the signal they observed. The committee member's strategy can be summarized as follows:

Table 1: Committee Members' Strategies

	s = 0	*s = 1*
cm_1	0	1
cm_2	0	1

So given the member's strategy, what inferences the market will make about the current state of the economy. Say the market receives the same message, 0 or 1, from the committee

members. By Bayes' rule probability of the current state being 0 or 1 in times of consensus will be as follows:

$$\frac{\gamma_1 + \gamma_2}{2}$$

If the market receives different signals from the committee members (say cm_1 announces 1, cm_2 announces 0), then the probability of the current state being 1 will be given as follows:

$$\frac{\gamma_1 + 1 - \gamma_2}{2}$$

Observe that

$$\gamma_1 > \frac{\gamma_1 + \gamma_2}{2} > \gamma_2 > \frac{\gamma_1 + 1 - \gamma_2}{2}. \tag{1}$$

Equation (1) illustrates that the committee member cm_1 has more guidance power if he was the only voice. The best way of communicating with the markets with an objective of providing forward guidance is the central bank governor to act alone.

The model provided in this section assumes that the central banks are perceived credible. For a central bank where the credibility is still an issue, a variant of this model with reputation updating in each period could be proposed and would be an extension of this paper[1]. It can be used for central banks to increase credibility in the eyes of the markets.

Proposition 1 *An acting alone governor's message has a stronger effect on influencing the market's action than a group decision where each committee member announces the same message, that is* $\gamma_1 > (\gamma_1 + \gamma_2)/2$. *A group decision where each committee member announces the same message has a stronger effect on influencing the market's action than a group decision where each committee member sends different messages, that is,* $(\gamma_1 + \gamma_2)/2 > (\gamma_1 + 1 - \gamma_2)/2$.

Proof. Strict inequality in equation (1) shows that regardless of the same messages from the committee members about the state of the world (i.e., $cm_1 = 0$ and $cm_2 = 0$), the market discounts information it receives due to existence of the second committee member. ■

[1] Önder (2013) proposes a framework where the market has beliefs about the types of the agents and the beliefs are updated each period depending on agent's decision to tell the truth or to lie about its signal.

3 Data Construction

To assess whether forward guidance was effective and to show some empirical evidence of Proposition 1, we investigate OIS yield curves by looking at the effect of announcements on the yield curve of rates on overnight indexed swaps (OIS) contracts. OISs are essentially a forecast of the overnight rates over the term of the contract. Overnight rates in this study include Federal Funds rate for the US dollars, Eonia for Euros and Sonia for sterling. One alternative would be using OIS yield curve data for five-minute intervals during the announcement day. However, the strong market reaction was not only prompted by the release of FOMC statement at 2 p.m., but also during the question-and-answer session starting at 2.30 p.m. when journalists question the chairman to better understand the policies. For instance, as it is showed in Figure 2, 10-year OIS yield curve begins going up. It is clear that for the first 30 minutes interval, the change is purely coming from the FOMC statement, and it is possible that the rest of the upward-movement is due to new-revealed information during the press conference as well. Thornton (2012) and Campbell et al. (2012) also use daily change of OIS yield curves to assess the effect of forward guidance.

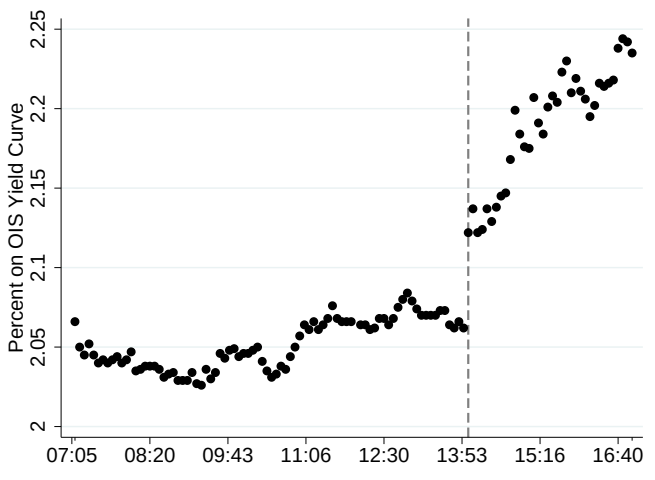

Figure 2: Response of OIS Yield Curves to the FOMC meeting on June 19, 2013, source: Bloomberg

We majorly look at the FOMC announcements along with the European Central Bank (ECB) and the Bank of England (BoE) decisions. Per the FOMC decisions, we used data

from May 2002 till December 2013. We went through all the FOMC statements in that period and noted down the voting picture, that is, number of the FOMC members who was for or against the decision. Then we looked at the daily change in OIS yields curves at the 10 year maturity from the day before the announcement.

There are twelve members in the FOMC seven of which are the Board of Governors of the Federal Reserve System. The president of the Federal Reserve Bank of New York is a permanent member; whereas the other four members rotate among the remaining eleven Reserve Bank presidents on a yearly basis. Nevertheless some decisions has been made with less than 12 people because some governor seats were temporarily empty.

Next, we looked at the ECB and the BoE forward guidance statements starting from July 2013 till October. Eonia and Sonia are used to obtain the daily change in yields curves at the 10 year maturity from the day before the announcement for Europe and the United Kingdom, respectively. However, there is very limited number of observations since the ECB and the BOE has started using forward guidance as a policy tool. ECB does not publish the number of yes/no votes after the decision whereas BoE MPC members votes are public, and so far the BOE's MPC has made the decisions unanimously. Nevertheless, the BOE makes its announcements one hour after the ECB's announcement, thus it is not quite possible to disentangle if the changes in Sonia was due to the BOE's forward guidance statements.[2]

4 Model's Implications

We will try to show some empirical evidence for Proposition 1 in two parts: (i) an acting alone governor has a more guidance power than a group consensus and (ii) a group consensus is better than a decision with a dissent. To do that, we need a period where the central bank was run by an acting alone governor and do some sort of forward guidance.

Rudebusch & Williams (2008) argue that the role of forward guidance in monetary policy goes well back to the recent financial crisis. In Table 2 we give details of changes in FED's monetary policy communication strategy. February 1994 and May 1999 are milestones of monetary policy communication strategy of the FED. In February 1994, FOMC started to

[2]see Table 5 and Table 6 for forward guidance statements of the ECB and the BOE.

announce a target rate for the federal funds rate. Before that FED's intention about the target rate was drawn from open market operations. Between 1983 and 1999 FOMCs views about the future policy path were voted in each meeting. In practice board members were voting on the expected direction of future changes in the stance of policy between meetings. However, results of voting were made public only after the next meeting. Therefore, it is very hard to say that these announcements include important set of information for the public. Since markets do not know the diversity in votes by the time of the target rate announcement we call this "one man" period. However, after May 1999 FOMC started to publish voting results with target rate announcement. In this case, markets know the distribution of yes and no votes. Therefore, we call this group decision making period. Section 4.1 argues that a decision taken by a group consensus creates more volatility in the asset prices than a one-man decision.

Table 2: Chanages in FED's Monetary Policy Communication Strategy

1983 - 1999	- FOMC votes for future policy path and results are published after the next meeting
- 1994	- FED's intention about target rate is drawn from open market operations
February 1994	- FOMC started to issue a statement about current policy stance - Voting results were made public after the next meeting - Started to announce its target for the federal funds rate
May 1999	- Include explicit language about the future stance of policy - Started to publish voting results immediately after each meeting

4.1 One man vs. group consensus

In their very influential paper, Gürkaynak et al. (2005) argue that FOMC statements could also be considered as a separate policy tool besides the rate targeting. They show that not only current federal funds rate target (target factor) but also future path of policy (path factor), which is mainly associated with FOMC statements have significant effect on asset prices. In other words, FOMC could affect asset prices through forward guidance. They estimated values for the "target" and "path factors" for each monetary policy announcement between 1990 and 2004.

Gürkaynak et al. (2005) decompose the effects of FOMC decisions on the federal funds rate target as current federal funds rate target and future path of policy components. That is to say, future path of policy part shows the effect of forward guidance on the federal funds target rate. Hence, we take their results on future path of policy target and analyze how their statistical properties change between these two periods. As their results end in 2004 our analysis include two periods: 1990-1999 and 2000-2004. For these periods, we will look into if one man ruling (for the period between 1990-1999) had a more guidance power than the group decision making (for the period between 2000-2004). In Figure 3, black and gray dots show the distribution of path factor between 1990 to 1999 and 1999 to 2004 respectively. A visual inspection show that variation in 1990-1999 period is smaller than the 2000-2004 period. Table 3 reports the statistical properties of the path factor and shows that variance during 1990s much smaller than the latter period[3].

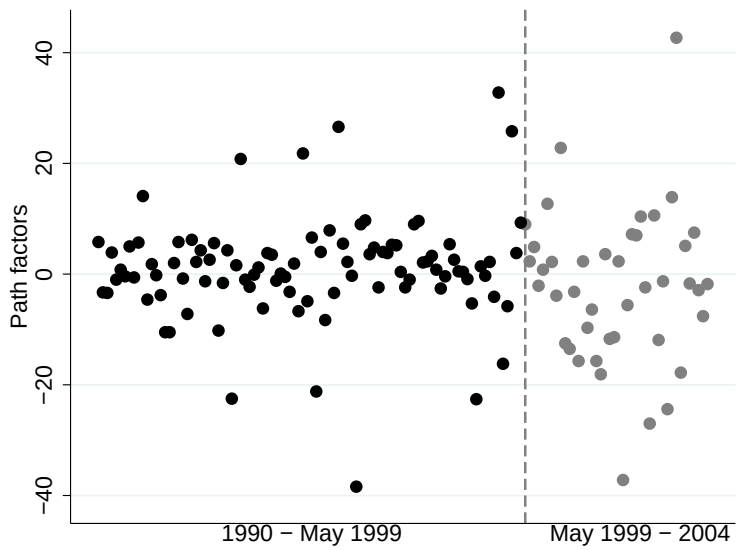

Figure 3: Standardized Changes in Federal Funds Target Rate in 1990-1999 and 2000-2004 Periods, source: Gürkaynak et al. (2005)

[3]Gürkaynak et al. (2005) use intraday data to overcome the simultaneity problem. They argue that "using a sufficiently narrow window of time around the monetary policy announcement, we can be sure that the FOMC decision was in no way influenced by asset price movements or other macroeconomic news over that interval". Therefore, we think that our analysis, using results of Gürkaynak et al. (2005), need not any further analysis controlling other macroeconomic variables. Secondly, Gürkaynak et al. (2005) argues that the statements that seem to drive the path factor lead to positive revisions in investors assessment of the future path of the output and inflation, which is consistent with Romer & Romer (2005). Hence, actually the information about the current state of the economy is reflected in path factor. Therefore, there is no need to control for it.

Table 3: Statistical Properties of Path Factor During the Periods 1990-1990 and 2000-2004, source: Gürkaynak et al. (2005)

	1990-1999	2000-2004
Mean	0.86	0.01
Variance	84.36	191.68
Minimum	-38.40	-37.20
Maximum	32.80	42.70

Gürkaynak et al. (2005) investigate the response of asset prices to U.S. monetary policy. They test whether the prices are affected by a single factor, i.e. surprise change in federal funds rate target. They conclude that single factor is not sufficient to thoroughly explain the asset price movements, instead two factors need to be in place. They use a method that identifies two common factors that describe asset price movements around FOMC announcements. The second factor (future path of policy factor) is defined to be orthogonal (not associated with the current federal funds rate decision) to the so called 'surprise' factor and it corresponds to changes in futures rates and captures the effect of FOMC statements on asset price changes. Gürkaynak et al. (2005) named the two factors as target factor and path factor and estimate values for these factors for each FOMC announcements from January 1990 through December 2004.

Now it is left to show that the response of markets to the target rate announcements could be different if there is diversity in views and is going to be discussed in section 4.2.

4.2 Unanimous decision vs. non-unanimous decision

A comparison of a unanimous decision to guide the markets with a non-unanimous decision is provided in Figure 4. Left panel of Figure 4 plots the Response of OIS Yield Curves to the FOMC's verbal guidance on Mar 18, 2009 which states that : "... the Committee will maintain the target range for the federal funds rate at 0 to 1/4 percent and anticipates that economic conditions are likely to warrant exceptionally low levels of the federal funds rate for an extended period"[4] and the decision has been taken unanimously. We do observe a drop in 10-year OIS yield curve. On the other hand, on Sep 21, 2011, it was announced that the FED will keep the federal funds rate at exceptionally low levels for the next two years where

[4]Forward guidance statements prior to 2012 was provided by Campbell et al. (2012).

Richard W. Fisher, Narayana Kocherlakota, and Charles I. Plosser have preferred to be vague about the duration of the low federal funds rate. The announcement on Sep 21, 2011 should have increased the market expectation that the federal funds rate would be essentially zero for the next two years. Thus, 2 year OIS rates should have declined to zero, and 10 year OIS rates should have dropped. However, the 10 year rates did not change at all and part of the reason could have been the dissented decisions of the three members.

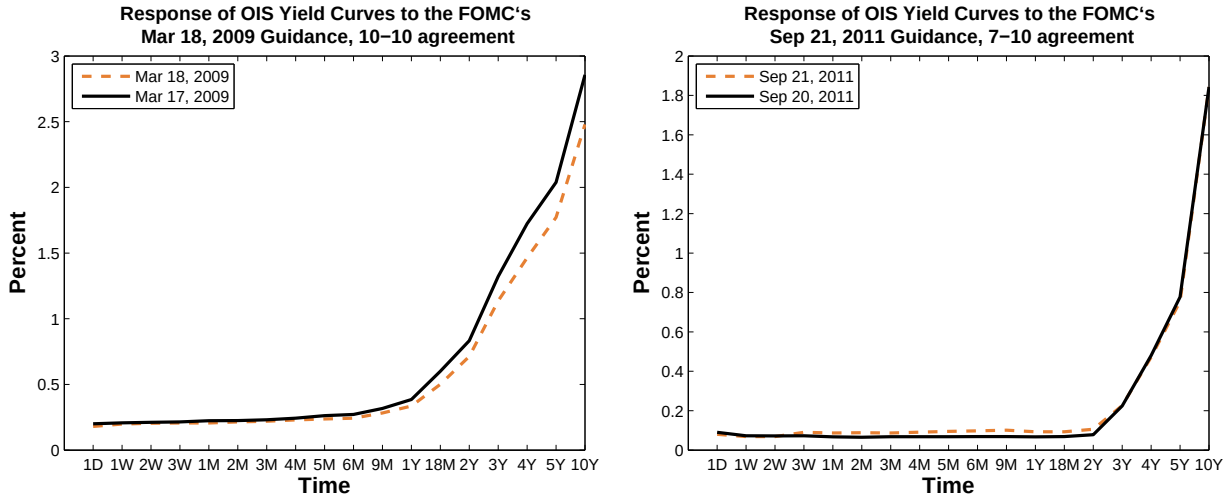

Figure 4: Source: Bloomberg

Figure 5 presents a scatter plot of the pro-voting shares and the daily change in 10-year OIS rate for the days listed in Table 4 along with the days that have forward guidance statements which was listed in Campbell et al. (2012). Diamonds indicate the observed data and dashed-line is the trend-line. We do observe a positive correlation between the voting shares and the daily change in 10-year OIS rate, but one should be cautious on interpreting the figure. The drawback of this analysis is the weight of each decision is the same. For instance, in Table 4, it is documented that some of the announcements are same as the previous one and probably the market had anticipated some of these announcements. Thus, some of the announcements may carry more information than the rest in terms of guiding the market.

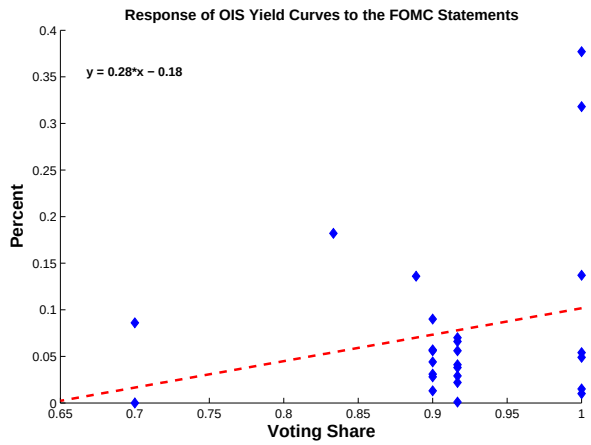

Figure 5: Response of OIS Yield Curves

5 Conclusion

Making a decision and communicating with markets has been a challenge and central banks switched from individual to group decision making by establishing monetary policy committees. The current trend is to run the central banks with committees and views of all the committee members are channeled into the market for the purpose of being transparent. This paper shows that if a central bank utilizes the group decision making process, then a central bank carries out the risk of creating noise rather than "forward guidance". A central bank that is incapable of clearly explaining its policy to the public or to the markets fails its mandate. The chairman, even though a decision was taken individualistically (i.e., through voting), should ensure that everyone in the committee speaks from the same page, thus, it does not look fractious.

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A Appendix

Table 4: Forward Guidance Statements and Ratio of Agreement among the Committee Members to Announcements

Date	Rate	"Forward Guidance" in statement	Ratio
January 25, 2012	0 - 0.25	"...the Committee decided today to keep the target range for the federal funds rate at 0 to 1/4 percent and currently anticipates that economic conditions– including low rates of resource utilization and a subdued outlook for inflation over the medium run– are likely to warrant exceptionally low levels for the federal funds rate at least through late 2014."	9-1
March 13, 2012	0 - 0.25	same	9-1
April 25, 2012	0 - 0.25	same	9-1
June 20, 2012	0 - 0.25	same	11-1
August 1, 2012	0 - 0.25	same	11-1
September 13, 2012	0 - 0.25	"...the Committee expects that a highly accommodative stance of monetary policy will remain appropriate for a considerable time after the economic recovery strengthens. In particular, the Committee also decided today to keep the target range for the federal funds rate at 0 to 1/4 percent and currently anticipates that exceptionally low levels for the federal funds rate are likely to be warranted at least through mid-2015."	11-1
October 24, 2012	0 - 0.25	same	11-1
December 12, 2012	0 - 0.25	"...the Committee decided to keep the target range for the federal funds rate at 0 to 1/4 percent and currently anticipates that this exceptionally low range for the federal funds rate will be appropriate at least as long as the unemployment rate remains above 6-1/2 percent,... the Committee will also consider other information, including additional measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial developments."	11-1
January 30, 2013	0 - 0.25	same	11-1
March 20, 2013	0 - 0.25	same	11-1
May 1, 2013	0 - 0.25	same	11-1

June 19, 2013	0 - 0.25	"...the Committee today reaffirmed its view that a highly accommodative stance of monetary policy will remain appropriate for a considerable time after the asset purchase program ends and the economic recovery strengthens. In particular, the Committee decided to keep the target range for the federal funds rate at 0 to 1/4 percent and currently anticipates that this exceptionally low range for the federal funds rate will be appropriate at least as long as the unemployment rate remains above 6-1/2 percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored. In determining how long to maintain a highly accommodative stance of monetary policy, the Committee will also consider other information, including additional measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial developments. When the Committee decides to begin to remove policy accommodation, it will take a balanced approach consistent with its longer-run goals of maximum employment and inflation of 2 percent."	10-2
July 31, 2013	0 - 0.25	same	11-1
Sep 18, 2013	0 - 0.25	same	9-1
Oct 30, 2013	0 - 0.25	same	9-1

Table 5: Forward Guidance Statements from the ECB

Date	Rate	"Forward Guidance" in statement
Jul 4, 2013	0 - 0.25	"...The Governing Council expects the key ECB interest rates to remain at present or lower levels for an extended period of time."
Aug 1, 2013	0 - 0.25	same
Sep 5, 2013	0 - 0.25	same
Oct 2, 2013	0 - 0.25	same
Nov 7, 2013	0 - 0.25	same

Table 6: Forward Guidance Statements from the BOE

Date	Rate	"Forward Guidance" in statement	Ratio
Jul 4, 2013	0 - 0.5	"...the latest remit letter to the MPC from the Chancellor had requested that the Committee provide an assessment, alongside its August Inflation Report, of the case for adopting some form of forward guidance, including the possible use of intermediate thresholds."	9-0
Aug 1, 2013	0 - 0.5	"...the Committees latest inflation and output projections will appear in the Inflation Report to be published at 10.30 on Wednesday 7 August. ...the Committee will also respond to the Chancellors request for its assessment of the use of thresholds and forward guidance at that time."	9-0
Aug 7, 2013 [a]	0 - 0.5	"...the MPC intends not to raise Bank Rate from its current level of 0.5 percent at least until the Labour Force Survey headline measure of the unemployment rate has fallen to a threshold of 7 percent, subject to the conditions below. The MPC stands ready to undertake further asset purchases while the unemployment rate remains above 7 percent if it judges that additional monetary stimulus is warranted. ...the MPC intends not to reduce the stock of asset purchases financed by the issuance of central bank reserves and, consistent with that, intends to reinvest the cash flows associated with all maturing gilts held in the Asset Purchase Facility."	9-0
Sep 5, 2013	0 - 0.5	"...in the context of that guidance, the Committee agreed to reinvest the £1.9 billion of cash flows associated with the redemption of the September 2013 gilt held in the Asset Purchase Facility."	9-0
Oct 10, 2013	0 - 0.5	"...The Committee reached its decisions in the context of the monetary policy forward guidance announced alongside the publication of the August 2013 Inflation Report."	9-0
Nov 7, 2013	0 - 0.5	same	9-0
Dec 5, 2013	0 - 0.5	same	9-0

[a] Aug 7, 2013 is not an MPC meeting, the statement that was promised to deliver on Aug 1, 2013

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