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Working Paper

The effects of policy guidance on perceptions of the fed's reaction function

Staff Report, No. 652

Provided in Cooperation with:
Federal Reserve Bank of New York

Suggested Citation: Femia, Katherine; Friedman, Steven; Sack, Brian (2013) : The effects of policy guidance on perceptions of the fed's reaction function, Staff Report, No. 652, Federal Reserve Bank of New York, New York, NY

This Version is available at:
<https://hdl.handle.net/10419/93615>

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Federal Reserve Bank of New York
Staff Reports

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The Effects of Policy Guidance on Perceptions of the Fed's Reaction Function

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November 2013

JEL classification: E52, E58

Abstract

In the past few years, the Federal Open Market Committee (FOMC) has been using forward guidance about the federal funds rate in a more explicit way than ever before. This paper explores the market reaction to the forward guidance, with particular focus on the use of calendar dates and economic thresholds in the FOMC statement. The results show that market participants interpreted the FOMC's policy guidance as conveying important information about the Committee's policy reaction function. In particular, market participants came to expect the FOMC to wait for lower levels of unemployment for a given level of inflation before beginning to raise the target federal funds rate, thereby shifting to a more accommodative policy approach aimed at supporting the economic recovery.

Key words: monetary policy, forward guidance

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Steven Friedman and Brian Sack were officers in the Federal Reserve Bank of New York's Markets Group at the time this paper was written.

To view the authors' disclosure statements, visit
http://www.newyorkfed.org/research/author_disclosure/ad_sr652.html.

Introduction

Communications about the future path of the federal funds rate can be a powerful monetary policy tool, as expectations about the future course of monetary policy have a strong influence on broader financial conditions and hence on economic outcomes. Such a tool may be particularly important at times when the use of the central bank's main policy instrument is constrained. Indeed, with the target federal funds rate having reached the zero bound in recent years, Chairman Bernanke has repeatedly pointed to this type of communication as one of two key tools still available to the Federal Open Market Committee (FOMC), along with changes to the size and composition of the Federal Reserve's balance sheet.¹

In the past few years, the FOMC has been using forward guidance about the federal funds rate in a more explicit way than ever before. Initially, it provided qualitative information about the types of economic conditions that would warrant keeping the federal funds rate at its near-zero level. Subsequently, it provided an explicit calendar date through which it expected this policy setting to be maintained and, more recently, explicit economic thresholds that it believed would warrant maintaining the policy setting. This more explicit guidance about the federal funds rate has been part of the FOMC's effort to lower longer-term interest rates and ease financial conditions more broadly.

This paper explores the market reaction to the forward guidance that the FOMC has provided about the federal funds rate, with particular focus on the use of calendar dates and economic thresholds in the FOMC statement. We investigate whether shifts in the calendar-date guidance conveyed information about the FOMC's reaction function (that is, the way in which the Committee adjusts policy in response to a given change in macroeconomic conditions) or simply information about prospects for the economy itself. We also assess how the perceived reaction function that was reached under calendar guidance compared to the more explicit guidance that the FOMC provided through the use of economic thresholds.

Innovations in FOMC Communication

A considerable body of research has emphasized the importance of expectations about future interest rates in influencing macroeconomic outcomes.² This literature has shown that Federal Reserve communications, including FOMC statements containing forward guidance, have typically had significant effects on those interest rate expectations.³ Gurkaynak et al (2005a), for example, estimate that information about the future path of the federal funds rate can have a much larger effect on longer-term Treasury yields than actual changes in the federal funds rate. This body of research provided an empirical backdrop for the FOMC's communication policy in recent years, and the market response to

¹ For example, see Bernanke (2012).

² See Eggertsson and Woodford (2003) and Eggertsson and Woodford (2006).

³ Bernanke, Reinhart, and Sack (2004); Gurkaynak, Sack and Swanson (2005a and 2005b); Campbell et al (2012).

these recent communications seems to further support the earlier conclusion that these sorts of policies can lower interest rates and ease conditions in financial markets.

Since 2008, the FOMC has taken several notable steps regarding its policy guidance. As summarized in Table 1, the FOMC began providing guidance about the length of time that the federal funds rate would remain near the zero bound in December 2008. Initially, this guidance was qualitative in nature, with the FOMC stating its expectation that “exceptionally low levels of the federal funds rate” would be appropriate first for “some time” and then, in subsequent statements, for “an extended period.” At the November 2009 meeting, the Committee included additional information about the macroeconomic indicators on which it based this judgment, essentially providing qualitative information about its policy reaction function.

A further significant innovation occurred in August 2011, when the FOMC included a calendar date associated with the length of time that it expected economic conditions to warrant a near-zero federal funds rate, saying that such conditions were likely to persist “at least through mid-2013.”⁴ The decision to communicate about the likely path of the federal funds rate more than two years ahead was seen by some as a very aggressive step, although the Committee was careful to state that this calendar date did not represent an unconditional commitment to follow that path. The calendar-based guidance was subsequently changed on two occasions, extending it to “at least through late 2014” at the January 2012 meeting and “at least through mid-2015” at the September 2012 meeting.

Lastly, the FOMC made another important innovation in December 2012, when it adopted explicit economic conditions that it thought would warrant the current target range for the federal funds rate. Specifically, the FOMC said that it anticipates that this range 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.” This language indicates that these economic conditions are thresholds rather than triggers, meaning that a violation of one of the conditions would have to be breached before a rate hike occurred, but that such circumstances would not require an immediate rate hike.⁵

⁴ The FOMC statement indicated that the target federal funds rate would remain “exceptionally low.” In this piece, we interpret “exceptionally low” as meaning the current range of 0 to 25 basis points.

⁵ In a February 2013 speech, Vice Chair Yellen commented that, “It deserves emphasis that a 6-1/2 percent unemployment rate and inflation one to two years ahead that is ½ percentage point above the Committee’s 2 percent objective are thresholds for *possible* action, not triggers that will necessarily prompt an immediate increase in the FOMC’s target rate”.

Table 1: Changes to the FOMC's Forward Guidance

Date	Type of Guidance	FOMC Statement Language
12/16/2008	Qualitative	In particular the Committee anticipates that weak economic conditions are likely to warrant exceptionally low levels of the federal funds rate for some time .
3/18/2009	Qualitative	The Committee ... anticipates that economic conditions are likely to warrant exceptionally low levels of the federal funds rate for an extended period .
11/4/2009	Qualitative	The Committee ... continues to anticipate that economic conditions, including low rates of resource utilization, subdued inflation trends, and stable inflation expectations , are likely to warrant exceptionally low levels of the federal funds rate for an extended period .
8/9/2011	Calendar-based	The Committee 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 mid-2013 .
1/25/2012	Calendar-based	In particular, the Committee ... 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 .
9/13/2012	Calendar-based	To support continued progress toward maximum employment and price stability, 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 .
12/12/2012	Threshold-based	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 .

Source: Federal Reserve Board

Market Response to Calendar Guidance

In considering the financial market response to these announcements, we begin by looking at the FOMC's use of explicit references to calendar dates in its policy guidance, since this was the first major innovation to these communications over this period. Later, we will turn to the FOMC's reference to explicit economic thresholds.

The FOMC's use of calendar-based forward guidance seems to have had a meaningful effect on shorter-term interest rates and the volatility of those rates. One approach that attempts to observe the financial market effects of the forward guidance is to look at the changes in asset prices in the days immediately surrounding key changes in the forward guidance. Table 2 shows the results of this approach for the three major changes in the calendar-based guidance that were discussed earlier. As can be seen in the table, expectations of future short-term interest rates declined on these announcements, with the rates on Eurodollar futures contracts falling 6 to 26 basis points for the contracts with expiration dates near the period covered by the guidance (shaded in the table). Interest rate volatility also tended to fall, at times sharply. A broader set of financial variables all adjusted in a manner consistent with increased policy accommodation, with Treasury yields falling, equity prices rising, and the dollar declining. The direction of these asset price movements would make financial conditions more supportive of growth.⁶

Table 2: Changes in Asset Prices around Calendar-Based Forward Guidance Announcements

	8/9/2011	1/25/2012	9/13/2012
Treasury Yields¹			
2-Year	-7	-1	-1
10-Year	-7	-7	-3
Eurodollar Futures²			
ED8	-26	-6	-5
ED10	-28	-13	-5
ED12	-21	-17	-6
Forward OIS³			
1y Rate, 2y Ahead	-11	-2	-2
1y Rate, 3y Ahead	-16	-12	-5
Volatility⁴			
1y Tenor, 2y Ahead	-17	-2	-6
1y Tenor, 3y Ahead	0	-5	-2
Equity Indexes⁷			
S&P 500	4.7%	0.9%	1.6%
Exchange Rates⁸			
Euro-Dollar	1.4%	0.5%	0.7%
Dollar-Yen	-1.0%	0.1%	-0.5%

1 One-day changes in on-the-run Treasury yields, in basis points.

2 One-day change in yield implied by Eurodollar futures contracts covering the three-month periods four, eight, and twelve quarters ahead, in basis points.

Shaded cells indicate the contract that is near the date provided in the guidance.

3 One-day change in the 1-year forward rate implied by overnight index swaps.

4 One-day change in normal swaption implied volatilities, in basis points.

5 One-day change in BankRate 30-year fixed mortgage rate.

6 One-day change in Moody's corporate bond indices.

7,8 One-day percent change.

Source: Bloomberg, authors' calculations

Moreover, this approach does not capture the full effect of the policy guidance, because the changes to the guidance were well anticipated by market participants on some of these occasions. The initial use of calendar guidance in August 2011 was a considerable surprise to the market, which explains the sizable

⁶ One caveat is that these FOMC announcements contained other information, including the Committee's assessment of economic conditions and, in some cases, announcements of large scale asset purchases. These event studies cannot distinguish between the effects of this information and the forward guidance. In some cases, these compounding factors might overstate the effect the policy change had on financial asset prices.

response of futures rates. However, for the two more recent announcements, market participants were placing meaningful odds on some shift in the forward guidance, implying that the observed response on those days does not reflect the full impact of those communications.

Given the limitations of the event-study approach, it is informative to look more broadly at the pricing of monetary policy prospects over this period. Figure 1 shows the path of the federal funds rate implied by federal funds and Eurodollar futures quotes before the calendar-based guidance and after each of the three changes to the guidance. Over this period, expectations for monetary policy tightening were pushed out significantly into the distant future, with the FOMC’s policy guidance likely contributing meaningfully to this shift.

In addition, as investors became more confident that policy would remain on hold, the degree of uncertainty around the expected interest rate path at those horizons declined. As shown in Figure 2, the volatility of the one-year rate beginning two years ahead implied by the pricing of swaptions reached a record low level during this period. This conviction was a key factor for keeping the implied path from futures rates low.

Of course, because the calendar-date guidance was not an unconditional commitment to maintain the current level of the federal funds rate, one would not expect the uncertainty about interest rates to completely vanish and the futures rate path to become completely flat at the current federal funds rate target. Nevertheless, the calendar guidance appears to have given investors greater conviction that the federal funds rate would remain near zero for a long period of time.

Figure 1: Implied Path of the Federal Funds Rate

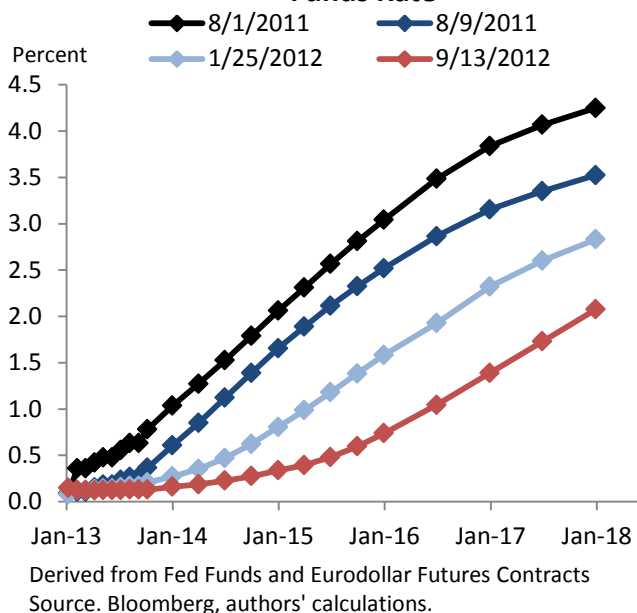


Figure 2: One-Year Swaption-Implied Volatility, Two Years Ahead



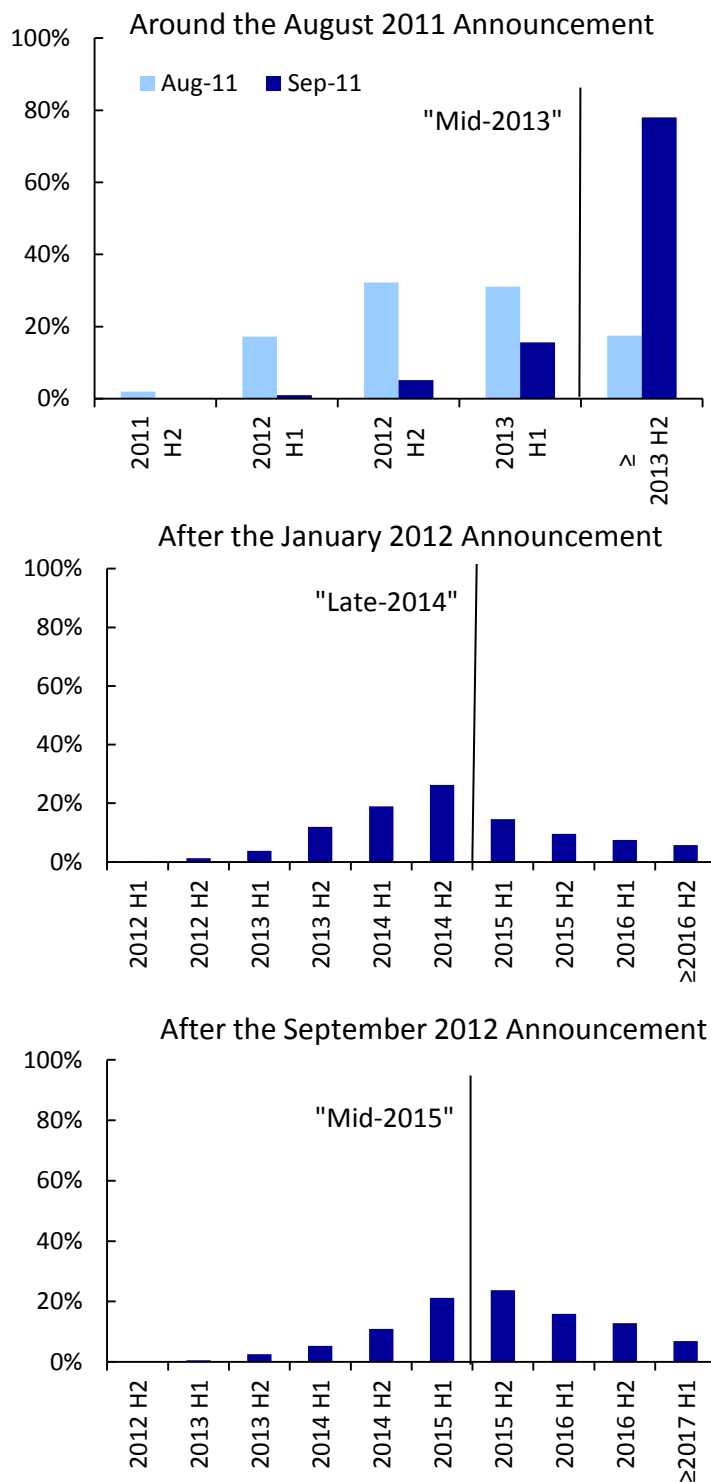
A similar message emerges from the Survey of Primary Dealers (SPD) that is conducted by the Federal Reserve Bank of New York ahead of each regularly scheduled FOMC meeting.⁷ This survey is particularly useful for considering the effects of the calendar guidance, because the SPD asks the primary dealers to assign probabilities to the timing of the first increase in the target federal funds rate.

As shown in Figure 3, the probability distribution of expectations for the timing of the first rate increase shifted notably after the first use of calendar guidance in the August 2011 FOMC statement. Indeed, the average probability that the first increase in the target federal funds rate would occur in the second half of 2013 or later rose to 78 percent in the September 2011 survey (the first one after the August FOMC statement), from 18 percent in the August 2011 survey (conducted ahead of the August statement).

Expectations about the timing of the first rate hike continued to shift out over time, primarily in response to the disappointing pace of the economic recovery. In the survey conducted after the extension of the policy guidance at the January 2012 FOMC meeting, the average probability assigned to the first rate hike taking place after the end of 2014 marker was 37 percent. And following the extension of the guidance to mid-2015 at the September 2012 meeting, the average probability assigned to lift-off occurring after the new threshold stood at 59 percent.

It is interesting to note that the probabilities reached in these latter two cases were well below that reached for the mid-2013 guidance. One potential interpretation is that the two extensions of the forward guidance ended up referring to a more distant horizon – roughly three years – than was the case when the forward guidance was first

Figure 3: Probability Distribution around First Increase in Federal Funds Rate



Source: FRBNY Survey of Primary Dealers

⁷ For more information on the Survey of Primary Dealers, see Correia-Golay, Friedman, and McMorrow (2013).

introduced, and dealers may simply believe that there is greater uncertainty about the path of interest rates at these longer horizons. This pattern would be consistent with the Committee’s characterization of the forward guidance as a forecast rather than a commitment.⁸

Perceptions of the Fed’s Reaction Function

Simply observing that policy expectations shifted out after these changes to calendar guidance does not provide a complete assessment of its effects. As noted by Bernanke (2012) and Woodford (2012), there are two potential interpretations to such movements. First, extensions to the calendar guidance could convey that the FOMC sees the economy as weaker, and hence expects policy to remain accommodative for longer in response. Second, the extensions could indicate that the policy reaction function has shifted—that is, that the Committee plans to maintain a more accommodative policy position for a longer period for a given set of macroeconomic conditions.⁹

The distinction between these two possibilities is important. In the event that the public viewed the shift in the calendar guidance as suggesting that the economy is weaker than previously anticipated, the shift could be counterproductive. Indeed, Woodford (2012) suggested that the FOMC’s calendar-based guidance may have in fact conveyed pessimism about the future course of the economy and argued that effective forward guidance should instead convince market participants that the central bank is pursuing a more accommodative policy reaction function, thereby inspiring greater confidence in the economic recovery.

There is little doubt about the importance of differentiating these two types of messages. However, one might still question whether the calendar guidance was actually taken as conveying pessimism about the economy rather than a more aggressive policy reaction function.

We attempt to distinguish between these two interpretations by looking at the results from the SPD. The survey asked dealers about the economic conditions that were expected at the time that the federal funds rate would lift off from the zero bound—specifically for three combinations of headline 12-month PCE inflation and the unemployment rate that would prompt the initial rate hike.¹⁰ The responses provide information about the perceived policy reaction function that the FOMC is following. Of course, the Committee’s reaction function is likely to be more complicated and to take into consideration a wider range of economic data, but these responses should be indicative of the broader conditions that might be expected to be in place at time of tightening.

⁸ See Bernanke (2012).

⁹ Of course, any announcement could reflect both a change in macroeconomic conditions and a change in how the Committee responds to those macroeconomic conditions.

¹⁰ Specifically, the survey has asked, “Given the levels of headline 12-month PCE inflation listed below [1%, 2% and 3%], at what level of the unemployment rate would you expect the Committee to increase its target for the federal funds rate?”

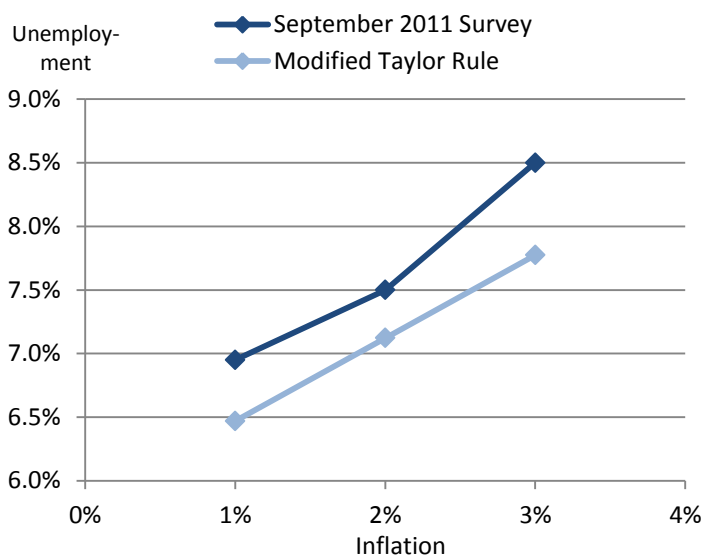
The SPD first asked this question in its September 2011 survey, after the initial use of calendar-date guidance in the August 2011 FOMC statement. The median response to this question is shown in the dark blue line in Figure 4. The first observation to make is that the calendar guidance, while only providing a single date about future policy prospects, was interpreted in terms of the economic conditions that could be in place at the time of the lift-off. Investors had the perception that there was a range of economic outcomes that could be consistent with the indicated lift-off date. Specifically, market participants perceived that the FOMC would wait for lower levels of the unemployment rate if inflation were running at lower levels, as captured by the upward slope of the line.

That pattern represents the type of trade-off between these variables that one would expect under a typical policy reaction function, including the modified version of the Taylor rule that Vice Chair Yellen has referenced in her speeches, shown by the light-blue line in the figure.¹¹ The slope of the responses from the PDF is very close to that derived under the policy rule, although the curve is somewhat higher than in the policy rule. If inflation were running at 2 percent, survey respondents believed that the Committee would wait until the unemployment rate declined to 7.5 percent before raising the target federal funds rate, compared to a value closer to 7 percent under the rule.

This survey question is also useful for assessing the market's interpretation of the changes in the policy guidance discussed above. If an extension of the calendar guidance conveyed only a weaker economic outlook, it would not result in any shift in this locus of points. The market would only be anticipating that a longer period would lapse before economic conditions reached that locus. If the changes to the calendar guidance instead conveyed a shift in the Federal Reserve's reaction function to maintain a more accommodative policy stance for a given set of economic conditions, one would expect to see a downward shift in the locus of points.

As shown in Figure 5, the changes to the calendar guidance clearly conveyed a shift to a more

Figure 4: Macroeconomic Thresholds for First Increase in Federal Funds Rate



Survey estimate is based off of median response. "First increase" is defined as a target federal funds rate of 50 basis points. Source: FRBNY Survey of Primary Dealers, authors' calculations.

¹¹ Yellen (2012) uses a modified version of the monetary policy rule proposed by John Taylor in 1993 in which monetary policy is twice as responsive to economic slack as it is to inflation. This rule is defined as $R_t = 2 + p_t + 0.5(p_t - 2) + 1.0Y_t$, where R is the federal funds rate, p is the percent change in headline PCE inflation from four quarters earlier, and Y is the output gap. To convert survey respondents' expectations for the unemployment rate into projections for the output gap, we follow Yellen and use the following relationship: $Y_t = 2.3(5.6 - U_t)$, where 2.3 is the estimated value of the Okun's law coefficient, 5.6 is the assumed value of the equilibrium unemployment rate, and U_t is the actual unemployment rate. To determine the implications of this rule for lift-off, we compute the combinations of the unemployment rate and inflation rate that are consistent with a prescribed federal funds rate of 50 basis points.

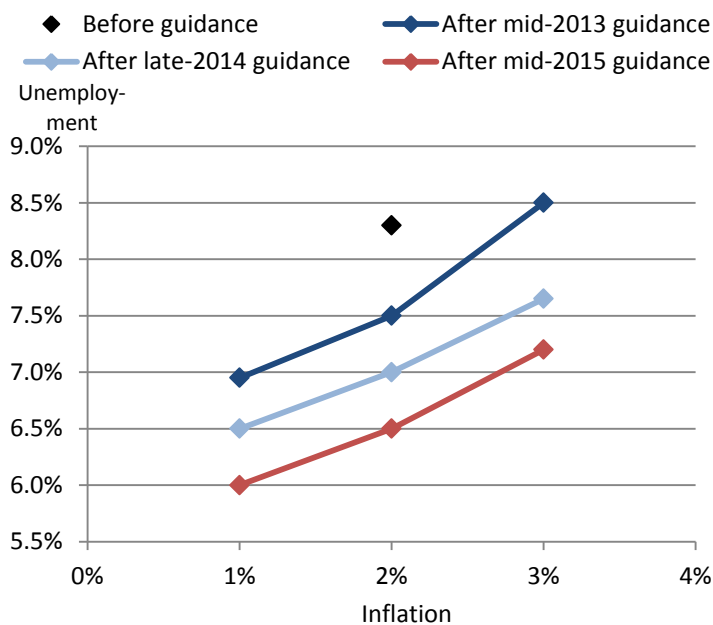
accommodative policy reaction function. The locus of points shifted down meaningfully with each successive extension of the calendar guidance, meaning that market participants saw the FOMC as taking a more accommodative policy approach—that is, waiting until a lower unemployment rate, for a given level of inflation, before raising the federal funds rate.¹²

The initial use of calendar guidance appears to have a similar effect. This assessment is more difficult because the survey question was not asked in advance of the mid-2013 guidance. However, the responses to other questions in the August 2011 SPD can be used to determine the economic conditions that were projected at the time of lift-off just ahead of the first use of calendar guidance, giving us a single point rather than a locus of points at that time. As can be seen, this point (the black dot in Figure 5) was well above the locus that was established after the adoption of the mid-2013 guidance. Thus, it appears that the success at conveying a more accommodative policy approach began with the first usage of calendar-based guidance.

The ability to shift the perceived reaction function so significantly was an important outcome that likely helped to support the economic recovery. One might have expected these shifts to become increasingly difficult. After all, the initial shifts moved the perceived reaction function towards the modified Taylor rule, suggesting that the FOMC was simply communicating that the timing of the first rate hike would be governed in the historical manner in which the FOMC has adjusted the federal funds rate. However, subsequent shifts in the calendar guidance pushed the locus below the level that would have been expected from the FOMC's historical behavior, indicating that the FOMC was moving towards a more unusual policy approach.

Indeed, the move to the mid-2015 language was accompanied by additional language that may have helped convince market participants that the FOMC would deviate from historical norms. In particular, the statement said, “To support continued progress toward maximum employment and price stability, the Committee expects that a highly accommodative stance of monetary policy will remain appropriate for a considerable time after the economic recovery strengthens.” This phrase was

Figure 5: Macroeconomic Thresholds for First Increase in Federal Funds Rate



Survey estimates are based off of median responses. "First increase" is defined as a target federal funds rate of 50 basis points.
Source. FRBNY Survey of Primary Dealers, authors' calculations.

¹² Chairman Bernanke (2012) made a similar observation based on responses to the Bluechip Survey, noting that respondents to that survey have repeatedly lowered their expectations for the level of the unemployment rate at the time of the first increase in the federal funds rate.

interpreted by many market participants as indicating that the calendar guidance was conveying information about the FOMC's reaction function. Such an interpretation was supported by subsequent comments by FOMC members. For example, New York Fed President Dudley gave a speech in September 2012 stating that extending the calendar guidance did not reflect "greater pessimism" about the economy, and that "the proper inference is that we were acting to secure a better outcome -- more rapid progress towards full employment and price stability."

Two other pieces of evidence are consistent with the interpretation that these changes to calendar guidance conveyed a shift in the reaction function. First, the FOMC's own forecasts released at the time of the changes in calendar guidance in most cases showed a downward revision to the path for the unemployment rate. Second, equity prices tended to rise in response to these announcements (as shown above in Table 2).¹³ These patterns would be expected if the calendar guidance conveyed a more accommodative policy approach, and they would be hard to justify if the calendar guidance signaled less confidence in the recovery.¹⁴

Economic Thresholds as Policy Guidance

As noted earlier, the FOMC in December 2012 changed its policy guidance to refer to explicit economic thresholds for the unemployment rate and for projected inflation. It stated that the current level of the federal funds rate would be expected to be maintained as long as the unemployment rate was above 6.5% and projected inflation was not above 2.5%. These economic thresholds replaced the explicit reference to a calendar date that had been used for policy guidance since August 2011.

If the ultimate objective of policy guidance is to provide information about the central bank's policy reaction function, then the most direct approach is for the central bank to communicate directly about the economic conditions that are affecting the policy stance, rather than having investors make inference about those conditions from the use of calendar guidance. Moreover, by specifying economic conditions rather than a calendar date, the central bank allows the market to determine the expected duration of the zero-bound policy based on its evolving view about the economic recovery. Allowing

¹³ The immediate rise in equity prices following the introduction and two extensions of the calendar-date guidance may also reflect changes in expectations for balance sheet policy that occurred at the same time. For example, in the September 2012 FOMC statement, in addition to the extension of the calendar-date guidance to mid-2015, the Committee announced an open-ended mortgage purchase program and signaled an intention to continue this program and engage in other securities purchases absent substantial improvement in the outlook for the labor market.

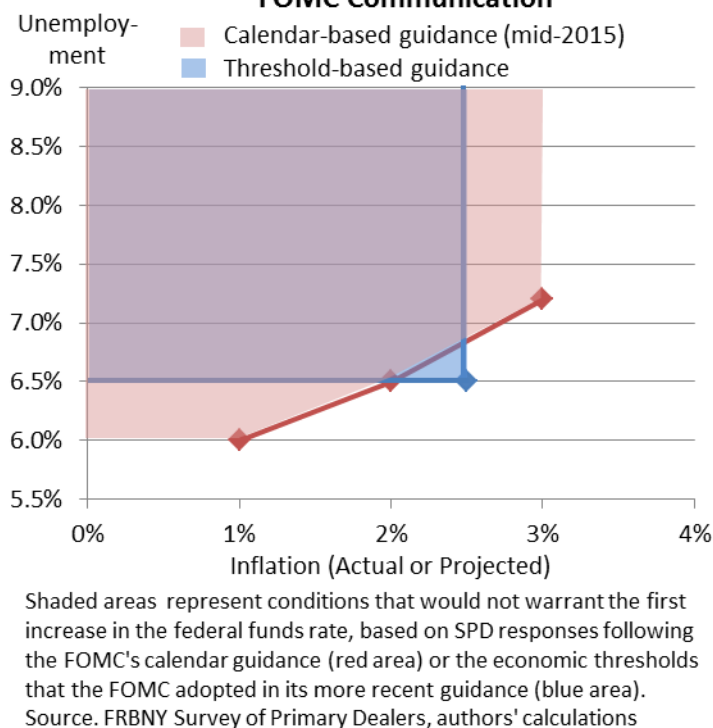
¹⁴ It is also possible that the changes in the calendar guidance prompted market participants to revise down their assessment of the neutral federal funds rate (the level of the federal funds rate consistent with full employment and price stability), which would cause the locus of points to shift in the manner observed in Figure 5. However, the two arguments mentioned above—the general improvement in the FOMC's employment forecasts and the rise in equity prices around these announcements—suggest that the forward guidance communicated a change in the FOMC's reaction function beyond just a downward shift in the neutral federal funds rate. Moreover, it is also worth noting that the SPD began asking about the longer-run federal funds rate in the June 2012 survey, and the median response has been stable at 4 percent, with no change after the introduction of the mid-2015 guidance.

policy expectations to adjust in this manner was seen as having desirable properties for stabilizing the economy. In particular, if economic data or other information pointed to a weaker economic recovery and a slower decline in the unemployment rate, market participants would automatically extend the expected duration of the zero-rate policy, providing additional stimulus to help offset the weaker outlook.¹⁵

In assessing the effects of the threshold-based policy guidance, it is useful to compare the economic thresholds adopted by the FOMC to the perceived policy reaction function that had been achieved under calendar guidance. The comparison is made in Figure 6.

The figure repeats the trade-off that market participants perceived after the mid-2015 guidance was adopted (the red line from Figure 5). This line defines a perceived “inaction zone” to the upper-left (the red shaded area), in which economic conditions would not warrant lifting off from the zero bound. The threshold guidance similarly defines an inaction zone, shown by the blue shaded area in the figure, that to some degree overlaps with the calendar-guidance inaction zone.

Figure 6: "Inaction Zones" Based on FOMC Communication



We are showing both of these zones on the same figure for simplicity, even though the comparison is not fully accurate for two reasons. First, the economic threshold in the current guidance is defined in terms of projected inflation, while the perceived reaction function from the calendar guidance was defined in terms of actual inflation. Second, the area from the calendar guidance represents the survey respondents' best estimate of the reaction function, while the area from the threshold guidance is a minimal set of conditions that have to be met before considering tightening. Thus, the thresholds that would be expected to prompt tightening might lie further to the lower-right than represented by the blue line.

Despite these considerations, we find the comparison to be informative. One important observation is that the two areas are similar in the region of what investors perceived as the most likely economic outcomes. In particular, the boundaries under both the calendar-based guidance and the threshold-based guidance pass through the point of 2 percent inflation and 6.5 percent unemployment, which is

¹⁵ See, for example, Chairman Bernanke's remarks at the December 2012 FOMC press conference.

close to the modal forecast from the SPD at that time.¹⁶ This observation is consistent with the Committee noting in the December 2012 meeting statement that it “views these thresholds as consistent with its earlier date-based guidance.” In this regard, the threshold guidance did not convey a further shift in the policy reaction function, but instead may have solidified investors’ perceptions about the reaction function by being more transparent.

However, the figure also highlights that the threshold guidance, by itself, does not convey the type of trade-off between the unemployment rate and the inflation rate that one might expect under a policy reaction function. The existence of a trade-off along these lines has been suggested in other communications, such as Chairman Bernanke’s comment during the June 2013 FOMC press conference that the decision to raise the federal funds rate, once the unemployment rate reaches 6.5%, will depend on other factors, including whether inflation continues to remain at very low levels. Thus, it is likely that investors continue to perceive such a trade-off, but it is not communicated directly under the current form of the threshold guidance.

Conclusion

At the August 2012 Jackson Hole Symposium, Chairman Bernanke noted that adjustments to private sector forecasts of the outlook reflect “a growing appreciation of how forceful the FOMC intends to be in supporting a sustainable recovery.” The results from this paper support the view that market participants have interpreted the FOMC’s policy guidance as conveying important information about the Committee’s policy reaction function. Responses to the New York Fed’s primary dealer survey indicate that dealers have come to expect the Committee to wait for lower levels of unemployment for a given level of inflation before beginning to raise the target federal funds rate, thereby shifting to a more accommodative policy approach aimed at supporting the economic recovery.

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¹⁶ The most recent SPD indicates that the modal forecast at the time of the first federal funds rate increase has PCE inflation as 2% and the unemployment rate at 6.2%, placing it just outside the two inaction zones.

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