

# The Role and Effectiveness of Federal Reserve Press Conferences

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## **Abstract**

Managing monetary policy expectations through central bank communication has become a cornerstone of central banking. This paper explores whether Federal Reserve press conferences clarify monetary policy by exploring market reactions during press conferences. Press conferences could clarify monetary policy by adding new information that shifts interest rate expectations or decreases market uncertainty about future interest rates. This paper finds that press conferences do not affect 10-year treasury rates, 30-year treasury rates or the VIX during tight time windows around policy statements and press conferences. In short, press conferences do not play a critical role in clarifying monetary policy.

*Keywords:* Monetary Policy, Federal Reserve Board, Federal Reserve System, FOMC, Fed, Interest Rates, Policy Effects, Central Banking

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## **1. Introduction**

Since the 1990's, central bank communication has become an increasingly important monetary policy tool. Central bank communication serves the dual purpose of affecting monetary policy and helping central banks remain accountable to the public (Woodford 2005). Managing monetary policy expectations has become a cornerstone of central banking, and effective central bank communication is critical for properly shaping market expectations. Recently, the Federal Reserve began holding press conferences after certain Federal Open Market Committee (FOMC) meetings to help clarify monetary policy decisions and to strengthen Federal Reserve communication generally. This raises the question whether these press conferences clarify monetary policy.

Central bank transparency improves the effectiveness of monetary policy by clarifying the future path of monetary policy. Central banks attempt to affect long-term interest rates since economic choices like consumption and investment decisions are based on long-term rates. Long-term rates are determined by the risk-free rate, expected future rates and the risk premium. Additional information from central banks allows market participants to form more accurate expectations about expected future rates. However, additional communication could also confuse market participants if market actors cannot distinguish strong signals of central bank intentions from weaker ones. Central bankers must weigh the benefits of additional communication with the potential cost of increased market confusion.

Federal Reserve transparency has significantly increased over the past two decades. The Federal Reserve began releasing policy statements in 1994 to announce changes in monetary policy. Prior to 1994, market participants determined current

monetary policy by studying open market operations. Through the next decade and a half, policy statements became more important as the FOMC began releasing statements after every meeting and included additional information about inflation and output projections and the future path of monetary policy (Kohn and Sack 2003, Poole and Rasche 2003 and see [federalreserve.gov](http://federalreserve.gov)).

The use of communication tools increased under Ben Bernanke, especially after the federal funds rate hit the zero lower bound in December 2008. After 2008, the Federal Reserve used unconventional monetary policy and communication tools to lower long-term rates by lowering expectations of future rates. Clarifying the future path of monetary policy becomes especially crucial once the overnight rate hits the zero lower bound because central banks must rely on affecting expectations further down the yield curve to continue changing long-term rates (Bernanke, Reinhart, and Sack 2004). For example, the Federal Reserve used forward guidance in policy statements to explain that the federal funds rate would remain near zero well into the future. In addition to forward guidance, the Federal Reserve began holding press conferences in 2011.

Press conferences are the newest form of communication used by the Federal Reserve. The Federal Reserve began holding press conferences to “present the Federal Open Market Committee's current economic projections and to provide additional context for the FOMC's policy decisions” (“Federal Reserve Press Release Regarding Press Briefings” 2011). The Federal Reserve also explained, “The introduction of regular press briefings is intended to further enhance the clarity and timeliness of the Federal Reserve's monetary policy communication. The Federal Reserve will continue to review its communications practices in the interest of ensuring accountability and increasing public

understanding.” Press conferences open with a statement by the Chair of the Federal Reserve<sup>1</sup> and then move to a question and answer period with members of the press. Press conferences occur four times a year following an FOMC policy statement, and the Federal Reserve has held thirteen press conferences to date.<sup>2</sup> Though Federal Reserve press conferences have not been studied empirically, they are worthy of study in order to determine if they are an effective means for shaping monetary policy.

In this paper I explore the effects of Federal Reserve press conferences, specifically whether press conferences clarify monetary policy and whether they add information over and above what is included in associated policy statements. Central bank communication tools like press conferences can affect long-term rates by changing market expectations of future rates. If Federal Reserve press conferences add new information that affects and clarifies expectations about the future path of monetary policy, we should expect to see more movement in long-term interest rates during press conferences relative to movements on policy statement days without press conferences. In addition, this paper examines whether press conferences decrease general market uncertainty and uncertainty about the future path of interest rates. Previous economic literature has found significant effects for other forms of Federal Reserve communication like policy statements, Congressional testimony and speeches by the Chairman. This paper explores whether these results hold for press conferences.

The June 19, 2013 press conference is an example of how one press conference had an effect on the future path of monetary policy. During the press conference opening

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<sup>1</sup> Hereinafter I will use “Chairman” to refer to the Chair of the Federal Reserve. However, I do not use Chairman to imply the gender of the chairperson.

<sup>2</sup> Originally, the Federal Reserve held press conferences an hour and forty-five minutes after the release of policy statements, but starting in June 2013, press conferences are held thirty minutes after the release of a policy statement. Twelve press conferences are included in the sample data.

statement, Chairman Bernanke explained, “If the incoming data are broadly consistent with this forecast, the Committee currently anticipates that it would be appropriate to moderate the monthly pace of purchases later this year” (“Transcript of Chairman Bernanke’s Press Conference June 19, 2013” 2013). The idea that the FOMC would begin scaling back quantitative easing by the end of 2013 was new and not included in the associated policy statement. Market participants at the time anticipated that the FOMC would begin decreasing quantitative easing in early 2014, so the news that the FOMC would decrease quantitative easing by the end of 2013 constituted a tightening of monetary policy. The two months following this press conference saw an increase in 30-year treasury rates of around 0.5%. Some of this increase in long-term rates can be attributed to Chairman Bernanke’s announcement during the press conference.

Figure 1 shows the change in 30-year treasury rates for the June 2013 Federal Reserve press conference. The graph shows a rise in interest rates following the release of the FOMC statement and it shows a 0.04% increase in 30-year treasury rates during the press conference. The average absolute change in 30-year treasury rates during this time window from 2001-2014 is 0.013% with a standard deviation of 0.014%. Therefore, the movement during this press conference is almost two standard deviations above the mean. Figure 1 supports the idea that the June 2013 press conference affected market expectations. This paper explores whether the movements seen in the June 2013 press conference reflect the fact that press conference systematically affect interest rates or if this press conference represents an outlier.

This paper does not find evidence to suggest that press conferences systematically

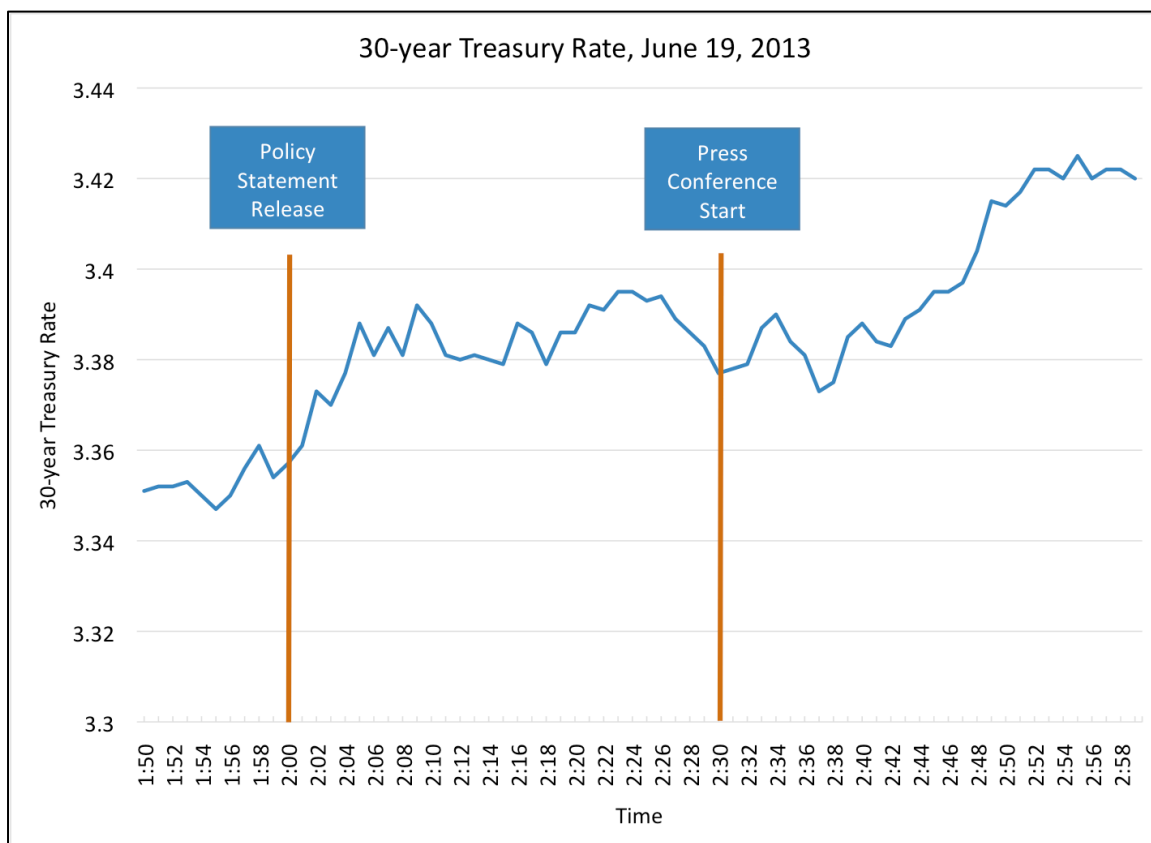


Figure 1 – 30-year Treasury Rate from 1:50 to 3:00 on June 19, 2013

affect long-term interest rates. By using absolute changes in daily 10-year treasury rates and minute-by-minute changes in 30-year treasury rates during small time windows, I analyze whether interest rates have larger movements on days with Federal Reserve press conferences relative to FOMC policy statement days with no press conferences. The release of FOMC policy statements, meeting minutes and Humphrey-Hawkins Congressional testimony by the Chairman were included in regressions as comparisons. The press conference variable is not significant in the regressions using treasury rates, while FOMC policy statements and meeting minutes releases were significant.

If press conferences clarify monetary policy actions, we should also expect to see decreasing market uncertainty during press conferences. I use the Chicago Board Options Exchange (CBOE) Volatility Index (VIX) and the standard deviation of 30-year treasury



rates to measure market uncertainty. The VIX measures the expected 30-day volatility of the S&P 500.<sup>3</sup> If market uncertainty decreases, the expected volatility of the stock market would decrease and the VIX would decrease. Therefore if press conferences decrease market uncertainty by clarifying monetary policy, the VIX should decrease during press conferences. I used minute-by-minute VIX data and an identical specification to the 30-year treasury regressions and found that press conferences did not affect the VIX.

The rest of the paper is organized as follows: Section 2 summarizes existing literature on central bank transparency, communication and press conferences. Section 3 describes the methodology used in the paper and offers a theoretical explanation for interest rate movements and changes in uncertainty during press conferences. Section 4 presents the results and Section 5 concludes.

## **2. Literature Review**

### **2.1 Transparency**

This paper fits into the broader economic literature on central bank transparency. Central bank transparency is defined as the absence of asymmetric information between a central bank and the private sector (Geraats 2002). Throughout the past three decades, central bank transparency has grown around the world with many central banks implementing policies like formal inflation objectives, published forecasts, public minutes and voting records, and announcements and explanations of policy decisions (Eijffinger and Geraats 2006). Increases in central bank transparency coincided with the rise of independent central banks and the use of discretionary monetary policy (Dincer and Eichengreen 2007, Geraats 2001b). In addition to helping independent central banks

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<sup>3</sup> For more information see <https://www.cboe.com/micro/VIX/vixintro.aspx>

remain accountable to the public, central bank transparency decreases the inflation bias of monetary policy. Discretionary monetary policy faces an inflation bias because economic actors set wage and price contracts based on expected inflation. Therefore, central bankers can raise economic output above the natural rate by raising inflation in the short-term. Increased transparency creates a disincentive for inflation manipulation because with transparency economic actors can react more quickly to changes in monetary policy and adjust their inflation expectations accordingly. This incentive effect smoothes changes in monetary policy since transparent central banks deviate less from their inflation target relative to less transparent central banks (Geraats 2006, Geraats 2001a).

Quantitative analysis supports the notion that increased central bank transparency has beneficial effects. Eijffinger and Geraats (2002) create one of the most comprehensive measures of central bank transparency to date. Based on a fifteen-point scale, Eijffinger and Geraats capture most aspects of central bank transparency like inflation targets, public forecasts and minutes, and prompt policy statements. Despite covering most transparency methods, their index fails to account for central bank press conferences. Dincer and Eichengreen (2007) use the comprehensive transparency index created by Eijffinger and Geraats to measure transparency over 100 central banks. Dincer and Eichengreen find that increased transparency decreases inflation and output volatility. These results support the economic theory that increased transparency allows market participants to react more quickly to central bank actions and therefore creates a disincentive for inflation manipulation.

However, increased transparency is not always better. Additional transparency could confuse market participants by adding contradictory information or by adding so

much information that market participants cannot distinguish strong signals of central bank intentions from weaker signals. In her many papers on central bank transparency, Geraats captures the idea of this dichotomy of increased clarity versus confusion as a “signal-to-noise ratio.” Beneficial and effective forms of central bank transparency would increase the signal-to-noise ratio while ineffective forms would decrease this ratio. In their definitive survey on transparency literature, Blinder, Ehrmann, Fratzcher and De Haan (2008) capture the notion of effective communication strategies as ones that manage expectations by “creating news” and “reducing noise.” Effective central bank communication strategies that steer expectations successfully “create news” that cause market reactions and “reduce noise” so that policy decisions are more predictable. In other words, ineffective communications fail to elicit market responses and confuse market participants.

Dale, Orphanides and Osterholm (2011) add further theoretical complexity to the analysis of central bank transparency by exploring the effects of differing levels of precision of central bank information. For instance, information about a central bank’s inflation objective is more precise than a central bank’s output projections. The benefits of the release of imperfect information depends on market participant’s ability to properly judge the level of precision of the information and to interpret imperfect information as such. In other words, the success of central bank communication depends on the ability of market participants to view projected policy and information as conditional rather than as central bank commitments (Blinder et al. 2008). If market participants view central bank projections as commitments, then discrepancies between actual and projected outcomes may serve to decrease the signal-to-noise ratio and may decrease central bank credibility

(Issing 2005). Dale, Orphanides and Osterholm argue that if the private sector cannot assess the quality or imperfection of central bank information, then the value of publishing this information is ambiguous. This analysis is critical for understanding information included in central bank press conferences since most information given is forward-looking and therefore imperfect.

## **2.2 Communication**

Another strand of economic literature focuses on the effects of central bank communication more specifically. Central bank communications are a subset of central bank transparency methods. Tools like policy statements, testimony and press conferences constitute communication while other transparency policies like an inflation target would not fall under the category of communication. Existing literature shows that increases in central bank communication improve the predictability of monetary policy. By exploring daily changes in one-month-ahead federal funds rate futures, Poole and Rasche (2003) find that monetary policy surprises have decreased following the Federal Reserve's expanded use of policy statements in the late 1990's and early 2000's. Lange, Sack and Whitesell (2003) show that the predictability of monetary policy has increased since the late 1980's by regressing changes in the federal funds rate on changes in lagged treasury rates and federal funds rate futures. The predictive power of lagged treasury rates and federal funds rate futures significantly improved after 1994 once the Federal Reserve began releasing policy statements. Similarly, Swanson (2006) shows that interest rate forecasts, as measured by federal funds rate futures and private forecasts of 3-month treasury bill rates, improved after 1994 while forecasts of macroeconomic indicators had not. Swanson's analysis suggests that interest rate forecasts improved because of

increases in Federal Reserve transparency rather than some other factor like general improvements to forecasting methodology. This literature suggests that the Federal Reserve's improved communication strategy increased the predictability of monetary policy.

Other papers focus on market reactions around different forms of Federal Reserve communications to determine whether they affect expectations and, if so, whether they move expectations in the central bank's intended direction. Kohn and Sack (2003) explore market reactions around FOMC policy statements, congressional testimony and speeches by the Federal Reserve Chairman. Kohn and Sack use daily changes in federal funds rate futures, Eurodollar futures and treasury rates to determine whether "central bank talk" conveys important information to market participants.<sup>4</sup> Kohn and Sack control for monetary policy surprises and other macroeconomic factors and focus on increases in variance of the residual to determine the importance of these forms of Federal Reserve communication. FOMC statements and congressional testimony are significant, but only the testimony affects 10-year treasury rates. Kohn and Sack also show that information about the economic outlook has a stronger effect on long-term securities, while information about the future course of monetary policy strongly affects shorter-term securities.

Similarly, Chirinko and Curran (2013) use intraday price and quantity volatility of 30-year treasuries to determine the effects of FOMC statements, Chairman speeches and Chairman testimony from 1997-1999. Chirinko and Curran find that volatility is positively correlated with these three forms of communication. Chirinko and Curran

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<sup>4</sup> The paper uses 2-year and 10-year treasury rates, in addition to treasury forward rates between zero and four years ahead.

argue that this correlation could be attributed either to the release of new information or to coordination of private actors around public information. The authors argue that increased volatility before Chairman communication would reflect coordination while increased volatility after these communications would reflect added content. Chirinko and Curran find that speeches provide content, testimony works through coordination, and FOMC statements both add content and coordinate private actors.

Rosa (2013) applies Kohn and Sack's methodology to the release of FOMC minutes. By focusing on intra-day movements in treasury rates, stock prices and U.S. exchange rates, Rosa finds that the release of FOMC meeting minutes causes an increase in asset price volatility compared to days without the release of minutes. The effects of meeting minutes are smaller than the effects of FOMC statements. Rosa also finds that the effects of minutes is decreasing over time, suggesting that FOMC statements have become more informative, and that the Federal Reserve's emphasis on transparency has caused more information to be released in a timely manner.

Ehrmann and Fratzscher (2007) look at Federal Reserve communications like speeches and testimony by the Chairman, Federal Reserve Governors and regional bank Presidents. Ehrmann and Fratzscher code each communication based on whether they include a positive, neutral or negative economic outlook and whether the information suggests tightening, neutral or easing monetary policy. Ehrmann and Fratzscher find that communication by the Chairman and Governors affect treasury rates, and communication by Federal Reserve Presidents affect treasury rates only when they include information about the economy. Communication by the Chairman has the largest effect and information about the economy has a larger effect on long-term treasuries than

information about the future course of monetary policy. Hayo, Kutan and Matthais (2008) also code Federal Reserve communications based on their content and find similar results about the relative importance of different Federal Reserve members.<sup>5</sup> Hayo, Kutan and Matthais also find that FOMC policy statements have the largest effect on treasuries, followed in decreasing importance by the Semi-Annual Monetary Policy Report, Congressional testimony and speeches. Hayo, Kutan and Matthias (2010) expand this analysis to focus on European and Asian equities and find similar results.

The level of clarity is also a critical component for determining the effectiveness of different types of Federal Reserve communication. Jansen (2011) uses readability statistics to measure the level of clarity in Chairman testimony during the Congressional Monetary Policy Oversight hearings, often referred to as the Humphrey-Hawkins hearings and finds that increased clarity is associated with decreased financial market volatility. By including only testimony, this paper has a limited scope. However, measuring the clarity of individual Federal Reserve communications represents one of the newest strands of research within this literature.

### **2.3 Press Conferences**

Although no economists have studied Federal Reserve press conferences, multiple authors have explored the effects of European Central Bank (ECB) press conferences. Ehrmann and Fratzscher (2009) find that European markets view ECB press conferences as an important clarifying mechanism for monetary policy and that these press conferences have a larger effect on financial markets than the corresponding policy

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<sup>5</sup> The Chairman has the largest effect, followed in decreasing importance by the Vice-Chair, Governors and then voting Presidents. Non-voting Presidents are not significant.

announcement.<sup>6</sup> Rosa and Verga (2007) perform content analysis on the introductory statement of ECB press conferences and assign a value that captures the future policy inclination of each press conference. Rosa and Verga find that press conferences improve the predictability of future short-term rates and that the unexpected information included in the press conference affects market expectations six months in the future. Heinemann and Ullrich (2007) also perform content analysis on ECB press conferences and create a content indicator using code words. Heinemann and Ullrich also find that press conferences improve the predictability of future short-term rates by showing that their content indicator improved the fit of a Taylor-type model of interest rates.

These previous papers on ECB press conferences may cause us to expect similar results for Federal Reserve press conferences. However, unlike Federal Reserve policy statements, ECB policy statements that precede press conference do not include explanations and justifications for the announced policy and simply include the interest rate decision (Blinder et al. 2008). In other words, ECB press conferences perform a more formal clarifying function than Federal Reserve press conferences. Therefore, the results from papers on ECB press conferences may not hold for Federal Reserve press conferences.

This paper builds on existing economic literature on central bank communication by applying previous empirical analysis of central bank communication to Federal Reserve press conferences. Economic literature about transparency has shown the

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<sup>6</sup> Ehrmann and Fratzcher look at changes in 3-month Euribor futures to measure the effects of ECB press conferences. They utilize a difference of means test, comparing days with press conferences to days without press conferences. Ehrmann and Fratzcher find that press conferences are associated with higher absolute returns and trade volumes of 3-month Eurobor futures, and therefore conclude that press conferences are an important central source of information for the market. Ehrmann's and Fratzcher's methodology differs from this paper's methodology because their paper looks at a short-term interest rate and used a different regression specification, which attempted to discern explanatory factors that determined press conferences' effect.



importance of central bank communication and how this communication can affect the financial market. Previous literature has shown that many forms of Federal Reserve communication such as policy statements, testimony and the release of meeting minutes affect financial markets. This paper follows most directly from papers by Kohn and Sack (2003) and Chirinko and Curran (2013) by testing whether or not Federal Reserve press conferences make news without attempting to determine whether the associated market movement was the direction intended by the Federal Reserve. By examining whether press conferences move financial markets and decrease market uncertainty, we can explore whether press conferences are an effective method of central bank communication.

### **3. Methodology**

To estimate the effects of press conferences I utilized the following regression:

$$y_t = \beta_0 + \beta_1 \text{Statement}_t + \beta_2 (\text{Statement}_t \times \text{Conference}_t) + \beta_3 (\text{Statement}_t \times \text{Post2008}_t) + \beta_4 \text{Minutes}_t + \beta_5 \text{LaborR}_t + \beta_6 \text{Testimony}_t + \beta_7 \text{Treasury}_t + \beta_8 \text{Unemployment}_t + \delta' Q_t + \varepsilon_t$$

$Y_t$  captures different monetary policy outcome variables described below. I estimated the model using OLS with robust standard errors. Subscript “t” indexes time, and there is one observation per day. Twelve press conferences are included in the data sample.

#### **3.1 Monetary Policy Communication Variables**

*Statement* is a dummy that captures days with FOMC policy statement releases. *Conference* is a dummy that captures days with Federal Reserve press conferences, which always occurred after policy statements. The interaction variable *Statement*  $\times$  *Conference* captures the possibility that press conferences might alter the impact of policy statements. Note that because press conferences only occur following policy statements, the

interaction term is equivalent to a simple dummy variable indicating press conferences. *Post2008* is a dummy that captures if the year is greater than or equal to 2008. I included this dummy to test whether the effects of statements changed during unconventional monetary policy. *Minutes* is a dummy that captures days with FOMC meeting minutes releases. *Testimony* is a dummy that captures days when the Federal Reserve Chairman gave the Semi-Annual Monetary Policy Report to Congress, including both the testimony in front of the Senate Banking Committee and the House Financial Services Committee.

I used the Federal Reserve public website to collect information for these variables.<sup>7</sup> Gurkaynak, Sack, and Swanson (2005) also included a helpful appendix with the timing of FOMC policy statements through 2004. I used the Senate Banking Committee and House Financial Services website to check information for the *Testimony* variable. *Minutes* and *Testimony* were included to study the effects of other official forms of Federal Reserve communication in order to better contextualize the results for press conferences. Press conferences, meeting minutes releases and the testimony for the Semi-Annual Monetary Policy Report never occurred on the same day. I did not include other forms of communication like speeches by Federal Reserve Governors or Bank Presidents because other papers found smaller effects for these forms of communication.

### **3.2 Control Variables**

*LaborR* is a dummy that captures days when the Bureau of Labor statistics released Employment Situation Summaries.<sup>8</sup> I included this variable to compare the effects of press conferences to the effect of a major release of economic information.

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<sup>7</sup> For more information about FOMC statements, press conferences and meeting minutes see <http://www.federalreserve.gov/monetarypolicy/fomccalendars.htm>. For more information about the Semi-Annual Monetary Policy Report see [http://www.federalreserve.gov/monetarypolicy/mpr\\_default.htm](http://www.federalreserve.gov/monetarypolicy/mpr_default.htm).

<sup>8</sup> For more information visit [http://www.bls.gov/schedule/archives/empsit\\_nr.htm](http://www.bls.gov/schedule/archives/empsit_nr.htm).

*Treasury* captures the treasury rate at the end of each day. I included this variable to control for the effects of larger absolute movements in treasury rates when interest rates were higher, if this effect occurred. *Unemployment* captures the unemployment rate in order to control for the general state of the economy.  $\delta'Q_i$  is a time control using week dummies. Week dummies control for the general trend of interest rates during a given week and therefore pick up the effects of other important economic announcements and information in a given week.

I estimated the model using OLS because policy statements, press conferences, minutes releases, congressional testimony and labor releases are scheduled well in advance and are therefore exogenous to changes in monetary policy outcome variables or omitted variables. Rosa and Verga (2007) also find that non-standard econometric techniques do not perform better than standard OLS regression when they studied the effects of ECB press conferences.

### **3.3 Monetary Policy Outcome Variables**

For my dependent variable I used absolute daily changes in 10-year treasury rates, intraday absolute changes in 30-year treasury rates, the standard deviation of 30-year treasury rates and intraday changes in the VIX. Focusing on volatility and absolute changes in interest rates makes it unnecessary to do content analysis to assign an intended policy direction (accommodative or tightening) to each communication. This analysis simply attempts to determine whether press conferences “make news” and move markets, not whether these movements were the intended effects of the Federal Reserve. I used long-term interest rates because central banks attempt to affect long-term interest rates in order to affect economic output and inflation.

### **3.3.1 10-Year Treasury Rates**

I collected information for the daily close in 10-year treasury rates from Federal Reserve Economic Data (FRED) compiled by the Federal Reserve Bank of St. Louis. I used the 10-year Treasury Constant Maturity Rate not seasonally adjusted from January 3, 2000, through February 24, 2014. I started in 2000 because the Federal Reserve began releasing policy statements after each FOMC meeting starting in 2000. Prior to 2000, the FOMC only released statements to explain changes to monetary policy. Therefore, statements are not exogenous to changes in interest rates prior to 2000. Some other authors like Kohn and Sack (2003) use daily changes in interest rates to study the effects of Federal Reserve communication, but daily changes also pick up noise from many other important factors not associated with monetary policy like the release of economic information. Sack and Swanson (2005) show that using intraday data and a tight time window is important for excluding noise from other economic events.

### **3.3.2 30-Year Treasury Rates**

In order to decrease the effects of extraneous factors, I ran a similar regression using intra-day changes of 30-year treasury rates. I used the absolute change of 30-year treasury rates and the standard deviation of 30-year treasury rates from 1:50 P.M. to 3:00 P.M. Eastern Standard Time from January 2001 to January 2014. The FOMC released planned policy statements without press conferences at 2:30, 2:15 or 2:00. Unplanned policy statements after special FOMC meetings occurred either after markets closed or in the morning, and I therefore excluded them from the regression. For the first eight press conferences the FOMC released policy statements at 12:30 and began the press conference at 2:15. Therefore for these days the time window used is 12:20 to 3:00.

Beginning in 2013, the FOMC released statements at 2:00 while press conferences started at 2:30. I used the normal time window from 1:50 to 3:00 for those more recent press conference days. The inconsistent time periods for press conferences means that the regression will not completely control for time of day fixed effects for the press conference dummy. The longer time periods for some press conferences also means that the regression can over-estimate the effects of press conferences because there is more time for interest rates to change. The FOMC released minutes at 2:00. I excluded *LaborR* and *Testimony* in the 30-year treasury rate regressions because both the Employment Situation Summary release and Congressional testimony by the Chairman occurred in the morning.

Looking at the effects of policy statements and press conferences collectively is important because press conferences occurred at different times in the sample. Ideally, I would want a time period that only included press conferences. However, the fact that press conferences occurred much closer to the release of policy statements starting in 2013 made looking only at press conferences impractical.<sup>9</sup> A time window that only included press conferences could inadvertently pick up the effects of policy statements and incorrectly attribute those effects to press conferences. In order to avoid the inconsistency of time issue, I expanded the time window to include both press conferences and policy statements.

I used the 30-year Treasury Rate Interest Rate option (TYX) compiled by the CBOE to measure 30-year treasury rates. This option is based on the yield-to-maturity of the most recently auctioned 30-year Treasury bond, which occurs every six months in

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<sup>9</sup> Press conferences originally started at 2:15, an hour and forty-five minutes after the release of the policy statement. Beginning in 2013, press conferences being at 2:30, only thirty minutes after the release of the policy statement.

February and August. However, this option captures shifting market expectations around the 30-year treasury rate between 30-year Treasury bond sales. This is especially important for the time period between 2002 and 2006 when the Treasury stopped issuing 30-year bonds. TYX continued to measure market expectations for 30-year treasury rates during this period.<sup>10</sup> I acquired information for TYX from Pi Trading. TYX is traded from 8:20 A.M. to 3:00 P.M Eastern Standard Time, therefore the time period regression ended at 3:00. Unfortunately, by ending at 3:00 the regressions do not capture the entirety of each press conference, which began at either 2:15 or 2:30 and lasted roughly an hour. The regressions may therefore underestimate the effects of press conferences.

### **3.3.3 VIX**

I ran a regression using changes in the VIX to attempt to capture the potential clarifying aspect of press conferences. Press conferences might not add information that changes long-term interest rates, but the question and answer period may decrease uncertainty by allowing members of the press to clarify market confusion. The VIX measures the implied volatility of the S&P 500 independent of asset price in the S&P 500. In other words, the VIX measures the expected variance of stock prices over the next 30 days. The fact that the VIX measures expected volatility independent of asset prices is important because asset prices are affected by interest rates. Any changes in the VIX following a policy statement or press conference would therefore reflect changes to market uncertainty rather than the fact that asset prices moved because of changes in interest rates. I acquired the VIX data from Pi Trading for September 22, 2003 through January 17, 2014. The regular trading hours for the VIX was from 9:30 A.M. to 4:15 P.M Eastern Standard Time, so the time window used in the VIX regressions is from 1:50 to

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<sup>10</sup> For more information on the TYX option, see <http://www.cboe.com/learncenter/pdf/iro.pdf>.

4:00 for most days and 12:20 to 3:15 for the first eight press conferences. The VIX time windows cover the entire press conference duration and thus do not underestimate the effects of press conferences. I did not include the *LaborR* and *Testimony* variables in the VIX regression because both occurred outside of the time range. In addition, *Treasury* was not included because the VIX is independent of the interest rate. In the end, the analysis using changes in interest rates test if press conferences “make news,” while the VIX regressions test whether press conferences decrease uncertainty by reducing noise.

### **3.4 Predicted Effects of Press Conferences on Monetary Policy Outcome Variables**

Press conferences can clarify monetary policy by adding new information that increases market certainty about the future path of monetary policy and interest rates. Each policy statement announces current monetary policy and provides justifications for the current policy. Press conferences must add information above and beyond what is included in the associated policy statements in order to add additional clarity. In addition, markets must deem this information as credible. If press conferences do not add new information or if the markets do not deem the information included in press conferences as credible, then press conferences cannot clarify monetary policy, decrease market uncertainty or move interest rates. New information included in press conferences could affect market interest rates and/or market uncertainty. If press conferences clarify monetary policy, they could decrease market uncertainty, but may not move interest rates if they do not change the average expected rate by market participants. New information could change interest rates if the information caused the average expected interest rate by market participants to change, but this does not necessarily imply decreased

uncertainty.<sup>11</sup> In the end, if press conferences are important for clarifying monetary policy, then they should cause interest rate movements and decrease uncertainty.

### **3.4.1 Effects on Long-term Interest Rates**

New information included in press conferences could move interest rates if this information causes the average expected interest rate by market participants to shift. Market interest rates represent the average expected interest rates by market participants. Federal Reserve press conferences could present new information that significantly increases the likelihood of a certain interest rate in the future. If this new expected future interest rate supported by the press conference differs from the existing average expected future interest rate, then interest rates should move as expectations converge on this new expected interest rate. Market interest rates could differ from the Federal Reserve's intended interest rate path because of misinterpretations of previous Federal Reserve communications by market participants, a previous lack of clarity by the Federal Reserve or because the FOMC decided to change its plan for future monetary policy. Interest rates could change without increased certainty about future rates as long as the average expected interest rate by market actors shifts.

However, interest rates would not change if the new information included in a press conference supports the existing market interest rate. If this phenomenon occurred consistently, then that would suggest that economic actors formed accurate monetary policy expectations from existing information without press conferences. In other words, the existing interest rate accurately reflected the future path of interest rates before the new information included in a press conference. Affecting long-term interest rates is the

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<sup>11</sup> For example, if a press conference delivers new information in a way that confuses all market participants and causes their interest rate expectations to diverge, that press conference could still cause a change in the market interest rate.



Federal Reserve's main monetary policy aim in order to manage output and inflation. If market expectations of monetary policy consistently match the FOMC's intentions prior to press conferences, then press conferences are not critical for the main thrust of monetary policy. Clarifying monetary policy means correcting interest rates and market expectations that differ from the Federal Reserve's intended effects. If press conferences are an important clarifying tool for the Federal Reserve, then they should cause interest rate movements.

The regressions using the absolute change in 10-year and 30-year treasury rates test whether the information included in press conferences shift market expectations of future interest rates. As Figure 2 shows, a press conference's effect on interest rates depends on the market reaction to the associated policy statement. The stylized graph in Figure 2 is broken into two periods: a period after the policy statement is released and a period after the start of the press conference. Press conferences could either add information that reinforces market reactions or information that contradicts or counteracts market reactions to the policy statement. For example, if a statement announced an unexpected monetary policy tightening in an upcoming FOMC meeting, the press conference could reinforce the market reaction by clarifying that the tightening would most likely occur in the next meeting. This would push interest rates higher than they otherwise would have been following the policy statement by giving market actors increased confidence about the exact timing of the tightening and therefore causing interest rate expectations to rise accordingly. Conversely, if a policy statement announced a surprise tightening in the near future, the press conference could counteract a market overreaction by stating that the policy tightening would not occur in the next meeting.

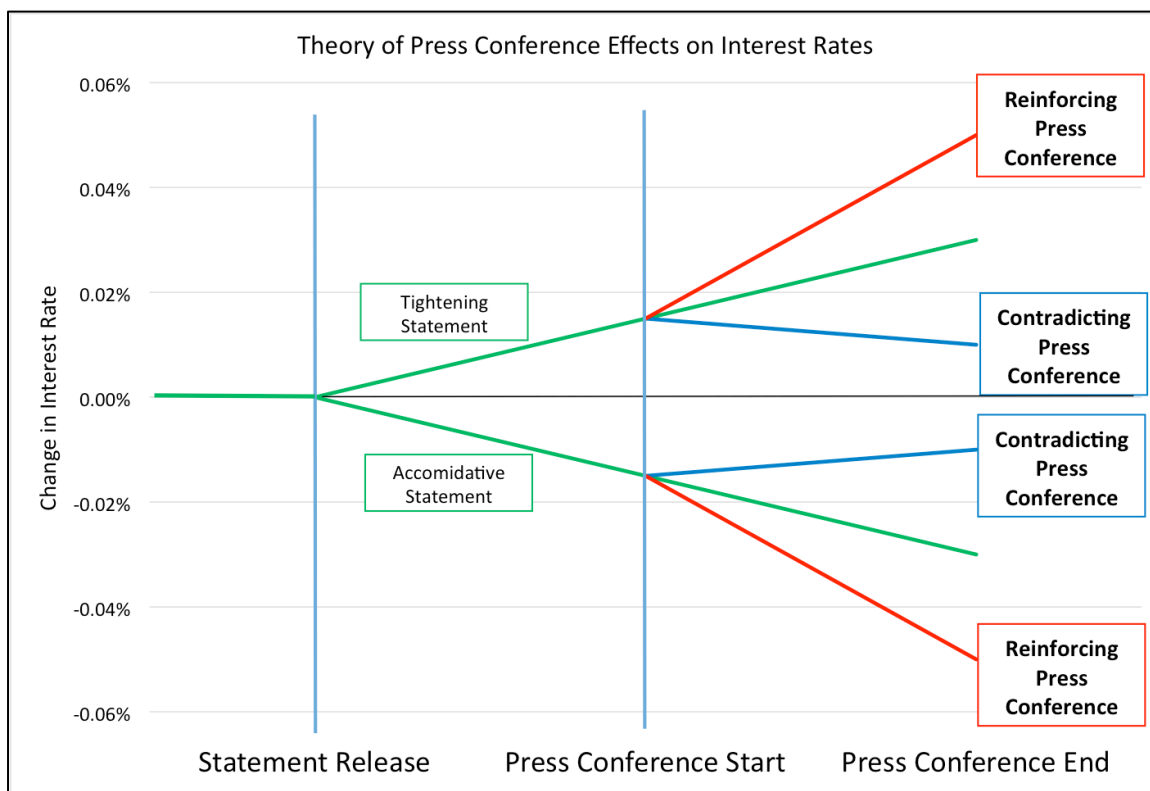


Figure 2 – Press Conference Effects on Interest Rates

Interest rates would likely not rise as much because market actors would know that the tightening would occur at least a few months in the future. Market reactions to policy statements occur quickly, so the Federal Reserve Chairman could tailor his statements to move markets in a manner more consistent with the intent of the FOMC policy statement.<sup>12</sup>

As Figure 2 shows, reinforcing press conferences are positively correlated with statements' effects while contradicting press conferences are negatively correlated with statements' effects. Figure 2 also shows why it is important to look at the *absolute* change in interest rates. For example, reinforcing press conferences could mean that interest rates are either becoming more positive or more negative. Utilizing the absolute change in

<sup>12</sup> The chairman cannot see market reactions during press conferences, so the applicability of this intuition may be limited.

interest rates causes the regression to return the appropriate positive coefficient for reinforcing press conferences independent of whether interest rates became more positive or more negative.

Whether press conferences reinforce or counteract statements could vary from statement to statement depending on the market reaction to the policy announcement. Therefore, the effects of press conferences that reinforce and those that counteract could cancel each other out and incorrectly return an insignificant coefficient in the absolute change in treasury regressions. In addition, the absolute change in 30-year treasury rates could underestimate effects of press conferences if the 30-year treasury rate reversed course and changed signs. For example, assume that a policy statement caused interest rates to increase by 0.01% prior to the start of a press conference and the subsequent press conference caused interest rates to decrease by 0.02%. The ultimate change in the interest rate through the period of the statement and press conference would be -0.01%, but the absolute value of the change in interest rate would be 0.01%. The true effect of the press conference would be -0.02%, but the absolute change in interest rates would incorrectly show that the effect of the press conference was 0.

To address this problem, I ran additional regressions using the *standard deviation* of 30-year treasury rates in order to avoid these issues. If the effects of press conferences cancel each other out in the regression using the absolute change in treasury rates, the regression of the standard deviation of interest rates should return a positive coefficient for press conferences.<sup>13</sup> In other words, if both the regression using the absolute change in interest rates and the regression using the standard deviation of interest rates return an

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<sup>13</sup> This assumes that the minute-by-minute volatility of the 30-year rate is roughly equivalent for press conferences that reinforce and press conferences that counteract market reactions.

Sign of Coefficient on Press Conference for:		Analysis	Press Conferences Add New Information That Affects Interest Rate Expectations?
$ \Delta i_t $	$SD(i_t)$		
+	+	Press conferences reinforcing reaction to policy statement	Yes
+	-	Press conferences reinforcing reaction to policy statement, lower intraday volatility	Yes
-	+	Press conferences counteracting reaction to policy statement, higher intraday volatility	Yes
-	-	Press conferences counteracting reaction to policy statement	Yes
+	0	Press conferences reinforcing reaction to policy statement, lower intraday volatility	Yes
-	0	Press conferences counteracting reaction to policy statement, higher intraday volatility	Yes
0	+	Press conferences effects cancelling in absolute value regression OR Higher intraday volatility	Yes
0	-	Lower intraday volatility	?
0	0	No effect	No

Table 1 – Press Conference Coefficient Analysis for Treasury Rate Regression

insignificant coefficient for press conference, then these insignificant results cannot be attributed to reinforcing press conferences canceling out the effects of counteracting press conferences. An insignificant result for both the absolute change in 30-year treasury rates and the standard deviation of 30-year treasury rates would mean that press conferences are not adding new information that change market expectations and shift the yield curve for longer-term securities. Table 1 summarizes the analysis for all possible outcomes for

the absolute change in interest rate regression and the standard deviation of interest rate regression.

### **3.4.2 Decrease in Uncertainty About Future Rates**

Press conferences could also clarify monetary policy by decreasing uncertainty about future interest rates. There is a variance in market actors' expectations of future interest rates around the average rates captured by financial markets. A higher variance in market participants' interest rate expectations represents higher market confusion and uncertainty since expectations among market participants differ. A higher variance in market expectations could lead to higher interest rate volatility as interest rates fluctuate between market actors differing interest rate expectations. Clear signals about the future path of monetary policy and interest rates included in a Federal Reserve press conference should cause the variance in market expectations to decrease as market actor expectations converge on the expected interest rate supported by the Federal Reserve's communication.

The variance in market actors' expectations of future interest rates could decrease without the interest rate changing if the new information included in the press conference supports the existing market interest rate. Decreasing the variance of market expectations could have beneficial effects for equity markets and could affect the broader economy through wealth effects. However, the wealth effect channel is a much more indirect avenue of monetary policy when compared to shaping long-term interest rates.

The regressions using the VIX should capture the effects on the variance of market actors' expected interest rates. The VIX measures implied short-term market volatility. If press conferences clarify monetary policy by adding new information that

give strong signals of the future path of interest rates, then the variance of market participants' interest rate expectations should decrease. If the variance of interest rate expectations decreases, then market uncertainty and the volatility of equity markets should decrease.<sup>14</sup> Therefore, if press conferences clarify monetary policy, the VIX should decrease and the coefficient on the VIX variable in the regressions should be negative. If press conferences do not add information that clarifies monetary policy, then the VIX should not change. If press conferences actually confuse economic actors, then the VIX should increase and the coefficient in the regressions should be positive.

The standard deviation of interest rates could also measure the variance in market actor's expectations of interest rates and market uncertainty more generally. If press conferences cause the variance in expected future interest rates to decrease, then interest rate volatility would fall because interest rates would not fluctuate between market actors' differing expectations. If interest rates did not change, then the standard deviation of interest rates would decrease. A result with an insignificant coefficient for the absolute change in interest rate regression but a significant coefficient for the standard deviation regression could show that press conferences affect market uncertainty.

## **4. Results and Analysis**

### **4.1 10-Year Treasury Regressions**

Tables 2 and 3 present the results for the regressions using the absolute daily change in the 10-year treasury rate. Table 2 presents the results with no time control and Table 3 presents the results using week dummies. As Table 2 shows, the coefficients for the policy statement variable are positive and statistically significant, suggesting that

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<sup>14</sup> If market participants view an investment in equities as the present discounted value of all future income from that investment, then interest rate volatility would cause similar volatility in the pricing of equities.

	(1)	(2)	(3)	(4)
FOMC Statement	0.0104* (0.00607)	0.0105* (.00607)	0.0106* (0.00607)	0.0118* (0.00607)
FOMC Statement x Press Conference	-0.0046 (0.0153)	-0.00457 (0.0153)	-0.00459 (0.0153)	-0.00462 (0.0153)
FOMC Minutes Release		0.00288 (0.00375)	0.00270 (0.00374)	0.00368 (0.00373)
Semi-Annual Monetary Policy Report Testimony			0.00877 (0.00598)	0.00996* (0.00598)
Employment Situation Summary Release				0.0244*** (0.00381)
F-test: $\beta_{\text{statement}} + \beta_{\text{press conference}}$	0.6802	0.6751	0.6689	0.6070
N	3523	3523	3523	3523
R <sup>2</sup>	0.0142	0.0143	0.0150	0.0309

Notes: Standard errors are in parentheses. Three astericks (\*\*\*) denotes significance at the 1 percent level, two (\*\*) at the 5 percent level, and one (\*) at the 10 percent level. OLS robust standard errors in parenthesis.

these releases add new information that changes expectations about future interest rates.

The press conference variable is not significant in any of the regressions. The testimony variable only becomes significant once the labor release variable is included, so it is unclear whether this testimony actually affects interest rate expectations. I ran regressions that included only the first day of testimony in case the second day of testimony was redundant and caused the testimony coefficient to underestimate the effects. The variable that only included the first day of testimony was not statistically significant.

As Table 3 shows however, the statement dummy and press conference dummy are not significant when week dummies are used as a time control. These results hold when month dummies are used instead of week dummies. The lack of results when a time control is used supports the idea that daily changes in interest rates capture a significant amount of market noise not associated with the variables tested. When daily data is used, the time control picks up the effect of this noise. These results suggest that intraday

<b>Table 3: Absolute Daily Change in 10-year Treasury Rate, 2000-2014, Week Dummies</b>				
	(1)	(2)	(3)	(4)
FOMC Statement	0.000432 (0.00571)	0.00452 (.00572)	0.00450 (.00572)	0.00604 (0.00571)
FOMC Statement x Press Conference	0.00548 (0.0162)	0.00528 (0.0162)	0.00530 (0.0162)	0.00426 (0.0161)
FOMC Minutes Release		0.00390 (0.00410)	0.00360 (0.00410)	0.00492 (0.00410)
Semi-Annual Monetary Policy Report Testimony			0.0131 (0.00718)	0.0137* (0.00718)
Employment Situation Summary Release				0.0246*** (0.00393)
F-test: $\beta_{\text{statement}} + \beta_{\text{press conference}}$	0.5175	0.5177	0.5177	0.4930
N	3523	3523	3523	3523
R <sup>2</sup>	0.3071	0.3073	0.3084	0.3212

Notes: Standard errors are in parentheses. Three astericks (\*\*\*) denotes significance at the 1 percent level, two (\*\*) at the 5 percent level, and one (\*) at the 10 percent level. OLS robust standard errors in parenthesis.

changes in treasury rates should be used instead of daily changes in order to better control for market noise.

#### **4.2 30-Year Treasury Regressions**

Table 4 presents the results for the absolute change in 30-year treasury rates and Table 5 presents the results for the standard deviation of treasury rates. The regressions in Table 4 include the unemployment rate and the end of day 30-year treasury rate as controls. All of the regressions use week dummies as a time control. The coefficients on the statement and minutes variables are positive and significant, showing that interest rates have larger movements on days when the FOMC release a policy statement or meeting minutes. 30-year treasury rates move 0.027% more on days with policy statements and 0.0055% more on days when minutes are released. The movement on days with policy statements is economically significant because the standard deviation of the absolute change in 30-year rates for all days during this time window was 0.014.



**Table 4: Regression of Absolute Change in 30-year Treasury Rate, 1:50-3:00, 2001-2014**

	(1)	(2)	(3)	(4)
FOMC Statement	0.0273*** (0.00360)	0.0276*** (0.00359)	0.0189*** (0.00331)	0.0194*** (0.00330)
FOMC Statement x Press Conference	0.00481 (.00801)	0.00452 (0.00801)	-0.00811 (0.0101)	-0.00811 (0.00101)
FOMC Statement x Post-2008			0.0213*** (0.00789)	0.0208*** (0.00789)
FOMC Minutes Release		0.00550*** (0.00150)		0.00511*** (0.00149)
F-test: $\beta_{\text{statement}} + \beta_{\text{press conference}}$	0.0000	0.0000		
F-test: $\beta_{\text{statement}} + \beta_{\text{press conference}} + \beta_{\text{statement x post-2008}}$			0.0000	0.0000
N	3125	3125	3125	3125
R <sup>2</sup>	0.3873	0.3910	0.3994	0.4026

Notes: Standard errors are in parentheses. Three astericks (\*\*\*) denotes significance at the 1 percent level, two (\*\*) at the 5 percent level, and one (\*) at the 10 percent level. OLS robust standard errors in parenthesis.

Therefore, interest rates move almost 2 standard deviations more on days with FOMC policy statements. This result suggests that the information included in policy statements change market expectations of future interest rates. The results in Table 4 and Table 5 are also consistent with similar regressions that only include Tuesdays and Wednesdays, a regression using the absolute change in logged treasury rates and a regression using month dummies instead of week dummies.<sup>15</sup> The fact that the coefficient on the statement variable is significant in Table 4 and not significant in Table 3 suggests that tight time windows are critical for picking up the effects of statements. The statement coefficient may be insignificant in Table 3 because daily treasury data include morning trading, which is not affected by statements that are released in the afternoon. The regressions in Table 4 exclude mornings and therefore include less market noise.

<sup>15</sup> Statements, press conferences and minutes releases always occur on either Tuesday or Wednesday.

**Table 5: Regression of Standard Deviation of 30-year Treasury Rate, 1:50-3:00, 2001-2014**

	(1)	(2)	(3)	(4)
FOMC Statement	0.0134*** (0.00167)	0.0135*** (0.00167)	0.0135*** (0.00167)	0.0136*** (0.00167)
FOMC Statement x Press Conference	-0.00178 (0.00257)	-0.00194 (0.00257)	-0.00193 (0.00253)	-0.00192 (0.00256)
FOMC Minutes Release		0.00318*** (0.000483)	0.00304*** (0.000483)	0.00318*** (0.000484)
Unemployment Rate			0.00304 (0.00319)	0.00299 (0.00326)
Treasury Rate, End of Day				-0.000564 (0.000277)
F-test: $\beta_{\text{statement}} + \beta_{\text{press conference}}$	0.0000	0.0000	0.0000	0.0000
N	3125	3125	3125	3125
R <sup>2</sup>	0.4679	0.4766	0.4769	0.4769

Notes: Standard errors are in parentheses. Three astericks (\*\*\*) denotes significance at the 1 percent level, two (\*\*) at the 5 percent level, and one (\*) at the 10 percent level. OLS robust standard errors in parenthesis.

The press conference variable is not significant in any of the regressions in Table 4 and Table 5. The fact that press conferences are not significant for both the absolute change in interest rate regressions and the standard deviation of the interest rate regressions suggests that press conferences do not add new information that changes market expectations about future interest rates.

However, the positive and significant coefficient on the interaction between the post-2008 dummy and the statement dummy suggests that the effect of statements during conventional monetary policy and statements during unconventional monetary policy are structurally different. The positive coefficient on the post-2008 dummy interaction shows that statements had a larger effect after 2008. As a robustness test, I ran similar regressions using data only from 2008 through 2014. Table 6 and Table 7 present the results of these regressions. Again, the press conference variable was not significant in

<b>Table 6: Regression of Absolute Change in 30-year Treasury Rate, 1:50-3:00, 2008-2014</b>				
	(1)	(2)	(3)	(4)
FOMC Statement	0.0401*** (0.00714)	0.0401*** (0.00714)	0.0402*** (0.00714)	0.0403*** (0.00715)
FOMC Statement x Press Conference	-0.00815 (0.0101)	-0.00815 (0.0101)	-0.00811 (0.0101)	-0.00573 (0.00235)
FOMC Minutes Release		0.00559** (0.00235)	0.00557** (0.00235)	0.00573** (0.00235)
Unemployment Rate			0.0076 (0.0135)	0.00636 (0.0137)
Treasury Rate, End of Day				-0.0104 (0.00954)
F-test: $\beta_{\text{statement}} + \beta_{\text{press conference}}$	0.0000	0.0000	0.0000	0.0000
N	1479	1479	1479	1479
R <sup>2</sup>	0.4095	0.4123	0.4126	0.4139

Notes: Standard errors are in parentheses. Three astericks (\*\*\*) denotes significance at the 1 percent level, two (\*\*) at the 5 percent level, and one (\*) at the 10 percent level. OLS robust standard errors in parenthesis.

the absolute change in interest rate regression. However, in the regression using the standard deviation from 2008-2014, the coefficient on the press conference variable is negative and significant at the 10% level. The standard deviation is 0.007% lower on days with press conferences compared to statement days without press conferences. This result supports the idea that press conferences decrease intraday volatility of interest rates, lower the variance in market actors' expectations of future rates and clarify monetary policy. However, the press conference variable in Table 7 was not significant in a similar regression that used month dummies, calling into question the validity of the significant coefficient on press conferences.

The statistically significant coefficient on press conferences in Table 7 could occur because of the inconsistent time windows on press conference days. As explained in the methodology section, the first eight press conferences have a time window of 12:20-3:00 while all other days have a time window of 1:50-3:00. A negative coefficient

	(1)	(2)	(3)	(4)
FOMC Statement	0.0190*** (0.00365)	0.0190*** (0.00365)	0.0190*** (0.00366)	0.0190*** (0.00367)
FOMC Statement x Press Conference	-0.00738* (0.00414)	-0.00738* (0.00414)	-0.00737* (0.00414)	-0.00738* (0.00414)
FOMC Minutes Release		0.00351*** (0.000689)	0.00350*** (0.000689)	0.00357*** (0.000698)
Unemployment Rate			0.00212 (0.00409)	0.00157 (0.00421)
Treasury Rate, End of Day				-0.00466 (0.00418)
F-test: $\beta_{\text{statement}} + \beta_{\text{press conference}}$	0.0000	0.0000	0.0000	0.0000
N	1479	1479	1479	1479
R <sup>2</sup>	0.4731	0.4802	0.4803	0.4820

Notes: Standard errors are in parentheses. Three astericks (\*\*\*) denotes significance at the 1 percent level, two (\*\*) at the 5 percent level, and one (\*) at the 10 percent level. OLS robust standard errors in parenthesis.

on press conferences could occur if the interest rate market has lower volatility every day from 12:20-1:50. As a robustness check, I re-ran the regressions in Tables 4-7 using the time window of 12:20-3:00 for all days. The 12:20-3:00 time window adds additional noise to the statement variable and for the last four press conferences by adding an additional hour and a half before statements are released. Nevertheless, the results for the 12:20-3:00 time window regressions are similar to the results for the regressions using the 1:50-3:00 time window, except for the press conference variable in the standard deviation regression from 2008-2014.

Table 8 presents the results for that regression. Unlike the regressions with the 1:50-3:00 time window, the press conference variable is no longer significant when the standard deviation from 2008-2014 is used. This suggests that the inconsistent time windows for the first set of regressions overestimated the effects of press conferences. The fact that the results for press conferences in Table 7 did not pass the robustness test

<b>Table 8: Regression of Standard Deviation of 30-year Treasury Rate, 12:20-3:00, 2008-2014</b>				
	(1)	(2)	(3)	(4)
FOMC Statement	0.0128*** (0.00301)	0.0128*** (0.00301)	0.0128*** (0.00301)	0.0129*** (0.00302)
FOMC Statement x Press Conference	-0.00379 (0.00343)	-0.00379 (0.00344)	-0.00378 (0.00343)	-0.00378 (0.00343)
FOMC Minutes Release		0.00220** (0.00102)	0.00219** (0.00102)	0.00257** (0.00102)
Unemployment Rate			0.00301 (0.00478)	0.00257 (0.00482)
Treasury Rate, End of Day				-0.00366 (0.00514)
F-test: $\beta_{\text{statement}} + \beta_{\text{press conference}}$	0.0000	0.0000	0.0000	0.0000
N	1477	1477	1477	1477
R <sup>2</sup>	0.4317	0.4337	0.4339	0.4346

Notes: Standard errors are in parentheses. Three astericks (\*\*\*) denotes significance at the 1 percent level, two (\*\*) at the 5 percent level, and one (\*) at the 10 percent level. OLS robust standard errors in parenthesis.

presented in Table 8 suggests that the significant result for press conferences should be discounted. Therefore, these regressions support the idea that press conferences do not systematically affect 30-year treasury rates.

A potential issue with the results in Tables 4-7 is the fact that the time window ends at 3:00 while all press conferences end after 3:00. On average, press conferences ended at 3:16, so the 1:50-3:00 time window missed on average a quarter of each press conference. As explained in the methodology section, the TYX option used to measure the 30-year treasury rate stops trading at 3:00, so data is not available after 3:00. Nevertheless, as a robustness check, I re-ran all of the regressions using a time window from 1:50 through the first minute of the next day of trading (8:20 am). This analysis would capture movements during after-hours trading and would capture the effects of press conferences after 3:00. However, this time window could also capture noise from

market movements due to events that occurred overnight in Asian and European markets. Despite this potential issue, the results of these regressions were similar to the results presented in Tables 4-7.<sup>16</sup> The coefficient on press conferences in the regression of the standard deviation of interest rates from 2008-2014 was also significant. However, like the results presented in Table 8, a regression of the standard deviation of the 30-year rate from 12:20 through 8:20 of the next day returns an insignificant coefficient on press conferences. The consistent results between the original regressions and this robustness check bolster the idea that press conferences do not systematically affect long-term interest rates.

### 4.3 VIX Regressions

Table 9 presents the results for the change in VIX regressions. Each regression uses week dummies and the unemployment rate as controls. The coefficient on the statement dummy is negative and significant, meaning that the announcement of monetary policy and the associated explanation in the policy statement decreases market volatility and uncertainty. The press conference variable on the other hand is not significant. A regression that only included Tuesdays and Wednesdays and a regression from 2008-2014 found similar results.<sup>17</sup> As a robustness check, I re-ran all the regressions using month dummies, all the regressions using a consistent 12:20-4:00 time window,

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<sup>16</sup> Results were similar except the minutes dummy and the F-test of the combined effect of statements and press conference was no longer significant in any of the absolute change in interest rate regressions. The F-test and minutes variable were also not significant for absolute change in interest rate regressions using the time window of 12:20 – 8:20 the next day. The F-test was significant for the standard deviation regressions from 12:20 – 8:20. An insignificant F-test suggests that press conferences are counteracting the statement and negating the statements' effect. This would suggest that press conferences do have an effect. However, this could simply be picking up financial market noise from overnight events. If press conferences had an effect on interest rates, we would expect to see a significant coefficient on the press conference variable.

<sup>17</sup> Both the policy statement and press conference variables are not significant in the 2008-2014 regressions. The statement coefficient may no longer be significant because the changing nature of unconventional monetary policy may have hindered the ability of policy statements to decrease market uncertainty.

**Table 9: Regression of Change in VIX, 1:50-3:59, 2003-2014**

	(1)	(2)	(3)	(4)
FOMC Statement	-0.3568*	-0.3568*	-0.2525	-0.2525
	(0.2059)	(0.2059)	(0.1900)	(0.1900)
FOMC Statement x Press Conference	-0.4430	-0.4431	-0.3474	-0.3474
	(0.3590)	(0.3590)	(0.4601)	(0.4602)
Statement x Post-2008			-0.2000	-0.2000
			(0.4015)	(0.4016)
FOMC Minutes Release		0.03420		0.03421
		(0.09754)		(0.09756)
F-test: $\beta_{\text{statement}} + \beta_{\text{press conference}}$	0.0066	0.0066		
F-test: $\beta_{\text{statement}} + \beta_{\text{press conference}} + \beta_{\text{statement x post-2008}}$			0.0066	0.0066
N	2553	2553	2553	2553
R <sup>2</sup>	0.1260	0.1260	0.1262	0.1263

Notes: Standard errors are in parentheses. Three astericks (\*\*\*) denotes significance at the 1 percent level, two (\*\*) at the 5 percent level, and one (\*) at the 10 percent level. OLS robust standard errors in parenthesis.

and then all the regressions with month dummies and a 12:20-4:00 time window. These regressions returned similar results.<sup>18</sup> In the end, the VIX regressions support the idea that press conferences do not add new information that decreases market uncertainty.

#### 4.4 Explanations for Weak Effects of Press Conferences

The regressions presented above show that press conferences do not cause interest rate movements or a decrease in market uncertainty. There are multiple explanations for these results. First, the insignificant results for press conferences could be attributed to the low number of press conferences held to date. Twelve press conferences may not be enough to capture systematic effects of these press conferences. This issue could only be avoided only by waiting for the FOMC to hold more press conferences. With only four press conferences per year, avoiding this issue would take many years.

<sup>18</sup> Results were similar, except, for the 12:20-4:00 regression using week dummies, the statement variable was significant at the 10% level for all specifications in table 9. For the 12:20-4:00 regression using month dummies, the statement dummy became significant at the 5% level for the first two specifications in table 9 and the statement dummy became significant at the 10% level for the regression from 2008-2014.

In addition, press conferences have only occurred during unconventional monetary policy and during an easing cycle. Press conferences could have an effect during tightening periods or during conventional monetary policy, and this paper is unable to address this issue. Again, the only way to avoid this issue is to wait for the FOMC to hold more press conferences.

Another explanation is that the press conference variable was not significant due to data measurement error. However, this seems highly unlikely because I used market interest rate and VIX data that was measured accurately. In addition, I excluded the small number of days that had incomplete market information from the regressions.<sup>19</sup>

In addition, the fact that the 30-year treasury time window ended at 3:00 due to lack of data means that the 30-year treasury regressions could have underestimated the effects of press conferences. The truncated time window is especially important for the last four press conferences, which began at 2:30. However, the robustness regressions using a time window from 1:50 through the open of the next day of trading suggest that this issue does not affect the results. The issue of a truncated time window does not affect the VIX results because the VIX data ended at 4:00 every day.

Interest rate movements as a result of statements and press conferences also would not occur if the information conveyed in the statement and press conference were completely expected by the market. Only policy surprises would change expectations after the release of the statement and during the press conference. Therefore, the press conference coefficient may not be significant because the changes to monetary policy were completely expected by market participants and therefore already priced into the

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<sup>19</sup> Often these days were the days prior to market holidays, for example Christmas Eve. None of these days were on days with FOMC statements, press conferences or meeting minutes.



interest rate. It would have been beneficial to interact the statement and press conference variables with a measure of surprise. Previous literature used changes in 30-day federal fund rate futures to capture monetary policy surprises. The larger the movement in 30-day federal fund rate futures on the day of policy announcements, the larger the monetary policy surprise. However, this is not a good indicator for monetary policy surprises once the federal funds rate hit the zero lower bound in 2008. The complexity and changing nature of unconventional monetary policy makes it incredibly difficult to find a good market measure of monetary policy surprises for the most recent period, which includes all of the press conferences. I also could not find historical data for surveys that asked economists or market participants about their monetary policy expectations before policy statements. Nevertheless, it seems unlikely that all or even most of the monetary policy announcements in the past few years were completely expected, especially because of the complexity and novelty of unconventional monetary policy and the uncertainty surrounding the recession and slow economic recovery. In addition, the coefficient on the policy statement variable was significant for the regressions from 2008-2014, showing that monetary policy was not completely expected during the most recent period.

The insignificant results for press conferences are surprising because other forms of verbal communication like Chairman testimony has been found to be significant in other papers. However, congressional testimony and speeches are separate from other forms of communication and are not immediately preceded by other Federal Reserve communication. The release of a detailed policy statement that includes information about the future course of monetary policy may play a critical role in explaining the results of this paper. Press conferences would affect the financial market only if they

included information above and beyond what was already included in the policy statement. In reality, the release of policy statements immediately before press conferences could functionally overshadow the press conferences by releasing most, if not all, of the important monetary policy news. It is possible that the market is still reacting to the statement while the press conference is taking place, but by using the same window for non-press conference days we can separate the effect of statements from the effect of press conferences. The press conference interaction variable captures the independent effects of press conferences above the effect of the policy statement itself. The fact that the policy statement variable in many of the regressions was highly significant while the press conference variable was not significant supports the notion that policy statements overshadow press conferences.

This paper's results stand in contrast to existing papers on ECB press conferences. However, Federal Reserve policy statements include paragraphs of explanation about the most recent policy decision and information about the future path of monetary policy, while ECB policy statements are only a sentence describing the current interest rate policy. The fact that Ehrmann and Fratzscher (2009) show that ECB press conferences have a larger effect on markets than associated policy statements supports the idea that economic actors wait for the clarification provided in ECB press conferences before reacting to ECB policy. This paper shows that U.S. market actors do not wait for the press conference to react to monetary policy. Rather, the large amount of information included in FOMC policy statements cause market actors to move immediately following the statements rather than waiting for Federal Reserve press conferences.<sup>20</sup>

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<sup>20</sup> Ehrmann and Fratzscher use a different methodology than this paper, so that may explain the different results. Ehrmann and Fratzcher look at 3-month interest rate futures, which might act differently than long-

The June 19, 2013 press conference described in the introduction shows how a Federal Reserve press conference could affect the financial markets and suggests why other press conferences may not affect market expectations. The minutes for the June 2013 meeting capture a debate between FOMC participants about whether to put information about decreasing quantitative easing in the policy statement or in the press conference. The meeting minutes state:

Participants generally agreed that the Committee should provide additional clarity about its asset purchase program relatively soon. A number thought that the postmeeting (sic) statement might be the appropriate vehicle for providing additional information on the Committee's thinking. However, some saw potential difficulties in being able to convey succinctly the desired information in the postmeeting (sic) statement...At the conclusion of the discussion, most participants thought that the Chairman, during his post-meeting press conference, should describe a likely path for asset purchases in the coming quarters...

This press conference added new information that affected expectations about future interest rates because the FOMC actively withheld information from the statement in order to present that information in the press conference. This example suggests that other press conferences may not have affected market expectations because associated policy statements did not leave much new content for the press conference. In this case, the FOMC wanted the press conference to affect market expectations, and therefore information was withheld from the policy statement.

The June 2013 press conference also shows the potential risks of using press conferences to present new information. FOMC participants believed that the press conferences would give the Chairman more time to explain the timetable for the end of quantitative easing. However, interest rates increased significantly following the press

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term rates. The 30-year rate used in this paper still picked up the effect of policy statements and minutes, implying that the 30-year rate is still an appropriate measure of the effects of Federal Reserve communication generally.

conference. Members of the media seemed confused about the information presented at the press conference, with the first reporter asking whether the information about the timeline for the end of quantitative easing was a decision of the FOMC or simply the Chairman's personal opinion. Members of the media seemed confused and surprised that a decision of the FOMC would be withheld from a policy statement and instead presented at a press conference. Faced with strong market reactions, Federal Reserve Governor Jeremy Stein gave a speech a week after the press conference in which he clarified Chairman Bernanke's press conference statements. Governor Stein emphasized that the scaling back of asset purchases would depend on continued strong economic indicators going into the September and October FOMC meetings (Stein 2013). This speech's emphasis on a "data-driven" approach and decreased emphasis on Chairman Bernanke's specific timeline suggests that the increase in long-term interest rates following the June press conference was larger than FOMC participants expected. The FOMC wanted the June 2013 press conference to affect expectations and move markets, but Governor Stein's speech and the backtrack from the FOMC timeline show that market reactions to press conferences can deviate from the Federal Reserve's intended affects. In this case, the longer duration of the press conference and the question and answer period did not allow the Federal Reserve Chairman to sufficiently clarify the future path of interest rates in a way that allowed market expectations to match the Federal Reserve's intended effect.

While not included in the data used in this paper, the most recent press conference on March 19, 2014 gives another anecdotal example of a market reaction to a press conference and market confusion about new information included in a press conference. Following the release of the policy statement, the S&P 500 fell 0.6% and 10-year treasury

rates rose by 0.06% based on the information that FOMC participants projected that the federal funds rate would rise to 0.75% at the end of 2015 and rise to 1.75% by the end of 2016 (Bost and Eddings 2014). This projection was higher than in previous policy statements. Stock prices continued to slide during the press conference as Chairwoman Yellen stated that the a rise in the federal funds rate could happen six months after the end of quantitative easing, sooner than expected by the markets.<sup>21</sup>

The media used Yellen's statement as an explanation for the stock and bond sell-off, including a front-page story in the *Wall Street Journal* titled "Yellen Debut Rattles Markets" (Hilsenrath and McGrane 2014). Interestingly, many market commentators dismissed Yellen's comment as a mistake.<sup>22</sup> The day after the press conference, the stock market completely recovered ("Did Wall Street Read Yellen Comments Wrong?" 2014), and treasury rates were unchanged ("TREASURIES-Bonds Trade Mostly Flat in Wake of Yellen Comments" 2014). In the end, most of the movements in treasury rates occurred after the release of the statement rather than during the press conference. The March 2014 press conference did add new information about when interest rates would rise, but like the June 2013 press conference, market participants and members of the media seemed confused about new information being included in the press conference. Market

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<sup>21</sup> The policy statement explained, "It likely will be appropriate to maintain the current target range for the federal funds rate for a considerable time after the asset purchase program ends." Chairwoman Yellen was asked to clarify what "considerable" meant, and she stated, "I -- I, you know, this is the kind of term it's hard to define, but, you know, it probably means something on the order of around six months or that type of thing. But, you know, it depends -- what the statement is saying is it depends what conditions are like." (Saphir and Hughes 2014)

<sup>22</sup> In the *Wall Street Journal*, Paul Edelstein, Director of financial economists at HIS Global Insight, said "This could have been a rookie gaffe on Yellen's part." (Hilsenrath and McGrane 2014). In *USA Today*, Edward Yardeni, chief investment strategist at Yardeni Research stated, "In my opinion, Yellen confused herself and all of us too" ("Yellen Earns Mixed Grades from Wall St." 2014). In *Business Week*, Donald Selkin of National Securities Corp stated, "The words were poorly chosen. She handled it a little clumsily." (Ciolli and McCormick 2014). A piece on *Market Watch* titled "Many economists see Yelen's 'six month' comment as rookie mistake" gives more examples of analysts dismissing Chairwoman Yellen's comment ("Many Economists See Yellen's 'six Month' Comment as Rookie Mistake" 2014)

participants did not deem Yellen's statements as credible, potentially implying a lack of credibility for press conferences in general. Backtracking from statements in press conferences, as seen in June 2013, could cause press conferences to lose credibility as an indicator of future monetary policy. A lack of press conference credibility could explain this paper's results. David Kelly, chief global strategist at J.P. Morgan, may have summarized the predominant opinion on policy statements and press conferences in a comment to *USA Today* about Chairwoman Yellen's comment: "She probably did err by mentioning the six months (time frame). She muddied the timing of the first hike. If you want to say six months, put it in the statement. Say what you want to say in the statement. And stick to your guns" ("Many Economists See Yellen's 'six Month' Comment as Rookie Mistake" 2014)

## **5. Conclusion**

This paper explores the effects of Federal Reserve press conferences. Press conferences are supposed to clarify monetary policy and therefore must credibly present new information. If press conferences add new information, they may cause interest rates to shift by changing expectations of future rates or cause market uncertainty to decrease by decreasing the variance in market actor's expectations of future rates. This paper utilized 10-year treasury rates, 30-year treasury rates and the VIX to explore whether press conferences changed monetary policy expectations or decreased market uncertainty and found that press conferences do not systemically affect these three indicators. This paper does not find evidence to suggest that press conferences systematically add new information. Therefore, this paper finds that press conferences do not increase or decrease

certainty about the future path of monetary policy and press conferences do not play a critical role in clarifying monetary policy.

These results do not necessarily imply that the Federal Reserve should cease holding press conferences. Rather, the Federal Reserve could justify continued use of press conferences in terms of general accountability rather than in terms of clarifying monetary policy. The benefit of general accountability is beyond the scope of this paper. If the Federal Reserve wanted to make press conferences more important, it could withhold information from statements and instead present more new information in press conferences.<sup>23</sup> However, the June 2013 and March 2014 press conferences show the potential for market confusion if press conferences do not consistently present new FOMC decisions. The Federal Reserve should weigh the benefits and costs of press conferences' continued use without claiming that press conferences are important for clarifying monetary policy. In-depth policy statements, FOMC minutes, congressional testimony and FOMC member speeches may be enough to keep market actors sufficiently informed.

Future research should attempt to identify effects that may occur in the days following Federal Reserve press conferences as economic and media commentators release analyses of the press conference. Future research should also explore whether Federal Reserve press conferences increase the predictability of monetary policy. While press conferences may not move markets by clarifying current policy, they could add additional information that helps market actors better predict future changes to policy.

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<sup>23</sup> This would bring the Federal Reserve more in line with the practices of the ECB. It is unclear if the ECB's current strategy is better than the Federal Reserve's current strategy, and this paper does not attempt to empirically determine which strategy is better.

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