Fedspeak: Who Moves U.S. Asset Prices? Online Appendix

Carlo Rosa
Federal Reserve Bank of New York

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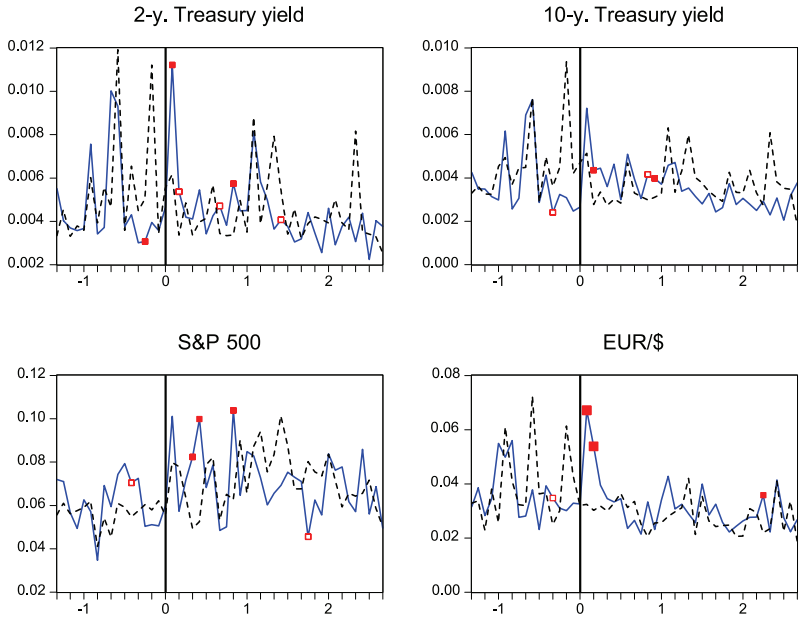
Appendix A. Additional Results

Figure A1. The Volatility of Asset Prices around Chairman Bernanke's Speeches: Subsamples

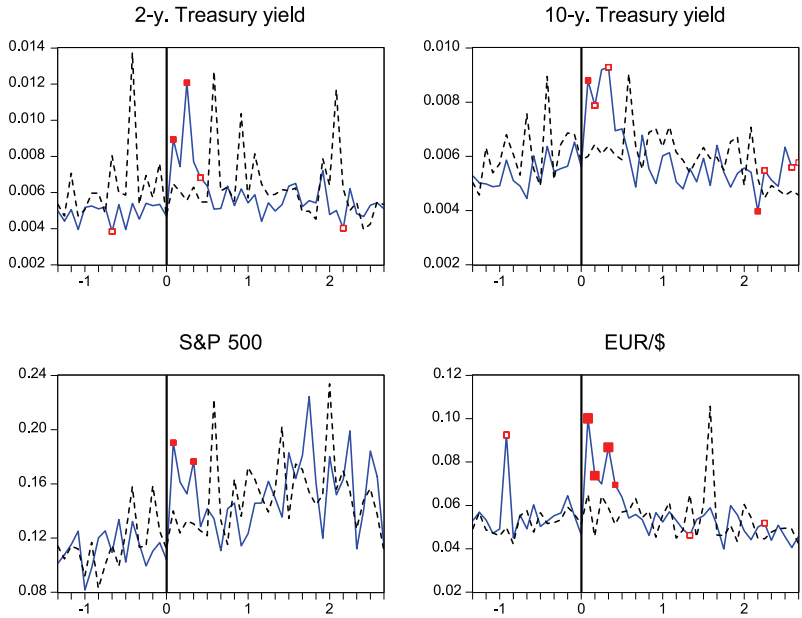
A. Sample: February 2006–December 2007



(continued)

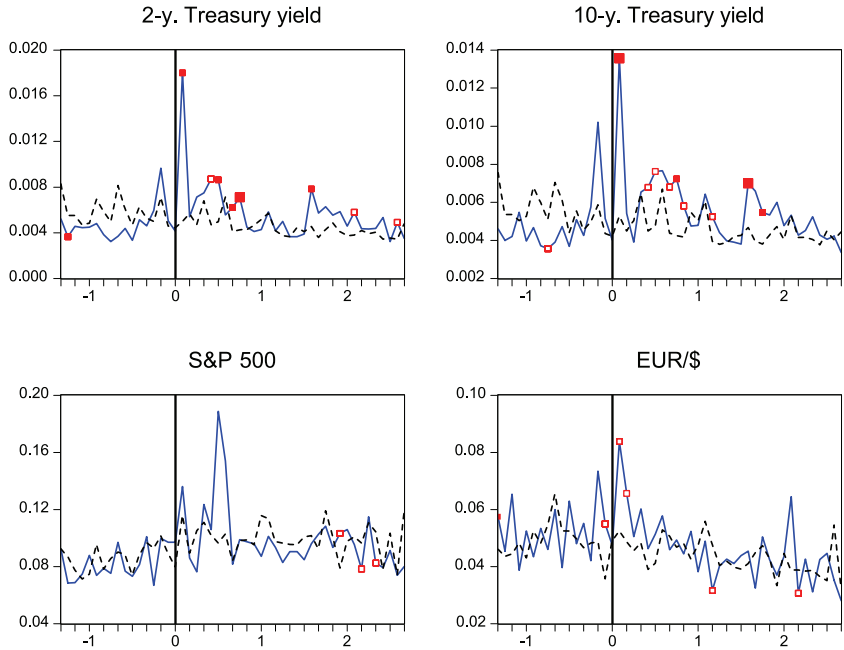
Figure A1. (Continued)

B. Sample: January 2008–December 2012



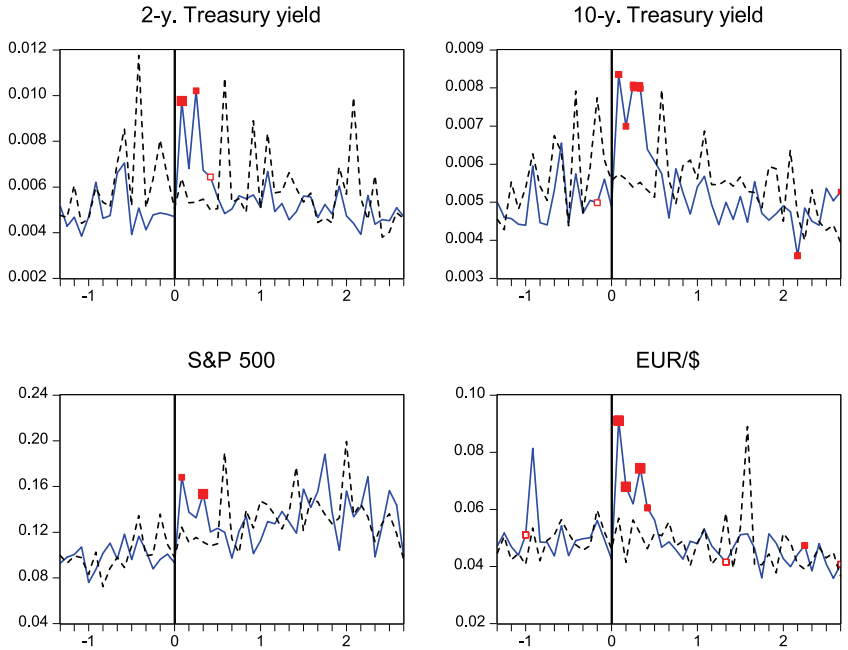
Notes: This figure plots (i) the standard deviation of five-minute asset price returns around the release time of the speeches of Federal Reserve Chairman Bernanke with a solid blue line and (ii) the standard deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the release day) with a dashed black line for two different samples: February 2006–December 2007 in panel A and January 2008–December 2012 in panel B. Returns are five-minute yield changes for Treasury rates and five-minute percentage changes for the S&P 500 and the euro–dollar exchange rate. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time. Brown and Forsythe (1974) statistics are employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

Figure A2. The Volatility of Asset Prices around Chairman Greenspan's Speeches



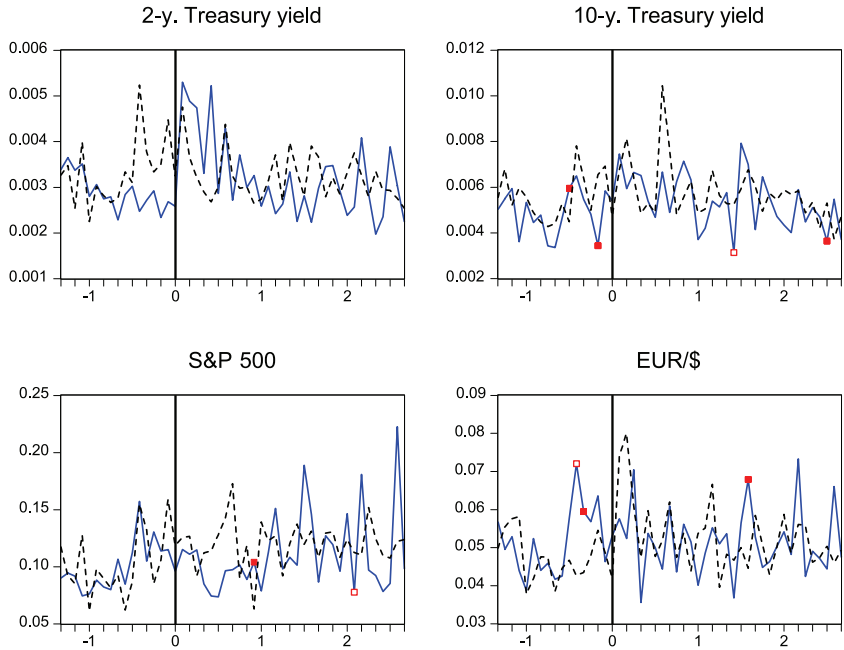
Notes: This figure plots (i) the standard deviation of five-minute asset price returns around the release time of the speeches of Federal Reserve Chairman Greenspan with a solid blue line and (ii) the standard deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the release day) with a dashed black line. The sample period is January 2001–January 31, 2006. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time. Brown and Forsythe (1974) statistics are employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

Figure A3. The Volatility of Asset Prices around Chairman Bernanke's Speeches



Notes: This figure plots (i) the standard deviation of five-minute asset price returns around the release time of the speeches of Federal Reserve Chairman Bernanke with a solid blue line and (ii) the standard deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the release day) with a dashed black line. The sample period is February 1, 2006–December 2012. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time. Brown and Forsythe (1974) statistics are employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

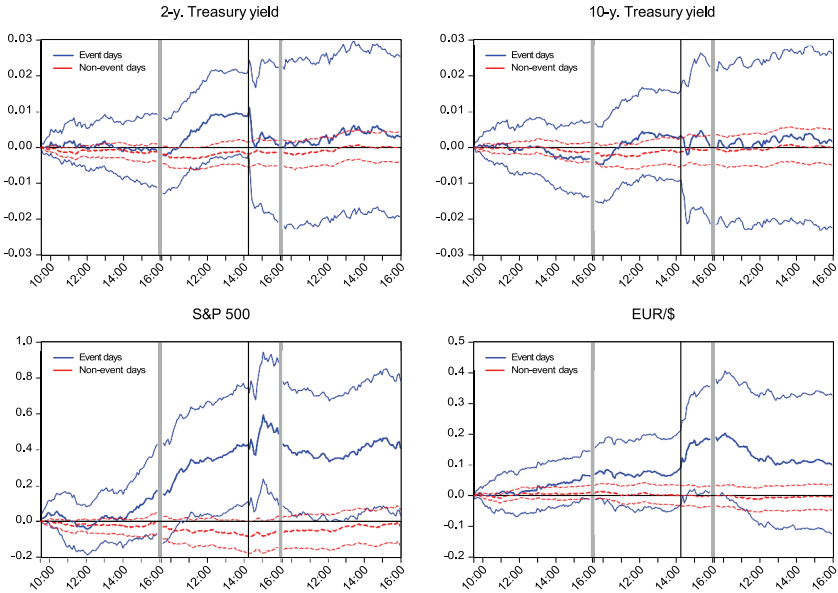
Figure A4. The Volatility of Asset Prices around FRBNY President Dudley's Speeches



Notes: This figure plots (i) the standard deviation of five-minute asset price returns around the release time of the speeches of Federal Reserve Bank of New York President Dudley with a solid blue line and (ii) the standard deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the release day) with a dashed black line. The sample period is January 27, 2009–December 2012. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time. Brown and Forsythe (1974) statistics are employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

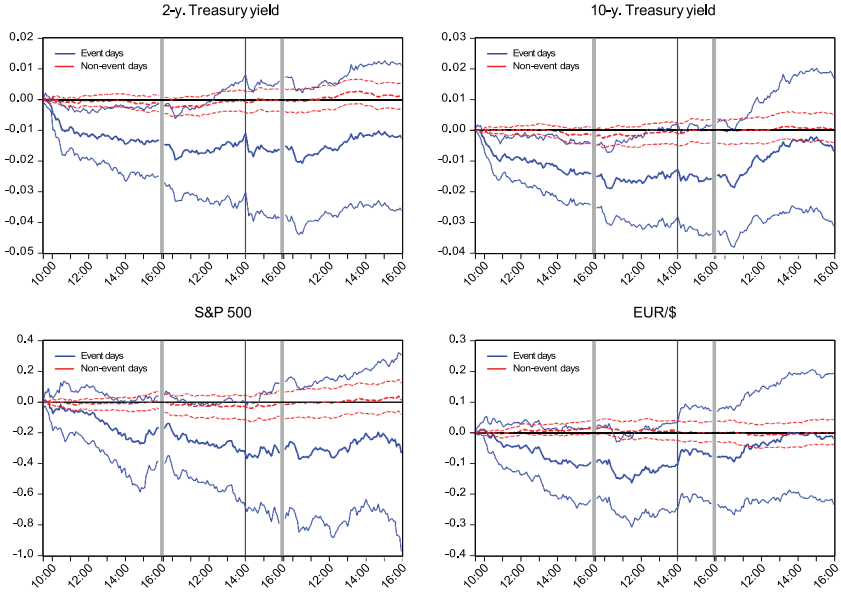
Appendix B. Pre-event Drift

Figure B1. Cumulative Asset Price Returns: FOMC Statement



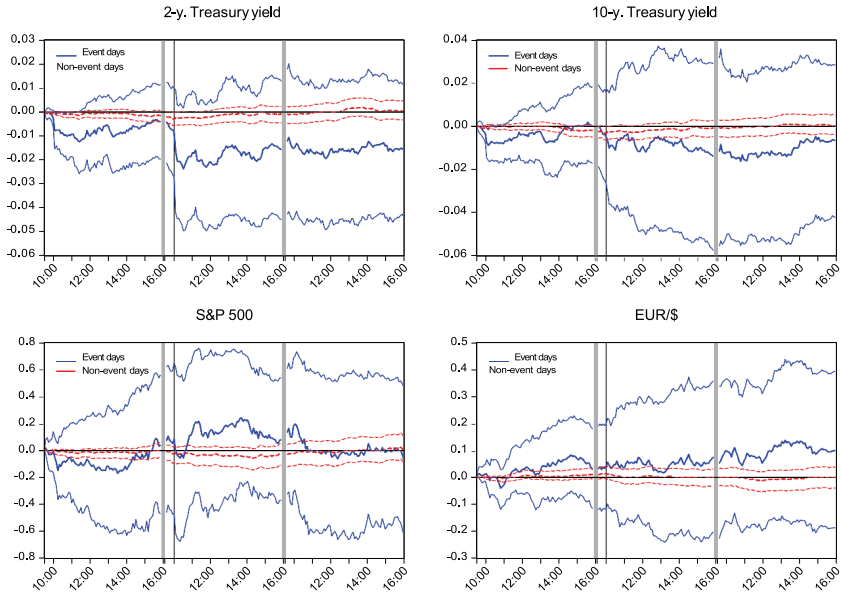
Notes: The figure displays the average cumulative returns on selected asset-prices on three-day windows. The five-minute asset return is the five-minute yield changes for the fixed-income instruments and the five-minute percentage changes for stock prices and the euro–dollar exchange rate. The five-minute returns are centered at zero. The sample period is from January 2001 to March 2011, and it includes only scheduled FOMC meetings. The thick solid blue line is the average cumulative return from 9:30 a.m. ET on days before to 4 p.m. ET on days after scheduled FOMC announcements. The thick red dashed line shows average cumulative returns on all other three-day windows that do not include FOMC announcements. The gray shaded areas are the end of the trading day. The thin lines represent 95 percent confidence bands around the average cumulative returns. The black vertical line is set at 2:15 p.m. ET, when FOMC statements are typically released in this sample period.

Figure B2. Cumulative Asset Price Returns: FOMC Minutes



Notes: The figure displays the average cumulative returns on selected asset prices on three-day windows. The five-minute asset return is the five-minute yield changes for the fixed-income instruments and the five-minute percentage changes for stock prices and the euro–dollar exchange rate. The five-minute returns are centered at zero. The sample period is from January 2005 to April 2011 (see Rosa 2013 for the choice of this sample). The thick solid blue line is the average cumulative return from 9:30 a.m. ET on days before to 4 p.m. ET on days after the FOMC minutes releases. The thick red dashed line shows average cumulative returns on all other three-day windows that do not include FOMC minutes releases. The gray shaded areas are the end of the trading day. The thin lines represent 95 percent confidence bands around the average cumulative returns. The black vertical line is set at 2 p.m. ET, when FOMC minutes are typically released in this sample period.

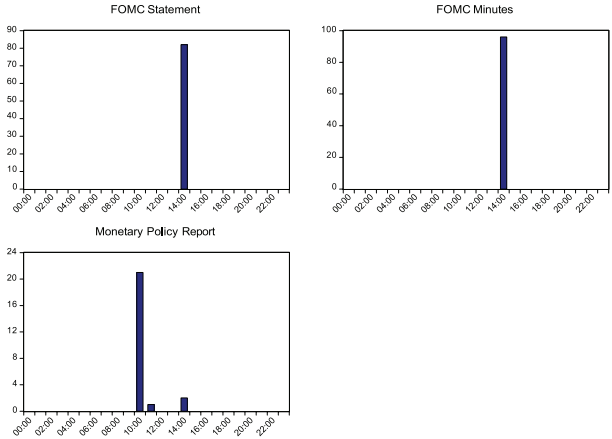
Figure B3. Cumulative Asset Price Returns: Monetary Policy Report



Notes: The figure displays the average cumulative returns on selected asset prices on three-day windows. The five-minute asset return is the five-minute yield changes for the fixed-income instruments and the five-minute percentage changes for stock prices and the euro–dollar exchange rate. The five-minute returns are centered at zero. The sample period is from January 2001 to December 2012. The thick solid blue line is the average cumulative return from 9:30 a.m. ET on days before to 4 p.m. ET on days after the release of the Monetary Policy Report. The thick red dashed line shows average cumulative returns on all other three-day windows that do not include FOMC minutes releases. The gray shaded areas are the end of the trading day. The thin lines represent 95 percent confidence bands around the average cumulative returns. The black vertical line is set at 10 a.m. ET, when the Monetary Policy Reports are typically released in this sample period.

Figure B4. Distribution of Announcement Times of Federal Reserve Events

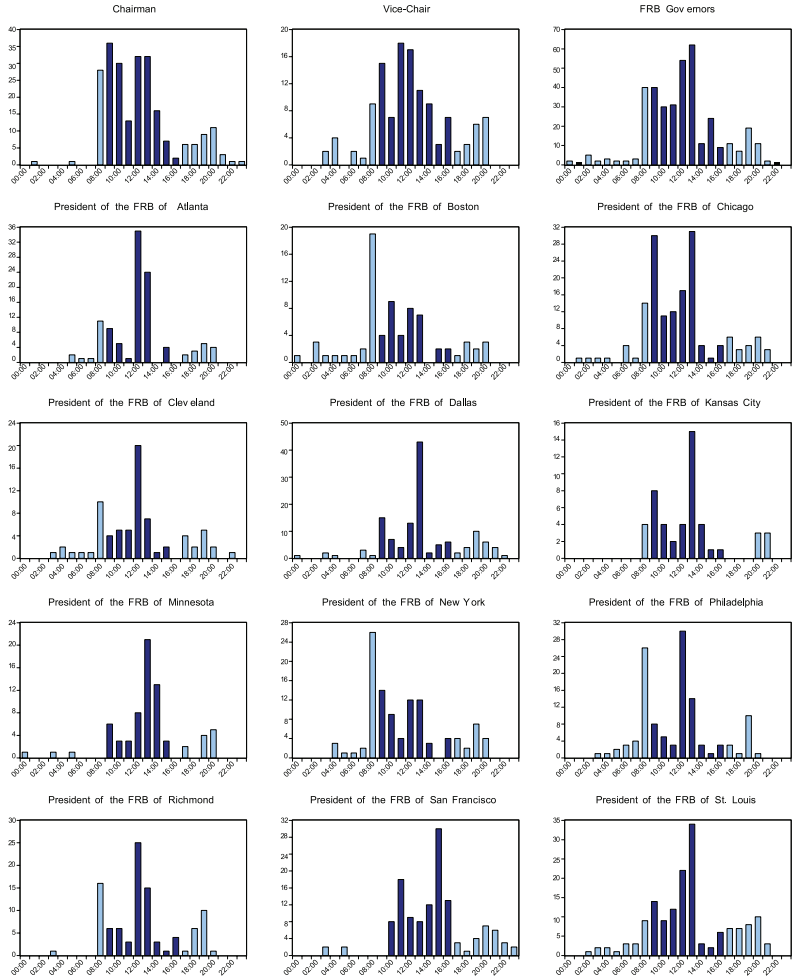
A. Scheduled Releases (FOMC Statement, FOMC Minutes, and Monetary Policy Report)



(continued)

Figure B4. (Continued)

B. Speeches by Chairman, Vice Chairman, FRB Governors, and Regional Federal Reserve Bank Presidents



Notes: The figure shows the distribution of announcement times stated in U.S. Eastern Time. Panel A displays scheduled releases, whereas panel B displays the distribution of announcement times of speeches. The sample for FOMC statement is January 2001–March 2001. The sample for FOMC minutes is January 2005–April 2011. The sample for the other types of communication is January 2001–December 2012. Note that one Monetary Policy Report was released at 11 a.m. ET (on February 11, 2004) and two Reports were released in the afternoon (on July 20, 2004 at 2:30 p.m. and on July 21, 2010 at 2 p.m. ET). Dark blue indicates hours between 9 a.m. ET and 4 p.m. ET (standard trading hours), whereas light blue indicates hours before 9 a.m. or after 5 p.m. ET.

Table B1. Daily Returns and the Pre-FOMC Announcement Drift: Scheduled Events

	Two-Year Treasury	Ten-Year Treasury	S&P 500	EUR/$
A. FOMC Statement				
Constant	−0.23	−0.10	−0.02	0.01
	(0.17)	(0.14)	(0.03)	(0.01)
Dummy	0.83	−0.14	0.49***	0.15**
	(0.70)	(0.60)	(0.16)	(0.07)
Adjusted R^2	−0.000	−0.000	0.005	0.001
Observations	1,572	2,114	2,281	2,883
Number of Events	63	74	81	82
B. FOMC Minutes				
Constant	−0.13	−0.10	0.00	0.02
	(0.17)	(0.14)	(0.03)	(0.01)
Dummy	0.85	0.13	−0.05	−0.02
	(0.77)	(0.81)	(0.11)	(0.09)
Adjusted R^2	−0.000	−0.000	−0.000	−0.000
Observations	1,572	2,116	2,282	2,851
Number of Events	34	42	47	51
C. Monetary Policy Report				
Constant	−0.26*	−0.24*	−0.01	0.02
	(0.16)	(0.14)	(0.03)	(0.01)
Dummy	−1.31	−0.01	0.10	0.22
	(1.97)	(1.33)	(0.23)	(0.13)
Adjusted R^2	−0.000	−0.000	−0.000	0.001
Observations	1,691	2,135	2,364	2,513
Number of Events	15	19	21	21

Notes: The table reports the results from a regression of the daily return on a constant term and a dummy variable, which is equal to one on Federal Reserve event dates and zero on all other days. The asset return is yield changes for the fixed-income instruments and the percentage changes for stock prices and the euro–dollar exchange rate. The daily returns are based on intraday data, and by construction, the return ends fifteen minutes before the Federal Reserve announcement has been released. The sample period is from January 2001 to March 2011 for the FOMC statement (panel A), from January 2005 to April 2011 for the FOMC minutes (panel B), and from January 2001 to December 2012 for the Monetary Policy Report (panel C, considering only Monetary Policy Reports released at 10 a.m. ET). The econometric method is ordinary least squares with heteroskedasticity and autocorrelation-consistent standard errors in parentheses. ***, **, and * indicate statistical significance at the 1 percent, 5 percent, and 10 percent level, respectively.

Table B2. Daily Returns and the Pre-Federal Reserve Speeches Announcement Drift: Speeches

	Two-Year Treasury	Ten-Year Treasury	S&P 500	EUR/$
A. Chairman				
Constant	−0.23	−0.13	0.00	0.01
	(0.19)	(0.16)	(0.03)	(0.01)
Dummy	0.37	0.40	0.16	−0.09*
	(0.55)	(0.48)	(0.12)	(0.05)
Adjusted R^2	−0.001	−0.000	0.001	0.001
Observations	1,299	1,837	2,184	2,457
Number of Events	200	200	200	200
B. Vice Chair of the Federal Reserve System				
Constant	−0.18	−0.24	0.01	0.02
	(0.19)	(0.16)	(0.03)	(0.01)
Dummy	−0.06	0.75	0.24**	−0.01
	(0.81)	(0.82)	(0.12)	(0.06)
Adjusted R^2	−0.001	−0.000	0.001	−0.000
Observations	1,316	1,754	2,112	2,519
Number of Events	96	96	96	96
C. Governors of the Federal Reserve Board				
Constant	−0.43**	−0.25	0.01	0.01
	(0.20)	(0.16)	(0.03)	(0.01)
Dummy	0.45	0.01	0.05	0.06*
	(0.50)	(0.45)	(0.07)	(0.03)
Adjusted R^2	−0.000	−0.001	−0.000	0.000
Observations	1,381	1,865	2,212	2,537
Number of Events	309	309	309	309
D. President of the Federal Reserve Bank of Atlanta				
Constant	−0.18	−0.23	−0.03	0.01
	(0.18)	(0.15)	(0.03)	(0.01)
Dummy	−0.83	1.06	0.35**	0.07
	(0.79)	(0.81)	(0.17)	(0.08)
Adjusted R^2	−0.000	0.000	0.002	−0.000
Observations	1,406	1,857	2,070	2,388
Number of Events	89	89	89	89

(*continued*)

Table B2. (Continued)

	Two-Year Treasury	Ten-Year Treasury	S&P 500	EUR/$
E. President of the Federal Reserve Bank of Boston				
Constant	−0.22	−0.12	0.02	0.01
	(0.19)	(0.15)	(0.02)	(0.01)
Dummy	−0.55	−0.68	−0.20	0.03
	(1.73)	(1.00)	(0.21)	(0.08)
Adjusted R^2	−0.001	−0.000	0.000	−0.000
Observations	1,193	1,668	2,026	2,352
Number of Events	56	56	56	56
F. President of the Federal Reserve Bank of Chicago				
Constant	−0.26	−0.22	−0.04	0.02
	(0.18)	(0.16)	(0.03)	(0.01)
Dummy	1.15	0.20	0.03	−0.05
	(1.18)	(0.77)	(0.15)	(0.06)
Adjusted R^2	0.001	−0.001	−0.000	−0.000
Observations	1,355	1,739	1,919	2,231
Number of Events	125	125	125	125
G. President of the Federal Reserve Bank of Cleveland				
Constant	−0.53***	−0.37**	0.03	0.03**
	(0.18)	(0.16)	(0.03)	(0.01)
Dummy	0.99	−0.08	−0.11	−0.09
	(0.90)	(0.76)	(0.15)	(0.08)
Adjusted R^2	−0.000	−0.001	−0.000	−0.000
Observations	1,145	1,579	1,932	2,232
Number of Events	56	56	56	56
H. President of the Federal Reserve Bank of Dallas				
Constant	−0.24	−0.26	0.03	0.01
	(0.19)	(0.16)	(0.03)	(0.01)
Dummy	0.74	1.65***	0.10	0.10
	(0.87)	(0.62)	(0.14)	(0.07)
Adjusted R^2	−0.000	0.002	−0.000	0.001
Observations	1,198	1,689	1,947	2,412
Number of Events	97	97	97	97

(*continued*)

Table B2. (Continued)

	Two-Year Treasury	Ten-Year Treasury	S&P 500	EUR/$
I. President of the Federal Reserve Bank of Kansas City				
Constant	−0.24	−0.25*	−0.02	0.01
	(0.20)	(0.15)	(0.03)	(0.01)
Dummy	0.89	0.39	0.25	−0.11
	(0.99)	(0.95)	(0.30)	(0.13)
Adjusted R^2	−0.001	−0.000	0.000	−0.000
Observations	1,298	1,868	2,220	2,565
Number of Events	43	43	43	43
J. President of the Federal Reserve Bank of Minneapolis				
Constant	−0.17	−0.15	−0.00	0.01
	(0.18)	(0.16)	(0.03)	(0.01)
Dummy	−0.58	−0.68	0.01	−0.10
	(1.18)	(0.82)	(0.24)	(0.10)
Adjusted R^2	−0.001	−0.000	−0.001	0.000
Observations	1,357	1,723	1,791	2,056
Number of Events	58	58	58	58
K. President of the Federal Reserve Bank of New York				
Constant	−0.34*	−0.27*	0.00	0.02
	(0.18)	(0.16)	(0.03)	(0.01)
Dummy	0.45	0.40	−0.11	−0.10
	(0.86)	(0.69)	(0.14)	(0.07)
Adjusted R^2	−0.001	−0.000	−0.000	0.000
Observations	1,313	1,822	2,188	2,412
Number of Events	86	86	86	86
L. President of the Federal Reserve Bank of Philadelphia				
Constant	−0.30	−0.11	0.02	0.02*
	(0.19)	(0.16)	(0.03)	(0.01)
Dummy	0.50	0.09	0.16	0.03
	(1.00)	(0.68)	(0.14)	(0.07)
Adjusted R^2	−0.001	−0.001	0.000	−0.000
Observations	1,144	1,541	1,937	2,277
Number of Events	94	94	94	94

(*continued*)

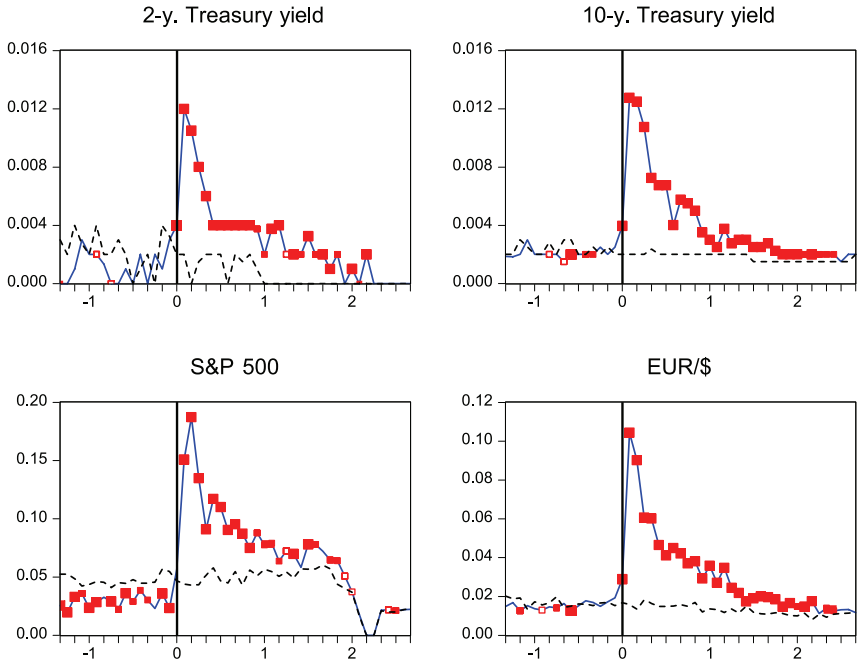
Table B2. (Continued)

	Two-Year Treasury	Ten-Year Treasury	S&P 500	EUR/$
M. President of the Federal Reserve Bank of Richmond				
Constant	−0.25	−0.14	0.01	0.02
	(0.18)	(0.15)	(0.03)	(0.01)
Dummy	−2.26***	−1.37**	−0.24*	−0.10
	(0.76)	(0.69)	(0.13)	(0.08)
Adjusted R^2	0.004	0.001	0.001	0.000
Observations	1,350	1,777	2,039	2,408
Number of Events	80	80	80	80
N. President of the Federal Reserve Bank of San Francisco				
Constant	−0.33	−0.35*	0.01	0.01
	(0.22)	(0.18)	(0.03)	(0.01)
Dummy	1.24	1.30*	−0.00	0.00
	(1.13)	(0.77)	(0.16)	(0.07)
Adjusted R^2	0.000	0.001	−0.001	−0.001
Observations	1,069	1,369	1,500	1,957
Number of Events	98	98	98	98
O. President of the Federal Reserve Bank of St. Louis				
Constant	0.02	0.03	0.03	0.01
	(0.19)	(0.16)	(0.03)	(0.01)
Dummy	−0.87	−0.68	0.02	−0.07
	(0.65)	(0.57)	(0.12)	(0.07)
Adjusted R^2	0.000	−0.000	−0.000	0.000
Observations	1,243	1,669	1,978	2,341
Number of Events	115	115	115	115

Notes: The table reports the results from a regression of the daily return on a constant term and a dummy variable, which is equal to one on Federal Reserve event dates and zero on all other days. The asset return is yield changes for the fixed-income instruments and the percentage changes for stock prices and the euro–dollar exchange rate. The daily returns are based on intraday data, and by construction, the return ends fifteen minutes before the Federal Reserve announcement has been released. The sample period is from January 2001 to March 2011 for the FOMC statement (panel A), from January 2005 to April 2011 for the FOMC minutes (panel B), and from January 2001 to December 2012 for the Monetary Policy Report (panel C, considering only Monetary Policy Reports released at 10 a.m. ET). The econometric method is ordinary least squares with heteroskedasticity and autocorrelation-consistent standard errors in parentheses. ***, **, and * indicate statistical significance at the 1 percent, 5 percent, and 10 percent level, respectively.

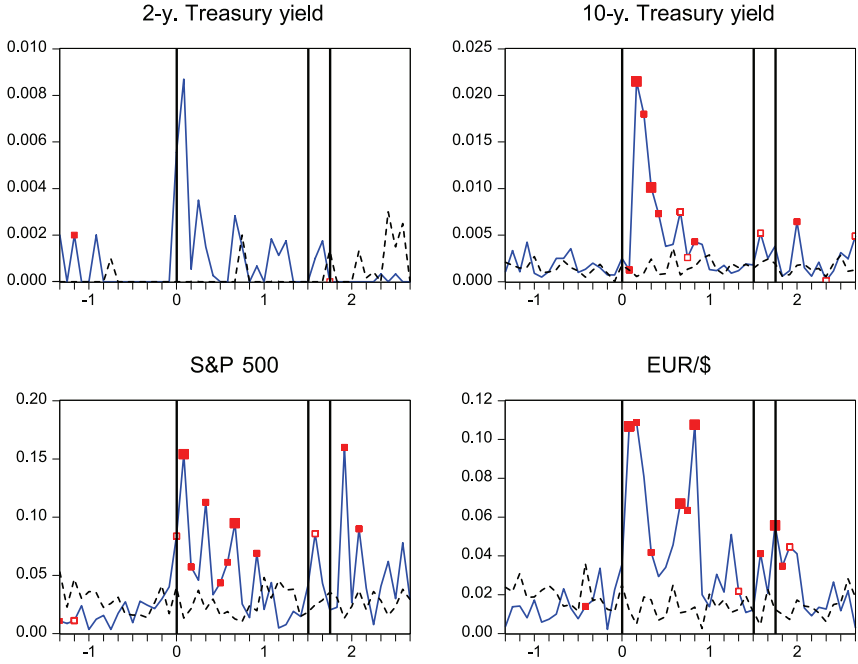
Appendix C. Robust Variance

Figure C1. The Volatility of Asset Prices around the Release of the FOMC Statement



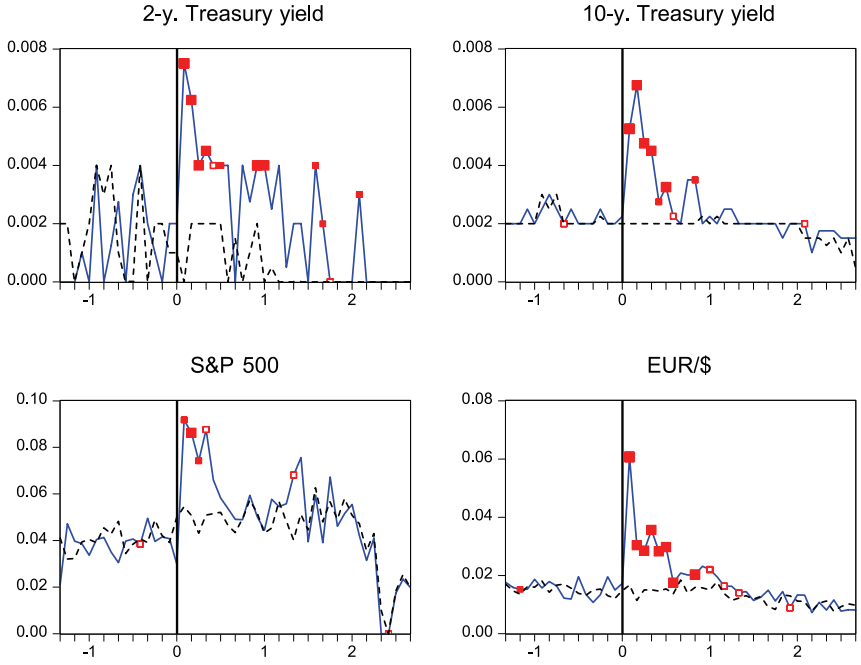
Notes: This figure plots (i) the median absolute deviation of five-minute asset price returns around the release of the FOMC statement on FOMC meeting days with a solid blue line and (ii) the median absolute deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the FOMC meeting day) with a dashed black line. The sample period is January 2001–December 2012. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time of the FOMC minutes, i.e., 2 p.m. ET. The Brown and Forsythe (1974) test is employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

Figure C2. The Volatility of Asset Prices around the Release of the Chairman's Press Conference



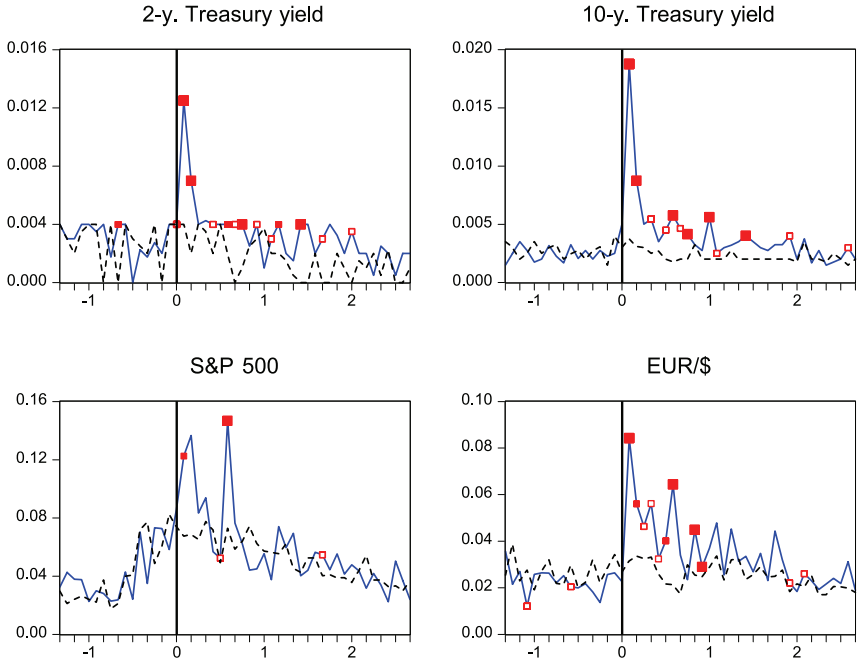
Notes: This figure plots (i) the median absolute deviation of five-minute asset price returns around the FOMC statement release with a solid blue line and (ii) the median absolute deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the FOMC minutes release day) with a dashed black line. The sample period is January 2012–December 2012. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The first vertical line is placed at the release time of the FOMC statement (12:30 p.m. ET); the second vertical line is placed at the release time of the Summary of Economic Projections (2 p.m. ET); and the third vertical line is placed at the start of the Chairman's press conference (2:15 p.m. ET). The Brown and Forsythe (1974) test is employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

Figure C3. The Volatility of Asset Prices around the Release of FOMC Minutes



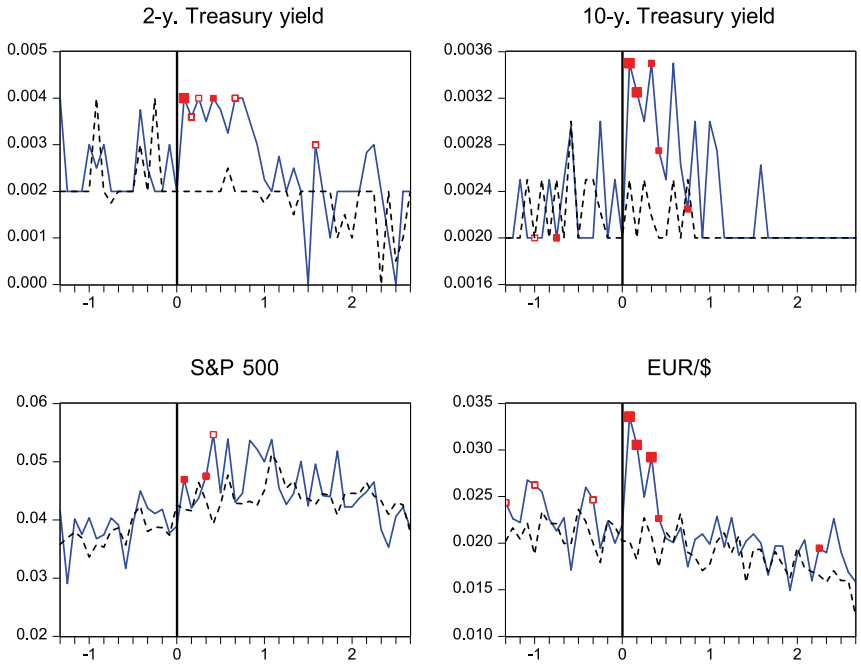
Notes: This figure plots (i) the median absolute deviation of five-minute asset price returns around the FOMC minutes release with a solid blue line and (ii) the median absolute deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the FOMC minutes release day) with a dashed black line. The sample period is January 2005–March 2011. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time of the FOMC minutes, i.e., 2 p.m. ET. The Brown and Forsythe (1974) test is employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

Figure C4. The Volatility of Asset Prices around the Chairman's Testimony to Congress



Notes: This figure plots (i) the median absolute deviation of five-minute asset price returns around the release time of the semi-annual Monetary Policy Report to Congress with a solid blue line and (ii) the median absolute deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the release day) with a dashed black line. The sample period is January 2001–December 2012. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time. The Brown and Forsythe (1974) test is employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

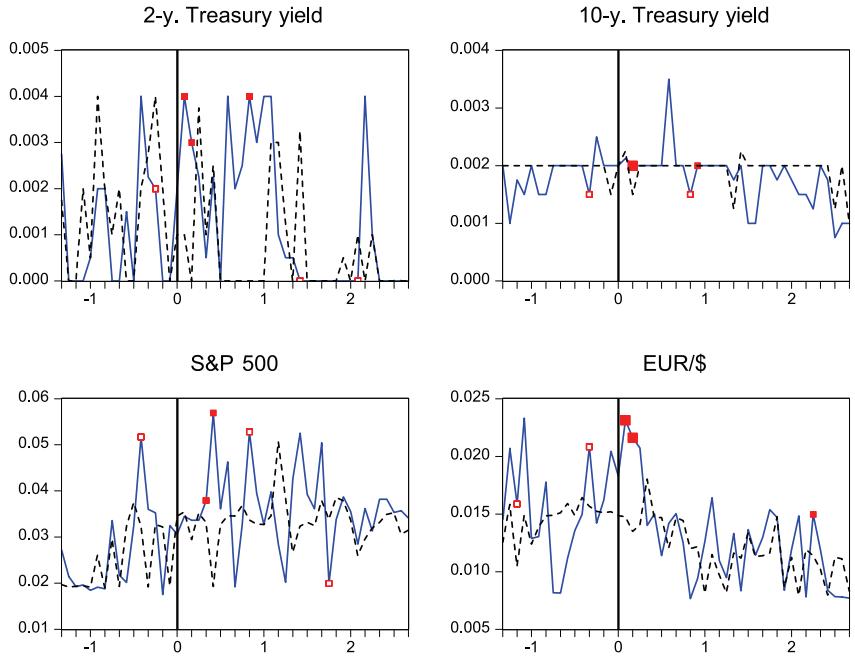
Figure C5. The Volatility of Asset Prices around the Federal Reserve Chairman's Speeches



Notes: This figure plots (i) the median absolute deviation of five-minute asset price returns around the release time of the speeches of the Federal Reserve Chairman with a solid blue line and (ii) the median absolute deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the release day) with a dashed black line. The sample period is January 2001–December 2012. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time. The Brown and Forsythe (1974) test is employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

Figure C6. The Volatility of Asset Prices around Chairman Bernanke's Speeches: Subsamples

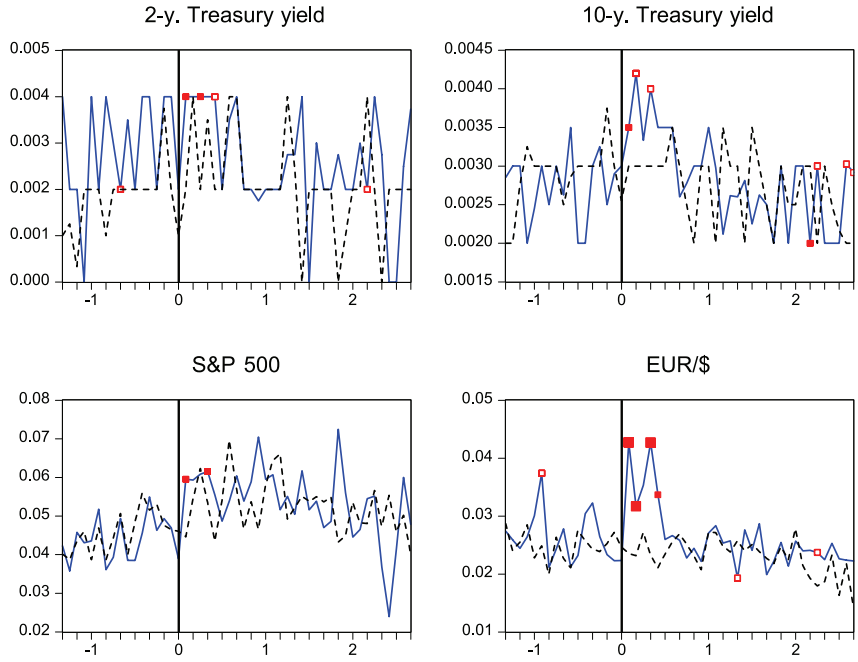
A. Sample: February 2006–December 2007



(continued)

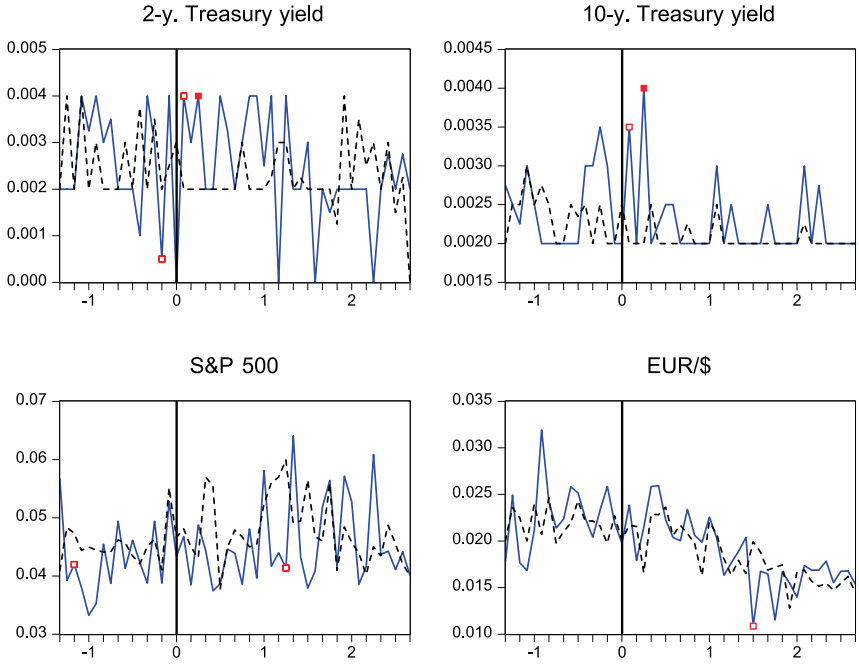
Figure C6. (Continued)

B. Sample: January 2008–December 2012



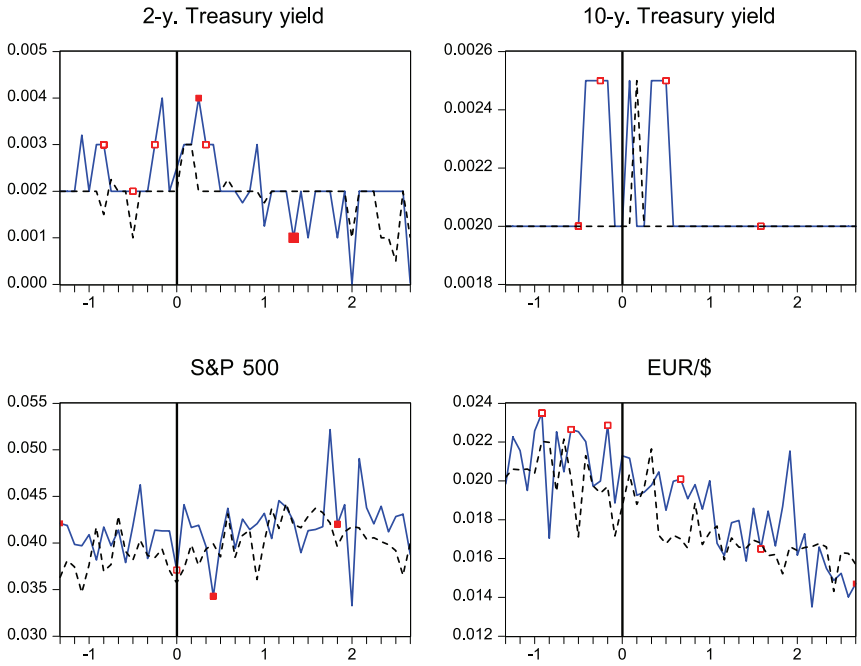
Notes: This figure plots (i) the median absolute deviation of five-minute asset price returns around the release time of the speeches of Federal Reserve Chairman Bernanke with a solid blue line and (ii) the median absolute deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the release day) with a dashed black line for two different samples: February 2006–December 2007 in panel A and January 2008–December 2012 in panel B. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time. The Brown and Forsythe (1974) test is employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

Figure C7. The Volatility of Asset Prices around the FRB Vice Chair's Speeches



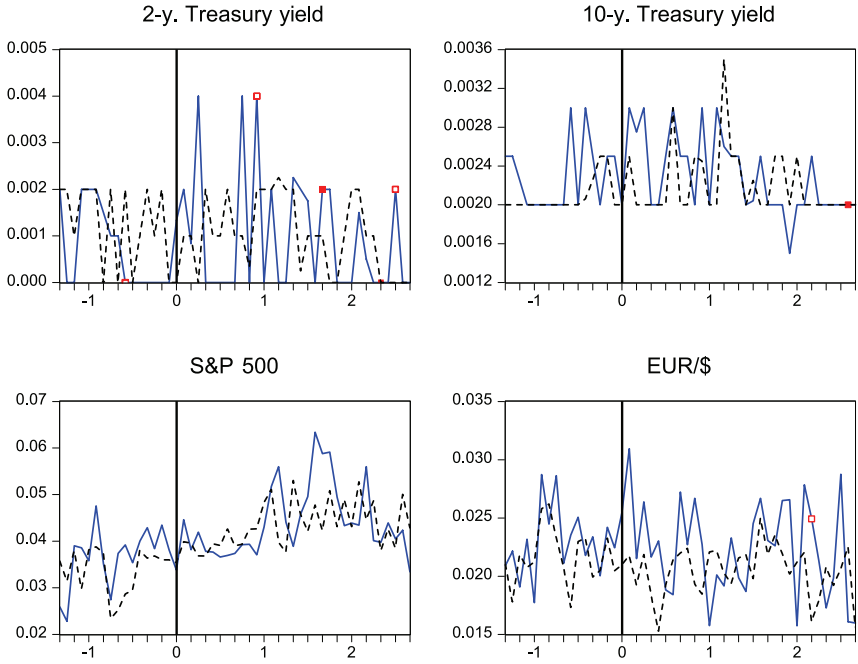
Notes: This figure plots (i) the median absolute deviation of five-minute asset price returns around the release time of the speeches of the Federal Reserve Board Vice Chair with a solid blue line and (ii) the median absolute deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the release day) with a dashed black line. The sample period is January 2001–December 2012. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time. The Brown and Forsythe (1974) test is employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

Figure C8. The Volatility of Asset Prices around the FRB Governors' Speeches



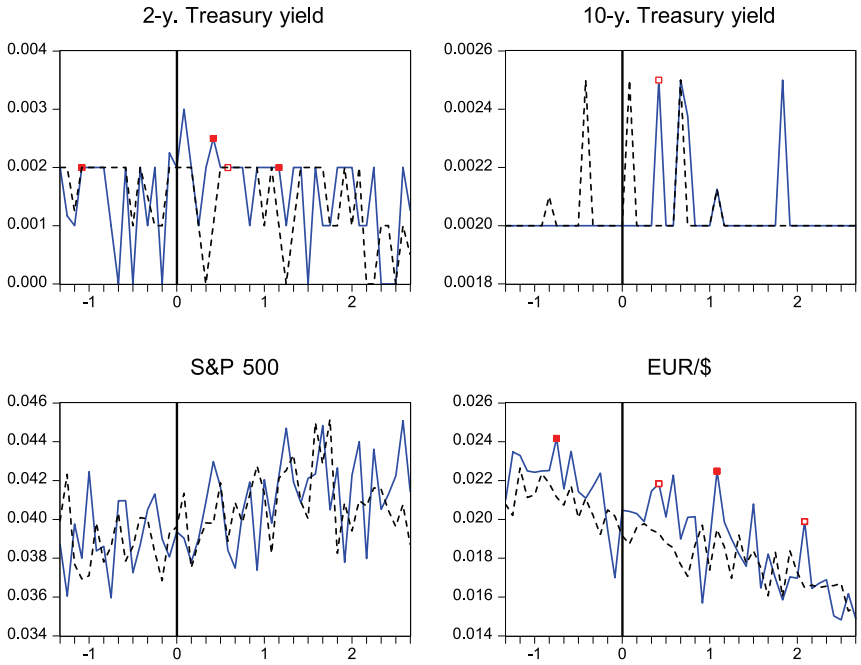
Notes: This figure plots (i) the median absolute deviation of five-minute asset price returns around the release time of the speeches of the Federal Reserve Board Governors with a solid blue line and (ii) the median absolute deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the release day) with a dashed black line. The sample period is January 2001–December 2012. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time. The Brown and Forsythe (1974) test is employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

Figure C9. The Volatility of Asset Prices around the FRBNY President's Speeches



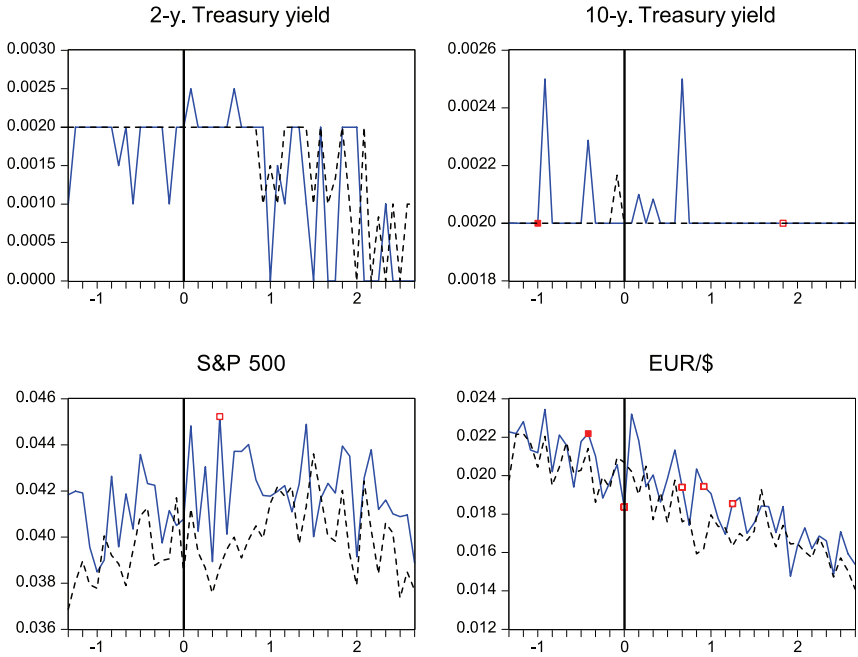
Notes: This figure plots (i) the median absolute deviation of five-minute asset price returns around the release time of the speeches of the Federal Reserve Bank of New York president with a solid blue line and (ii) the median absolute deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the release day) with a dashed black line. The sample period is January 2001–December 2012. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time. The Brown and Forsythe (1974) test is employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

Figure C10. The Volatility of Asset Prices around the Voting Regional Federal Reserve Bank Presidents' Speeches



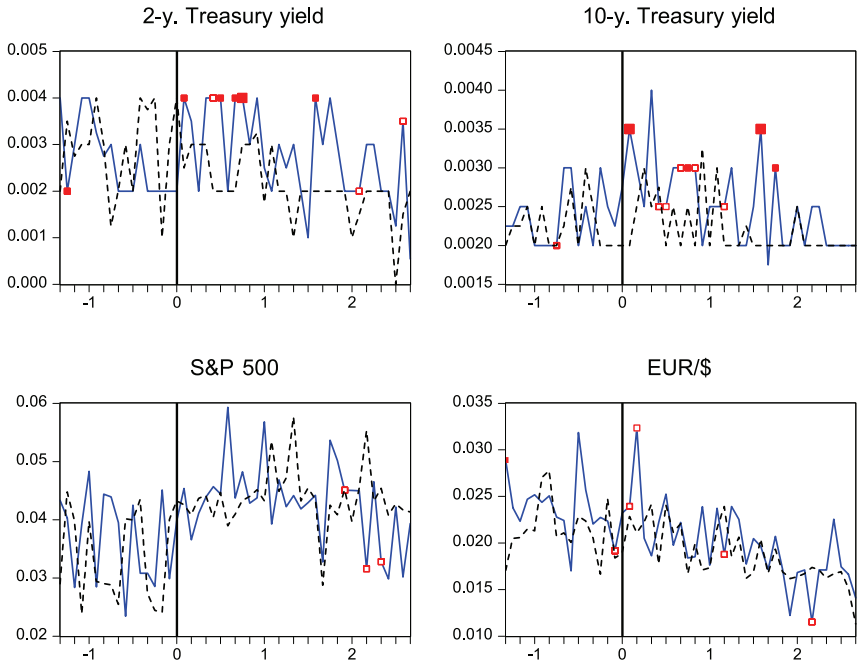
Notes: This figure plots (i) the median absolute deviation of five-minute asset price returns around the release time of the speeches of the voting presidents of the twelve District Federal Reserve Banks with a solid blue line and (ii) the median absolute deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the release day) with a dashed black line. The sample period is January 2001–December 2012. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time. The Brown and Forsythe (1974) test is employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

Figure C11. The Volatility of Asset Prices around Speeches by Non-voting Regional Federal Reserve Bank Presidents



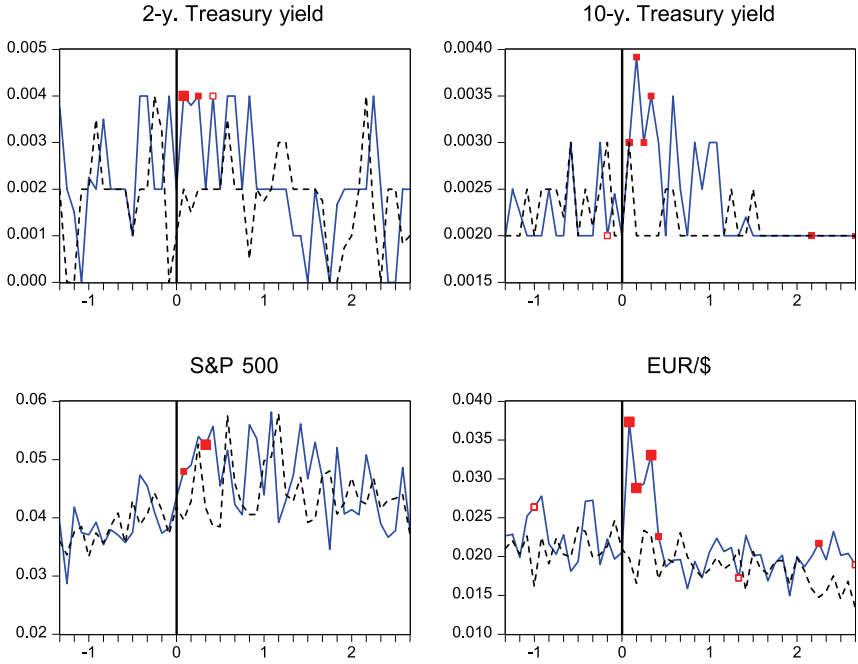
Notes: This figure plots (i) the median absolute deviation of five-minute asset price returns around the release time of the speeches of the non-voting regional Federal Reserve Bank presidents, who also attend FOMC meetings, with a solid blue line and (ii) the median absolute deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the release day) with a dashed black line. The sample period is January 2001–December 2012. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time. The Brown and Forsythe (1974) test is employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

Figure C12. The Volatility of Asset Prices around Chairman Greenspan's Speeches



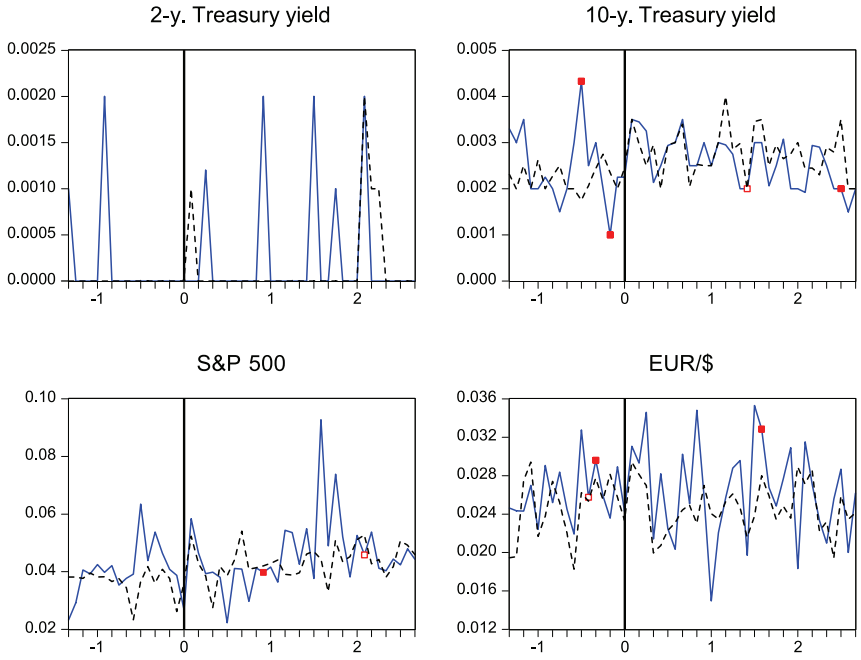
Notes: This figure plots (i) the median absolute deviation of five-minute asset price returns around the release time of the speeches of Federal Reserve Chairman Greenspan with a solid blue line and (ii) the median absolute deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the release day) with a dashed black line. The sample period is January 2001–January 31, 2006. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time. The Brown and Forsythe (1974) test is employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

Figure C13. The Volatility of Asset Prices around Chairman Bernanke's Speeches



Notes: This figure plots (i) the median absolute deviation of five-minute asset price returns around the release time of the speeches of Federal Reserve Chairman Bernanke with a solid blue line and (ii) the median absolute deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the release day) with a dashed black line. The sample period is February 1, 2006–December 2012. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time. The Brown and Forsythe (1974) test is employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.

Figure C14. The Volatility of Asset Prices around FRBNY President Dudley's Speeches



Notes: This figure plots (i) the median absolute deviation of five-minute asset price returns around the release time of the speeches of Federal Reserve Bank of New York President Dudley with a solid blue line and (ii) the median absolute deviation of five-minute asset price returns on control days (the same weekdays and hours of the previous and following week of the release day) with a dashed black line. The sample period is January 27, 2009–December 2012. The interval spans from one hour and twenty minutes before to two hours and forty minutes after the event time. The vertical line is placed at the release time. The Brown and Forsythe (1974) test is employed to test the null hypothesis of equal variances in each subgroup. Large and small filled squares denote significance of the differences at the two-sided 1 and 5 percent level, respectively, whereas small hollow squares denote significance at the 10 percent level.