Internet Appendix to
Price Pressure and Efficiency on FOMC Announcements

Oliver Boguth, Vincent Grégoire, and Charles Martineau

March 10, 2019

Contents

This appendix contains supplementary material that is discussed but not tabulated in the main body of the paper. We further discuss in more details some of the results reported in this appendix.

A. List of Figures and Tables

Below we provide a list of the figures and tables together with a brief description.

Figures:

- Figure IA.1 shows the unbiasedness regression results for the 2004-2011 sample excluding FOMC Announcements at the height of the financial crisis.

- Figure IA.3 shows the price reversals and predictability for the S&P 500 index.

Table:

- Table IA.I presents the FOMC announcement sample dates.

- Table IA.II presents the regression results of equity returns on FOMC News and order imbalance using SPY.

B. Figures and Tables

Figure IA.1. Price Discovery Regressions Excluding FOMC Announcements at the Height of the Financial Crisis

$$p_{i,T} - p_{i,-30} = \alpha_t + \beta_t \left(p_{i,t} - p_{i,-30} \right) + \varepsilon_{i,t},$$

where $p_{i,t} - p_{i,-30}$ is the EMini log return from 30 minutes before the announcement to minute t around FOMC announcement i and T is the settlement price on the next trading day. Regressions are estimated independently at each time t. We present the results for $t \in [-10, 1560]$ and $t \in [-10, 120]$ in Panels A and B, respectively. The shaded areas represent pointwise 95% confidence intervals around the estimated β_t coefficients using heteroscedasticity-consistent standard errors. The sample periods The sample period is from June 2004 to March 2011 with the exclusion of 11 FOMC announcements at the height of the financial crisis for $t \in [-10, 1560]$ and for $t \in [-10, 120]$ in Panel A and B, respectively. See Table IA.I for the list of excluded FOMC announcements.

Panel A. Full window

Panel B. Event day

2
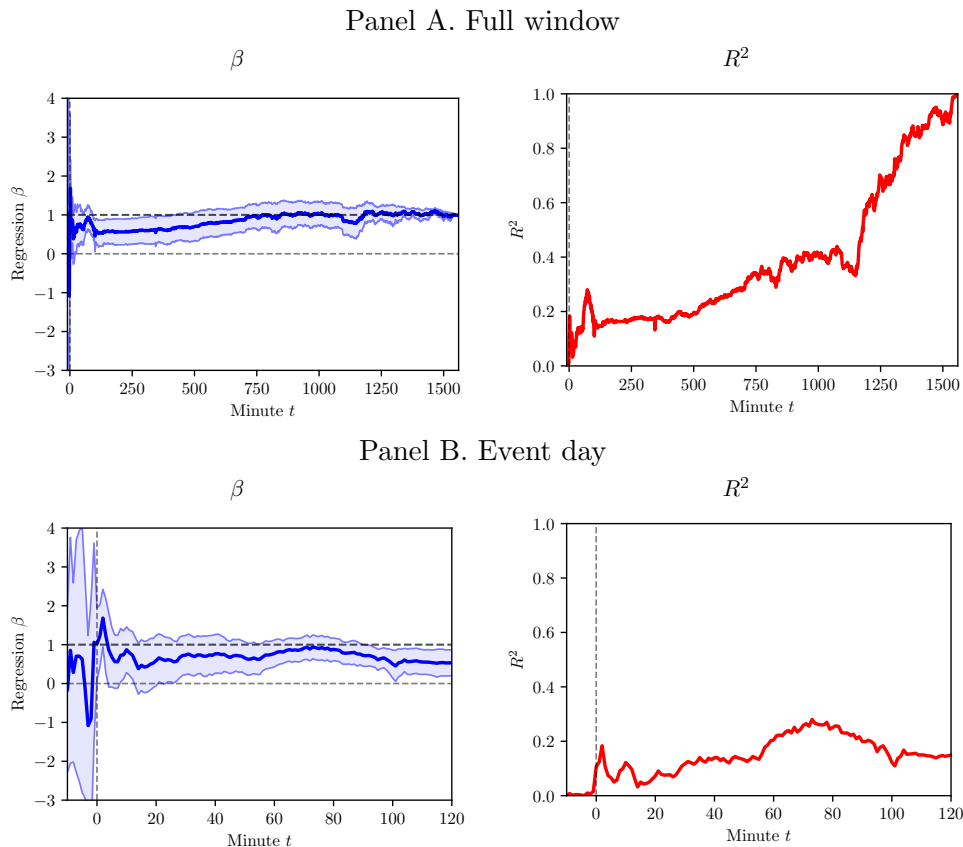
Figure IA.3. S&P 500 Net Total Return Reversals and Returns Predictability

This figure shows β_t coefficient estimates and $R^2{}_t$ from the following regressions:

$$
\begin{aligned}
p_{i,T} - p_{i,t} &= \alpha_t + \beta_t(p_{i,t} - p_{i,t_1}) + \varepsilon_{i,t} & t_1 < t < T, \text{ in Panel A,} \\
p_{i,T} - p_{i,t_2} &= \alpha_t + \beta_t(p_{i,t} - p_{i,t_1}) + \varepsilon_{i,t} & t_1 < t < t_2 < T, \text{ in Panel B,} \\
p_{i,T} - p_{i,t_2} &= \alpha_t + \beta_t(p_{i,t_2} - p_{i,t}) + \varepsilon_{i,t} & 0 < t < t_2 < T, \text{ in Panel C,}
\end{aligned}
$$

where $p_{i,T+1} - p_{i,t}$, $p_{i,T+1} - p_{i,T}$, and $p_{i,t} - p_{i,10}$ corresponds to the S&P Index log returns from time t following FOMC announcements to the next day settlement price, is the return from the announcement day settlement price (t_2) to next day settlement price (T), and is the return from 10 minutes to time t following announcement. Regressions are estimated independently at each time t. The shaded areas represent pointwise 95% confidence intervals around the estimated β_t coefficients using heteroscedasticity-consistent standard errors. The sample consists of FOMC announcements with press conferences between April 2011 and December 2017.

3
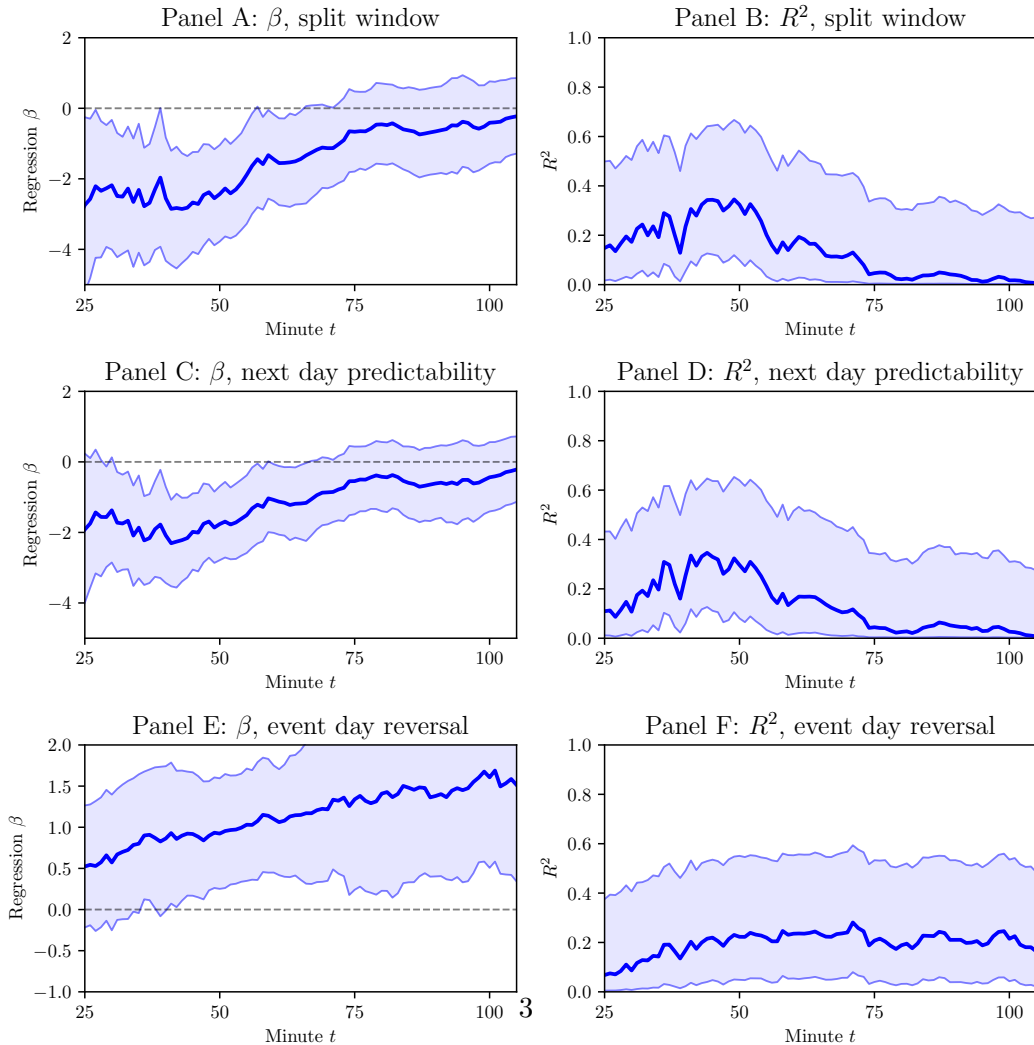
Table IA.I
FOMC Announcement Dates

This table present the FOMC announcement dates, the schedule time of the press release, whether the press release is followed by a press conference (PC) and whether the FOMC announcement is excluded from the sample for the results reported in Figure IA.1. The FOMC announcement of 2011-08-09 is excluded for all tests reported in the main paper.

Early sample				Middle sample				Later sample			
Date	Scheduled Time	PC	Excluded	Date	Scheduled Time	PC	Excluded	Date	Scheduled Time	PC	Excluded
1997-09-30	14:15			2004-06-30	14:15			2011-04-27	12:30	1	
1997-11-12	14:15			2004-08-10	14:15			2011-06-22	12:30	1	
1997-12-16	14:15			2004-09-21	14:15			2011-08-09	14:15		X
1998-02-04	14:15			2004-11-10	14:15			2011-09-21	14:15		
1998-03-31	14:15			2004-12-14	14:15			2011-11-02	12:30	1	
1998-05-19	14:15			2005-02-02	14:15			2011-12-13	14:15		
1998-07-01	14:15			2005-03-22	14:15			2012-01-25	12:30	1	
1998-08-18	14:15			2005-05-03	14:15			2012-03-13	14:15		
1998-09-29	14:15			2005-06-30	14:15			2012-04-25	12:30	1	
1998-11-17	14:15			2005-08-09	14:15			2012-06-20	12:30	1	
1998-12-22	14:15			2005-09-20	14:15			2012-08-01	14:15		
1999-02-03	14:15			2005-11-01	14:15			2012-09-13	12:30	1	
1999-03-30	14:15			2005-12-13	14:15			2012-10-24	14:15		
1999-05-18	14:15			2006-01-31	14:15			2012-12-12	12:30	1	
1999-06-30	14:15			2006-03-28	14:15			2013-01-30	14:15		
1999-08-24	14:15			2006-05-10	14:15			2013-03-20	14:00	1	
1999-10-05	14:15			2006-06-29	14:15			2013-05-01	14:00		
1999-11-16	14:15			2006-08-08	14:15			2013-06-19	14:00	1	
1999-12-21	14:15			2006-09-20	14:15			2013-07-31	14:00		
2000-02-02	14:15			2006-10-25	14:15			2013-09-18	14:00	1	
2000-03-21	14:15			2006-12-12	14:15			2013-10-30	14:00		
2000-05-16	14:15			2007-01-31	14:15			2013-12-18	14:00	1	
2000-06-28	14:15			2007-03-21	14:15			2014-01-29	14:00		
2000-08-22	14:15			2007-05-09	14:15			2014-03-19	14:00	1	
2000-10-03	14:15			2007-06-28	14:15			2014-04-30	14:00		
2000-11-15	14:15			2007-08-07	14:15			2014-06-18	14:00	1	
2000-12-19	14:15			2007-09-18	14:15			2014-07-30	14:00		
2001-01-31	14:15			2007-10-31	14:15			2014-09-17	14:00	1	
2001-03-20	14:15			2007-12-11	14:15		X	2014-10-29	14:00		
2001-05-15	14:15			2008-01-30	14:15			2014-12-17	14:00	1	
2001-06-27	14:15			2008-03-18	14:15			2015-01-28	14:00		
2001-08-21	14:15			2008-04-30	14:15		X	2015-03-18	14:00	1	
2001-10-02	14:15			2008-06-25	14:15			2015-04-29	14:00		
2001-11-06	14:15			2008-08-05	14:15			2015-06-17	14:00	1	
2001-12-11	14:15			2008-09-16	14:15		X	2015-07-29	14:00		
2002-01-30	14:15			2008-10-29	14:15		X	2015-09-17	14:00	1	
2002-03-19	14:15			2008-12-16	14:15		X	2015-10-28	14:00		
2002-05-07	14:15			2009-01-28	14:15		X	2015-12-16	14:00	1	
2002-06-26	14:15			2009-03-18	14:15		X	2016-01-27	14:00		
2002-08-13	14:15			2009-04-29	14:15			2016-03-16	14:00	1	
2002-09-24	14:15			2009-06-24	14:15		X	2016-04-27	14:00		
2002-11-06	14:15			2009-08-12	14:15			2016-06-15	14:00	1	
2002-12-10	14:15			2009-09-23	14:15		X	2016-07-27	14:00		
2003-01-29	14:15			2009-11-04	14:15			2016-09-21	14:00	1	
2003-03-18	14:15			2009-12-16	14:15			2016-11-02	14:00		
2003-05-06	14:15			2010-01-27	14:15			2016-12-14	14:00	1	
2003-06-25	14:15			2010-03-16	14:15			2017-02-01	14:00		
2003-08-12	14:15			2010-04-28	14:15		X	2017-03-15	14:00	1	
2003-09-16	14:15			2010-06-23	14:15			2017-05-03	14:00		
2003-10-28	14:15			2010-08-10	14:15			2017-06-14	14:00	1	
2003-12-09	14:15			2010-09-21	14:15			2017-07-26	14:00		
2004-01-28	14:15			2010-11-03	14:15			2017-09-20	14:00	1	
2004-03-16	14:15			2010-12-14	14:15		X	2017-11-01	14:00		
2004-05-04	14:15			2011-01-26	14:15			2017-12-13	14:00	1	
				2011-03-15	14:15						

Table IA.II
Regression of Equity Returns on FOMC News and Order Imbalance

Panel A of this table reports coefficients from regressions of SPY ETF returns on FOMC announcement surprises (ED) and order imbalance (OI) at every two-minute intervals following FOMC announcements, for a total of ten intervals. Returns in the first interval are calculated using prices one minute before to two minutes after FOMC announcements. Panel B reports coefficients from regressions of Emini returns on ED and order imbalance OI on an expanding window around FOMC announcements. ED correspond to the first principal component from using four Eurodollar contract returns expiring in 2, 4, 6, and 8 quarters. OI is the difference between the total number of buys and sells in trade volume divided by the total trade volume in the SPY. ** and * denote statistical significance at the 1- and 5-percent level. The standard errors are robust to heteroskedasticity. The sample period is from April 2011 to December 2017.

Panel A. The Nth two-minute interval following FOMC announcements

	$-1:2$		$2:4$		$4:6$		$6:8$		$8:10$	
ED	0.027**	0.023**	-0.001	-0.002	-0.001	-0.001	0.001	0.001	-0.002	-0.001
	(0.004)	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
OI		0.005**		0.006**		0.003**		0.003**		0.003**
		(0.002)		(0.002)		(0.001)		(0.001)		(0.001)
R^2	0.56	0.62	-0.02	0.17	-0.01	0.10	-0.02	0.24	-0.00	0.24
N	53	53	53	53	53	53	53	53	53	53

Panel B. Expanding window following FOMC announcements

	$-1:15$		$-1:30$		$-1:45$		$-1:60$		$-1:90$	
ED	0.023**	0.018**	0.016	0.014	0.024*	0.018	0.017	0.011	0.052**	0.041**
	(0.007)	(0.006)	(0.011)	(0.010)	(0.011)	(0.009)	(0.019)	(0.016)	(0.014)	(0.013)
OI		0.017**		0.010**		0.007**		0.011**		0.006**
		(0.005)		(0.003)		(0.002)		(0.002)		(0.002)
R^2	0.26	0.37	0.02	0.21	0.09	0.25	0.02	0.31	0.12	0.25
N	53	53	53	53	53	53	53	53	53	53