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The Pre-FOMC Announcement Drift

David Lucca   Emanuel Moench

New York Fed

Dec 1, 2012
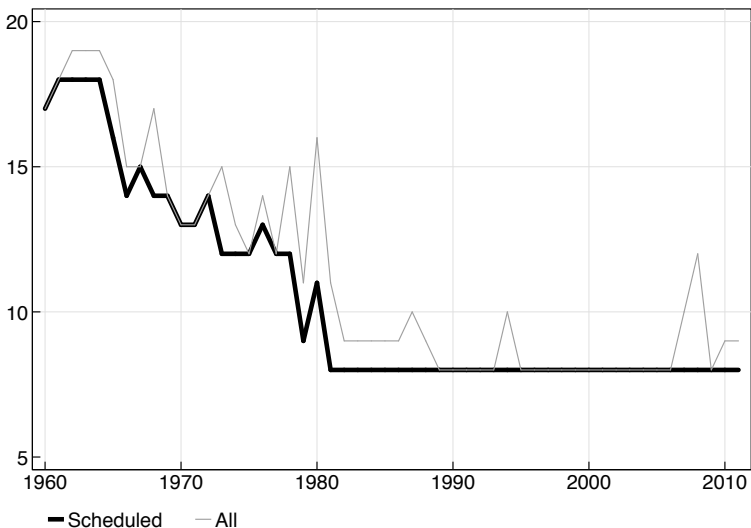BU/Boston Fed Conference on Macro-Finance Linkages

Introduction

- Bernanke-Kuttner (2005): Significant stock market reaction to US monetary policy surprises.

- This paper: US and international stocks earn *unconditional* abnormal returns in the 24 hours *before* scheduled FOMC announcements.

- Account for 80% of realized US stock returns since 1994.

- No similar returns in other asset classes or prior to other central bank/macro announcements.
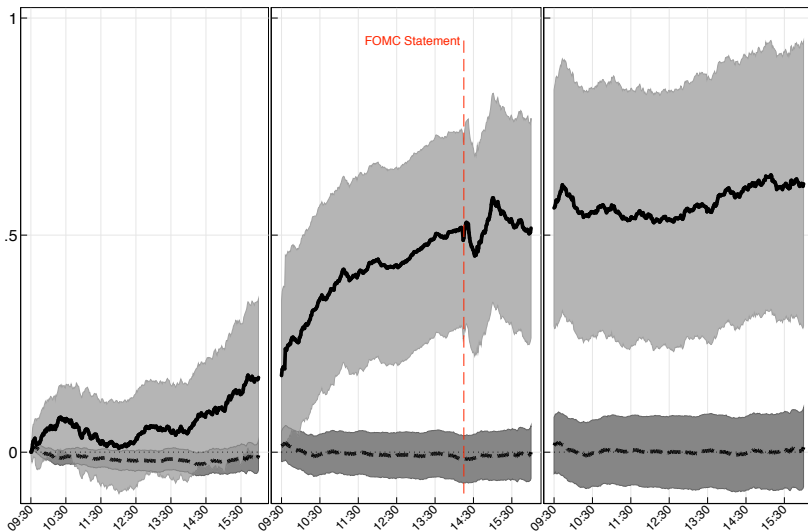
FOMC meetings and *purdah* period

- FOMC convenes eight times a year at scheduled meetings to set monetary policy. Scheduled meetings' dates are known in advance to investors.

- Before Feb 1994, policy decision not announced (inferred from OMOs).

- From Sep 1994 onwards, FOMC statement released at or a few minutes after 2:15 p.m. ET.

- Since Apr 2011, some statements released at 12:30 pm.

- Fed officials don't comment on monetary policy week before FOMC meeting (*purdah* period) $\Rightarrow$ Limited new information.

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Number of FOMC Meetings per Year

Scheduled — All

Cumulative Returns on SPX Around FOMC: 1994-2011

FOMC Dummy Regressions

- Dummy variable regressions:

$$rx_t = \beta_0 + \beta_1 \mathbb{1}_{t=FOMC} + \beta_x X_t + \epsilon_t,$$

- rx_t: Excess return on stocks close-to-close or 2pm-to-2pm.

- X_t: Controls.

- β_0: Unconditional mean excess return on non-FOMC days.

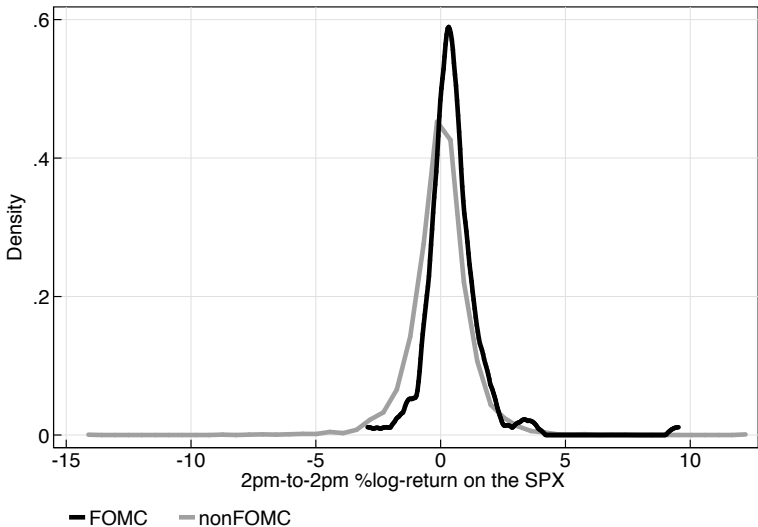- β_1: Unconditional mean difference excess return on FOMC days (mean ex. return when no β_0).

FOMC Dummy Regression: SPX

Table 3: Main Regression Table: Daily SPX excess returns

Dependent Variable: SPX %log-excess-return					
Type of return:		2pm-to-2pm	2pm-to-close	close-to-close	
FOMC dummy	0.488	0.484	0.002	0.330	0.049
	[0.11]***	[0.11]***	[0.09]	[0.10]***	[0.06]
Const.		0.004		0.009	0.015
		[0.02]		[0.02]	[0.01]
Annual ex-return FOMC		3.89		2.70	0.62
Annual ex-return non-FOMC		0.89		2.03	3.65
FOMC Sharpe Ratio		1.14		0.84	0.20
Obs.		4142		4166	6066
N. of FOMC		131		132	236
Dates		Sep94-Mar11		Sep94-Mar11	Feb70-Jan94

SPX 2pm-2pm Returns: Empirical Densities

FOMC ━━ nonFOMC ━━

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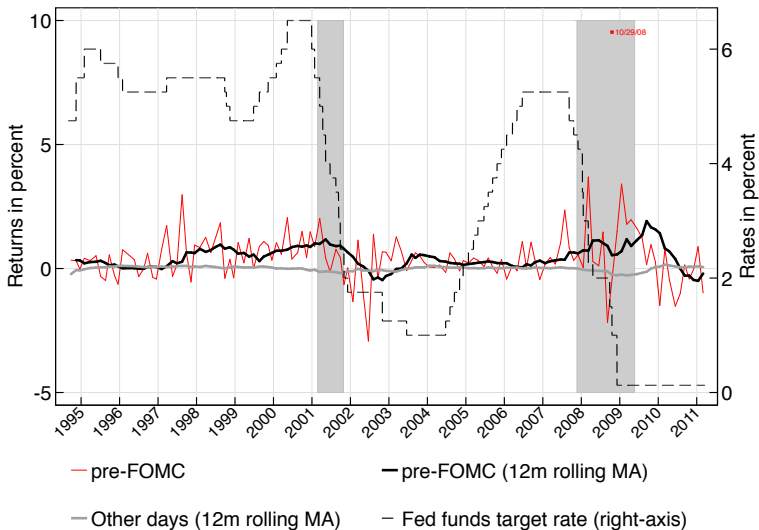Summary
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SPX 2pm-2pm Returns: Summary Stats

Table 4: Summary Statistics: 2pm-to-2pm SPX log-excess returns

	All Observations		**Excl. top/bottom 1**	
	FOMC	nonFOMC	FOMC	nonFOMC
Mean	.488	.004	.445	.009
	[.11]	[.02]	[.08]	[.02]
St. Dev.	1.22	1.22	.88	.99
Skew	3.18	-.24	.61	-.16
Kurtosis	25.61	15.91	5.22	3.71
Max	9.53	12.06	3.69	3.08
Min	-2.93	-13.96	-2.18	-3.25
Obs.	131	4011	129	3931

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The Time Series of pre-FOMC Returns

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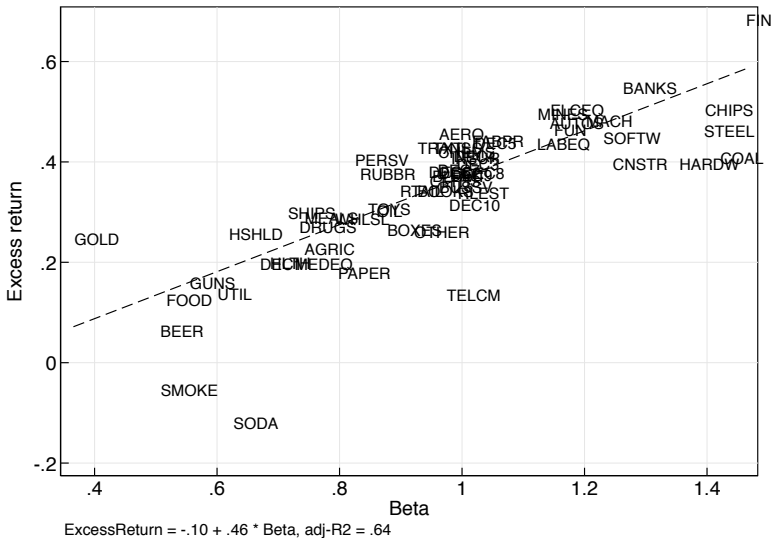Empirical Evidence
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Cross-Sectional and International Results

- The pre-FOMC effect is widespread across size and industry portfolios.

- Average Returns on FOMC days line up well with portfolios' market betas.

- Pre-FOMC announcement drift accounts for large shares of stock returns in international markets (except Japan) since 1994.

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The CAPM on FOMC Announcement Days

ExcessReturn = -.10 + .46 * Beta, adj-R2 = .64

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FOMC Dummy Regression: Global Equity Indexes

Table 7: International Stock Market Index Regressions

Dependent Variable: %log-excess-return of stock market index							
Stock Market Index:	DAX	FTSE100	CAC40	IBEX	SMI	TSX	NIKKEI
FOMC dummy	0.46	0.34	0.53	0.50	0.29	0.21	0.02
	[0.11]***	[0.11]***	[0.13]***	[0.12]***	[0.10]***	[0.09]**	[0.16]
Const.	0.01	−0.00	−0.00	0.01	0.02	0.01	−0.02
	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]
Annual ex-return FOMC	3.69	2.71	4.15	4.05	2.41	1.79	0.06
Annual ex-return non-FOMC	2.63	−1.17	−1.68	1.31	2.34	3.20	−4.08
FOMC Sharpe Ratio	1.07	0.80	1.05	1.07	0.75	0.65	0.01
Obs.	4194	4184	4204	4164	4151	4147	4072
N. of FOMC	130	132	131	131	132	131	125

Other Assets, Central Bank/Macro Announcements

No pre-announcement drift for

- Other asset classes (Fixed-income, currencies).

- Other central bank announcements (BuBa/ECB, BoE, BoJ).

- Other macroeconomic announcements (payroll, CPI, . . .).

  - Savor-Wilson (2011): 10 bps excess returns on payroll, CPI/PPI, FOMC announcement days from 1958-2009.

  - For the 1994-2011 sample, we do not find evidence of abnormal returns on payroll, inflation announcement days.

Realized Volatility around FOMC Announcements

FOMC Statement

ma5_ret2SPX

━━ FOMC   ▬ ▬ non-FOMC
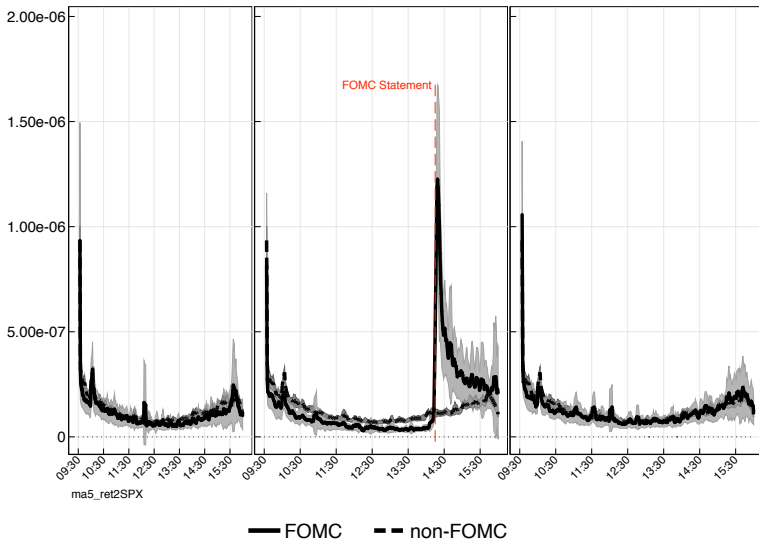
'Standard' Potential Explanations

- Standard risk-based explanations:

    - Jump risk.

    - Volatility.

    - Liquidity.

    - Consumption.

- Data Snooping across announcements.

None can account for the pre-FOMC announcement returns.

Controlling for Volatility and Liquidity

Table 10: Controlling for Liquidity and Volatility Risk

Dependent Variable: %Log returns of 2pm-to-2pm SP500 index

Liqu. defined on:	SPY		SP500 E-mini	
FOMC dummy	0.55	0.53	0.54	0.53
	[0.12]***	[0.07]***	[0.13]***	[0.07]***
Amihud Illiquid.		547.32		97.91
		[300.99]*		[49.30]**
Bid-Ask		0.31		0.34
		[0.27]		[1.25]
Relat. Trade Vols		−0.03		−0.10
		[0.04]		[0.03]***
VIX(lag)		0.00		0.00
		[0.00]		[0.00]
VIX(innovat.)		−0.60		−0.60
		[0.02]***		[0.02]***
Const.	0.00	−0.06	−0.01	−0.06
	[0.02]	[0.07]	[0.02]	[0.31]
Obs.	3574	3574	3189	3189
N. of FOMC	117	117	107	107
Dates	199601.201103	199601.201103	199709.201103	199709.201103

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Time Series Regression

Table 11: Time-series regressions

Dependent Variable: %2pm-to-2pm SPX log-excess-return			
	(1)	(2)	(3)
NBER	0.62*		
	[0.33]		
Ease Cycle		0.47	
		[0.43]	
Tight Cycle		0.07	
		[0.26]	
FFtarget		−0.045	
		[0.81]	
Stance			−0.38***
			[0.14]
Disagreement			−1.03 **
			[0.42]
Constant	0.33***	0.33***	1.13***
	[0.08]	[0.11]	[0.26]
Observations	130	130	130
Adjusted R^2	0.05	0.01	0.09

'Non-Standard' Potential Explanations

1. Political risk (Pastor&Veronesi 2012).

2. Inattentive investors (Kacperczyk,van Nieuwerburgh,Veldkamp 2011).

3. Limited participation (Duffie 2010).

- 1 implies higher volatility before announcement.
- 1 and 2 require news right before FOMC announcement.
- 3 implies lower returns before/after FOMC announcements.

Dummy Regs before and after FOMC days

Table 12: SP500 return before and after announcement

Dependent Variable: %2pm-to-2pm SPX log-excess-return		
$\math1(FOMC_{t+5})$	-0.054	[0.09]
$\math1(FOMC_{t+4})$	-0.087	[0.10]
$\math1(FOMC_{t+3})$	0.085	[0.09]
$\math1(FOMC_{t+2})$	-0.029	[0.10]
$\math1(FOMC_{t+1})$	0.077	[0.08]
$\math1(FOMC_t)$	0.488	[0.11]***
$\math1(FOMC_{t-1})$	-0.003	[0.13]
$\math1(FOMC_{t-2})$	0.062	[0.09]
$\math1(FOMC_{t-3})$	0.078	[0.11]
$\math1(FOMC_{t-4})$	-0.024	[0.10]
$\math1(FOMC_{t-5})$	-0.076	[0.08]
$\sum_{i=1}^{5} \math1(FOMC_{t+1})$	0.010	
P-value	0.961	
$\sum_{i=1}^{5} \math1(FOMC_{t-1})$	0.044	
P-value	0.844	

Summary

- US and international equities drift up ahead of FOMC announcements.

- SPX 24 hours before FOMC: 49 bps average return per meeting since 1994.

- No similar returns in other assets, ahead of other central bank/macro announcements.

- Potential explanations consistent with some but not all facts.

Fama-French Size Portfolios

Table 4: CRSP Size Portfolio Regressions

Dependent Variable: %Log-excess-return of CRSP portfolio index

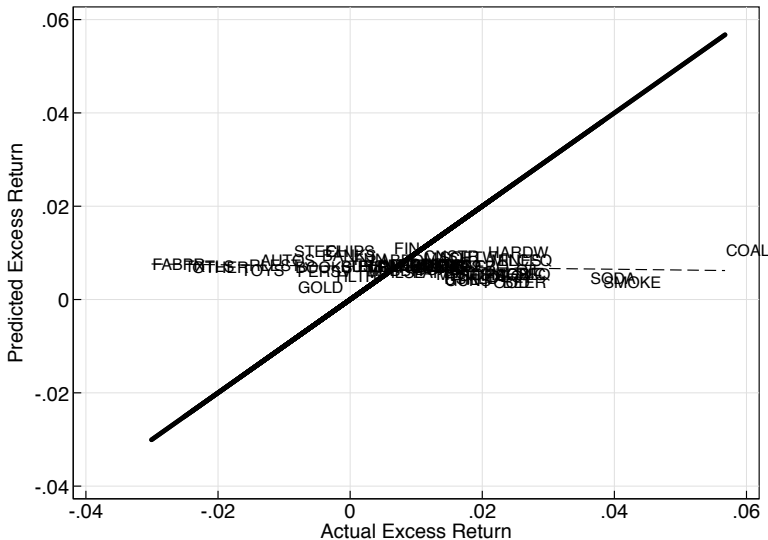| Portfolio:	Value Weighted	Equal Weighted	1st Decile	2nd Decile	3rd Decile	4th Decile
FOMC dummy	0.36	0.25	0.20	0.40	0.42	0.44
	[0.10]***	[0.08]***	[0.08]**	[0.12]***	[0.12]***	[0.11]***
Const.	0.01	0.06	0.02	0.02	0.01	0.01
	[0.02]	[0.02]***	[0.02]	[0.02]	[0.02]	[0.02]
Annual ex-return FOMC	2.91	2.47	1.79	3.31	3.46	3.55
Annual ex-return non-FOMC	2.24	15.37	5.49	3.49	3.44	2.15
FOMC Sharpe Ratio	0.92	0.92	0.71	0.85	0.93	0.98
Portfolio:	5th Decile	6th Decile	7th Decile	8th Decile	9th Decile	10th Decile
FOMC dummy	0.46	0.40	0.39	0.39	0.37	0.31
	[0.11]***	[0.10]***	[0.10]***	[0.10]***	[0.10]***	[0.10]***
Const.	0.01	0.01	0.02	0.01	0.02	0.01
	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]
Annual ex-return FOMC	3.75	3.27	3.27	3.19	3.09	2.52
Annual ex-return non-FOMC	2.59	3.45	4.29	3.21	3.63	1.73
FOMC Sharpe Ratio	1.07	1.03	1.05	0.99	0.98	0.80

Fama-French Industry Portfolios

Table 5: CRSP Value-Weighted Industry Portfolio Regressions

Dependent Variable: %log-excess-return of CRSP Industry portfolio						
Industry Portfolio:	AGRIC	FOOD	SODA	BEER	SMOKE	TOYS	FUN
FOMC dummy	0.24	0.10	−0.14	0.01	−0.07	0.32	0.50
	[0.17]	[0.08]	[0.22]	[0.09]	[0.15]	[0.12]**	[0.19]***
FOMC Sharpe Ratio	0.39	0.37	−0.10	0.09	−0.06	0.61	0.66
Industry Portfolio:	BOOKS	HSHLD	CLTHS	HLTH	MEDEQ	DRUGS	CHEMS
FOMC dummy	0.37	0.23	0.38	0.24	0.19	0.26	0.44
	[0.12]***	[0.09]**	[0.13]***	[0.11]**	[0.10]*	[0.10]***	[0.12]***
FOMC Sharpe Ratio	0.73	0.67	0.77	0.57	0.54	0.72	0.98
Industry Portfolio:	RUBBR	TXTLS	BLDMT	CNSTR	STEEL	FABPR	MACH
FOMC dummy	0.39	0.51	0.38	0.43	0.50	0.51	0.49
	[0.12]***	[0.16]***	[0.13]***	[0.18]**	[0.16]***	[0.19]***	[0.13]***
FOMC Sharpe Ratio	0.80	0.77	0.70	0.63	0.78	0.64	0.98
Industry Portfolio:	ELCEQ	AUTOS	AERO	SHIPS	GUNS	GOLD	MINES
FOMC dummy	0.52	0.51	0.45	0.25	0.13	0.26	0.56
	[0.14]***	[0.14]***	[0.15]***	[0.14]*	[0.13]	[0.22]	[0.16]***
FOMC Sharpe Ratio	0.97	0.86	0.79	0.49	0.29	0.28	0.89

Fama-French Industry Portfolios - ctd.

Industry Portfolio:	COAL	OIL	UTIL	TELCM	PERSV	BUSSV	HARDW
FOMC dummy	0.40	0.29	0.10	0.13	0.42	0.36	0.40
	[0.27]	[0.12]**	[0.09]	[0.12]	[0.13]***	[0.10]***	[0.17]**
FOMC Sharpe Ratio	0.43	0.67	0.34	0.28	0.83	0.93	0.63

Industry Portfolio:	SOFTW	CHIPS	LABEQ	PAPER	BOXES	TRANS	WHLSL
FOMC dummy	0.48	0.54	0.44	0.18	0.27	0.45	0.30
	[0.15]***	[0.16]***	[0.13]***	[0.10]*	[0.12]**	[0.11]***	[0.10]***
FOMC Sharpe Ratio	0.80	0.82	0.83	0.46	0.57	0.99	0.78

Industry Portfolio:	RTAIL	MEALS	BANKS	INSUR	RLEST	FIN	OTHER
FOMC dummy	0.33	0.27	0.56	0.42	0.35	0.69	0.30
	[0.12]***	[0.11]**	[0.19]***	[0.14]***	[0.16]**	[0.19]***	[0.12]***
FOMC Sharpe Ratio	0.74	0.64	0.72	0.77	0.52	0.92	0.61

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The CAPM on non-FOMC Announcement Days

International Equities Around FOMC Announcement Days

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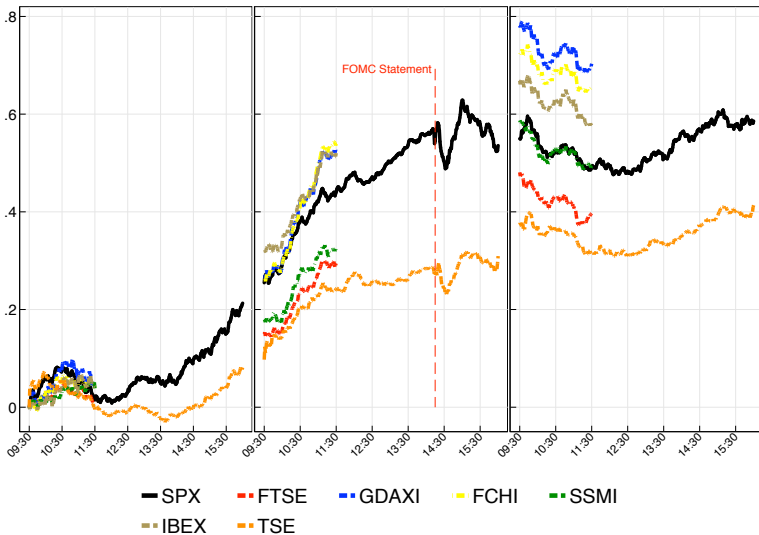
Trading Volume around FOMC Announcements

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FOMC   - - non-FOMC

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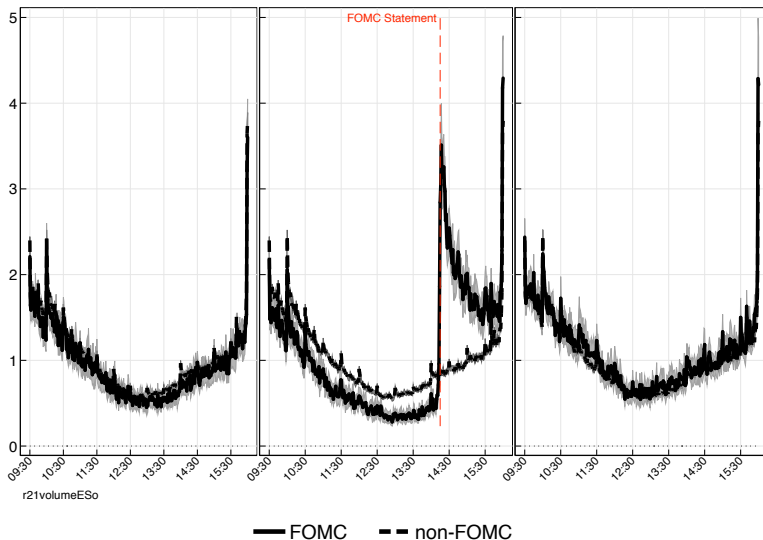
Two-Year Treasury Around FOMC Announcements

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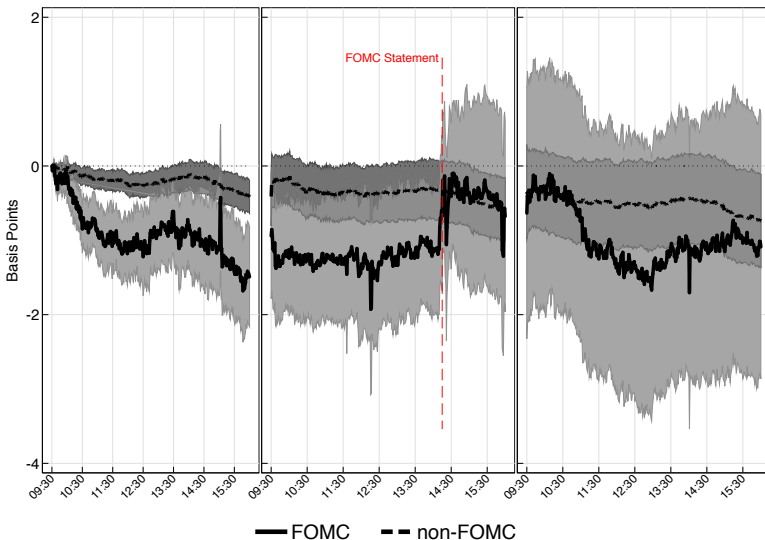
Number of Fed-related articles in WSJ/FT around FOMC