The Pre-FOMC Announcement Drift

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Agenda

- Motivation
- Simple Model
- Results
- Potential Explanations

Motivation

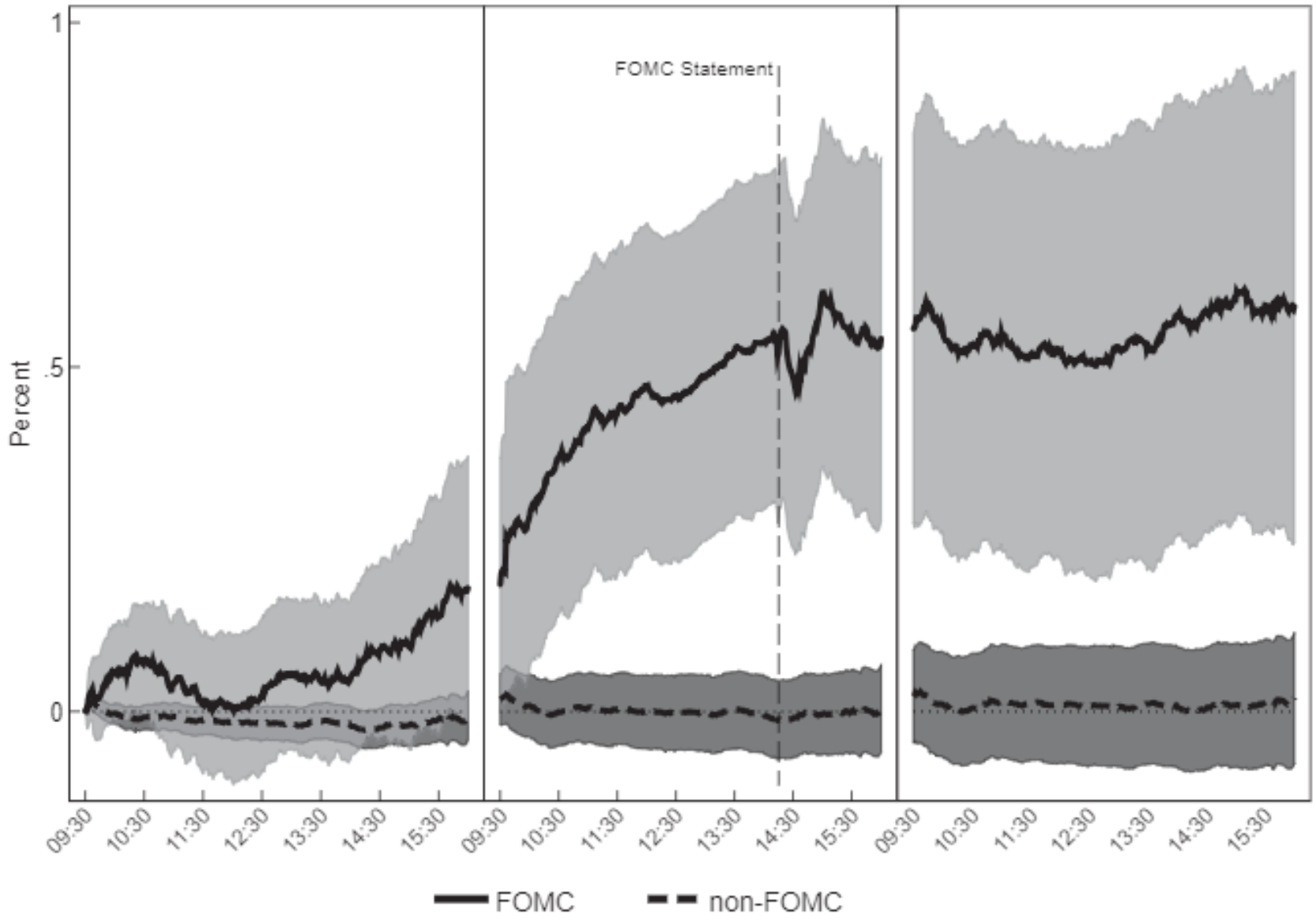
S&P has on average a drift of 49bps in the 24 hrs (SPX-2pm) before scheduled FOMC. Close-to-close also shows drift, but diluted.

Pre-FOMC drift is positive for the vast majority of the 1980 to 2011 sample. Other mkts except UK also show this drift.

The pre-FOMC drift is uncorrelated with the unexpected component of the yet-to-be realized policy decision. Subdued volume vs past 21-day window.

Key challenge for a risk-based explanation is to jointly explain the large positive mean of pre-FOMC returns and zero mean of announcement returns.

	pre-FOMC					Other				
	Mean	St. Dev.	Max	Min	No. Obs.	Mean	St. Dev.	Max	Min	No. Obs.
Post-1994 Sample										
SPX-2 pm	0.488	1.215	9.531	−2.927	131	0.004	1.218	12.064	−13.962	4,010
SPX	0.338	1.144	5.006	−2.571	132	0.009	1.261	10.953	−9.464	4,043
DAX	0.449	1.222	4.418	−3.241	131	0.014	1.571	10.797	−9.791	3,965
FTSE100	0.347	1.204	7.744	−3.492	132	0.004	1.222	9.384	−9.266	3,968
CAC40	0.517	1.422	8.833	−2.538	132	−0.001	1.49	10.595	−9.472	3,970
IBEX	0.491	1.369	9.002	−3.449	132	0.013	1.489	13.484	−9.586	3,939
SMI	0.301	1.141	5.992	−3.016	132	0.012	1.258	10.788	−8.108	3,942
TSX	0.231	0.981	3.752	−2.06	131	0.022	1.156	9.37	−9.788	3,956
NKY	0.006	1.806	7.456	−11.153	125	−0.02	1.579	13.235	−12.111	3,818
FF	−0.005	0.034	0.125	−0.155	132	−0.001	0.026	0.355	−0.52	4,032
ED4	0.006	0.07	0.37	−0.26	132	−0.001	0.08	0.83	−0.435	4,193
TSY-3M	0.000	0.043	0.144	−0.15	132	−0.001	0.06	0.84	−0.78	4,078
TSY-2Y	0.005	0.047	0.185	−0.192	132	−0.002	0.064	0.585	−0.607	4,193
TSY-5Y	−0.001	0.047	0.142	−0.166	132	−0.001	0.067	0.517	−0.382	4,193
TSY-10Y	−0.003	0.044	0.124	−0.175	132	−0.001	0.062	0.349	−0.37	4,193
VOLUME	0.825	0.351	2.675	0.294	120	1.041	0.419	5.283	0.129	3,686
lVIX−2 pm	23.612	9.501	75.52	11.04	121	23.108	9.092	80.69	9.69	3,855
Post-1980 Sample										
SPX-pre	0.366	1.124	9.531	−2.927	244	0.011	1.123	12.064	−22.911	7,598
FF	−0.004	0.031	0.125	−0.155	171	−0.002	0.03	0.38	−0.52	5,431
ED4	0.007	0.082	0.46	−0.26	193	−0.001	0.085	0.83	−1.18	6,261
TSY-3M	−0.011	0.106	0.54	−0.68	245	−0.001	0.109	1.69	−1.13	7,622
TSY-2Y	−0.005	0.08	0.37	−0.52	245	−0.001	0.092	0.89	−0.84	7,741
TSY-5Y	−0.006	0.074	0.42	−0.37	245	−0.001	0.086	0.72	−0.77	7,741
TSY-10Y	−0.009	0.07	0.33	−0.33	245	−0.001	0.08	0.65	−0.75	7,741


1
.5
0
Percent
FOMC Statement
09:30
10:30
11:30
12:30
13:30
14:30
15:30
FOMC
non-FOMC

Simple Model

$$rx_t = \beta_0 + \beta_1 1_t(\text{pre-FOMC}) + \beta_x X_t + \epsilon_t,$$

where rx_t *= cum dividend log excess return on SPX over risk free*

Pre-FOMC = explanatory variable equal to 1 on scheduled pre-OMC

β_1 *is the mean return on pre-FOMC windows when constant* β_0 *is omitted, and it is the mean excess return differential on pre-FOMC windows versus other days when the constant is present.*

β_0 *constant measures the unconditional mean excess return earned on all time periods outside of the pre-FOMC window.*

X_t *= additional control variables*

Results for pre-FOMC

Return Window	2 pm-to-2 pm		2 pm-to-Close	Close-to-close	Close-to-2 pm	Close(t − 2)-to-2 pm
pre-FOMC dummy	0.488 [0.11]***	0.485 [0.11]***			0.335 [0.06]***	0.544 [0.14]***
FOMC dummy			0.002 [0.09]	0.330 [0.10]***		
Const.		0.004 [0.02]		0.009 [0.02]		
Annual ex-return FOMC		3.89		2.70		
Annual ex-return non-FOMC		0.88		2.08		
Sharpe ratio	1.14	1.14	0.01	0.84	1.43	0.98
Obs.	131	4,141	131	4,175	131	131
No. of FOMC	131	131	131	132	131	131

$C(1)$: *the 24 hour return right before the FOMC meeting is on avg*.
49 bp vs ex-return non FOMC of 0.88.

The excess SPX return between 2pm and the market close is been zero (c 3).

Last *two* C(s): *other windows* ($close - to - 2pm$) and (close to 2 days prior to 2pm)
Pre-FOMC remains highly significant.

Sensitivity to Other Moments & Outliers

	All Observations		Excl. Top/Bottom 1%	
	Pre-FOMC	Other	Pre-FOMC	Other
Mean	0.488	0.004	0.445	0.008
	[0.11]	[0.02]	[0.08]	[0.02]
St. Dev.	1.22	1.22	0.88	0.99
Skew	3.18	−0.24	0.61	−0.16
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	4,010	129	3,930

Summary statistics of the $(2pm - to - 2pm)$ *on the SPX on FOMC* days versus all other days in the post-1994 sample. STDEV similar.

Skewness are quite different as equity returns exhibit a strong positive skew ahead of FOMC announcements, they are slightly negatively skewed on all other days.

Excluding outliers does not change materially the results (last two columns).

Pre-FOMC Returns Before 1994

Table IV

S&P500 Index Returns on Alternative Samples

This table reports pre-FOMC dummy variable regression results for different samples as reported in the bottom row. From September 1994 onwards, the dependent variable is the cum-dividend log excess return on the S&P500 from 2 pm on date $t-1$ to 2 pm on date t, while before 1994 the dependent variable is a close-to-close (4 pm-to-4 pm) excess return. "pre-FOMC dummy" is equal to one when FOMC news (an announcement post-1994 or OMOs on the day following FOMC scheduled meetings) is scheduled to take place in the following time interval, and zero otherwise. "Annual ex-return FOMC" is the cumulative annual excess return earned in the 24-hour pre-FOMC trading window and "Annual ex-return non-FOMC" is the cumulative annual excess return earned on all other days in the year. "Sharpe ratio" is the annualized Sharpe ratio on pre-FOMC returns. ***Significant at 1%, **significant at 5%, *significant at 10%. Robust standard errors are shown in brackets.

Dependent Variable: %Log Excess Return on S&P500 Stock Market Index				
Sample Period	1960:01–2011:03	1960:01–1979:12	1980:01–1993:12	1980:01–2011:03
pre-FOMC dummy	0.167	0.005	0.204	0.355
	[0.04]***	[0.04]	[0.09]**	[0.07]***
Const.	0.009	0.006	0.020	0.011
	[0.01]	[0.01]	[0.02]	[0.01]
Annual ex-return FOMC	1.81	0.16	1.81	2.87
Annual ex-return non-FOMC	2.27	1.45	4.98	2.80
Sharpe ratio	0.53	0.04	0.64	0.92
Obs.	12,854	5,012	3,539	7,842
No. of FOMC	524	280	113	244

Results for the Pre-FOMC Dummy Var. Reg.

Return Window	2 pm-to-2 pm		2 pm-to-Close	Close-to-close	Close-to-2 pm	Close(t − 2)-to-2 pm
pre-FOMC dummy	0.488 [0.11]***	0.485 [0.11]***			0.335 [0.06]***	0.544 [0.14]***
FOMC dummy			0.002 [0.09]	0.330 [0.10]***		
Const.		0.004 [0.02]		0.009 [0.02]		
Annual ex-return FOMC		3.89		2.70		
Annual ex-return non-FOMC		0.88		2.08		
Sharpe ratio	1.14	1.14	0.01	0.84	1.43	0.98
Obs.	131	4,141	131	4,175	131	131
No. of FOMC	131	131	131	132	131	131

Simple strategy that consists of buying the SPX at 2 pm the day before a scheduled FOMC announcement, selling 15 minutes before the announcement, and holding cash on all other days would have earned Sharpe of 1.14.

Persistence

	Post-1994 Sample		Post-1980 Sample	
+6	−0.02	[0.09]	0.04	[0.06]
+5	−0.10	[0.10]	−0.07	[0.06]
+4	0.09	[0.09]	0.03	[0.06]
+3	−0.06	[0.09]	0.04	[0.07]
+2	0.06	[0.08]	−0.02	[0.06]
+1 (pre-FOMC)	0.49***	[0.11]	0.37***	[0.07]
	0.04	[0.12]	0.06	[0.07]
−1	−0.02	[0.10]	0.05	[0.07]
−2	0.08	[0.11]	0.09	[0.07]
−3	−0.03	[0.10]	−0.08	[0.07]
−4	−0.08	[0.08]	0.03	[0.06]
$\sum_{i=2}^{6}$ (FOMC at $t+i$)	−0.041		0.027	
p-value	0.842		0.853	
$\sum_{i=0}^{4}$ (FOMC at $t-i$)	−0.018		0.147	
p-value	0.939		0.335	

Pre – FOMC returns are not reversed on subsequent days and
Are not associated with offsetting negative returns in prior days.

International Equity Indices

Table VI
Returns on International Stock Market Indices

This table reports estimates of pre-FOMC dummy coefficients for daily close-to-close returns on the German DAX, British FTSE 100, French CAC40, Spanish IBEX, Swiss SMI, Canadian TSX index, and Japanese NIKKEI 225. The sample in the upper panel is September 1, 1994 to March 31, 2011. Samples in the lower panel differ across indices depending on data availability and are reported in the bottom row. ***Significant at 1%, **significant at 5%, *significant at 10%. Robust standard errors are shown in brackets.

	Dependent Variable %Log Return of Stock Market Indices						
	DAX	FTSE100	CAC40	IBEX	SMI	TSX	NIKKEI
	Post-1994 Sample						
pre-FOMC dummy	0.43	0.34	0.52	0.48	0.29	0.21	0.03
	[0.11]***	[0.11]***	[0.13]***	[0.12]***	[0.10]***	[0.09]**	[0.16]
Const.	0.01	0.00	−0.00	0.01	0.01	0.02	−0.02
	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.03]
Sharpe ratio	1.04	0.81	1.03	1.01	0.75	0.67	0.01
Obs.	4,096	4,100	4,102	4,071	4,074	4,087	3,943
No. of FOMC	131	132	132	132	132	131	125
	Post-1980 Sample						
pre-FOMC dummy	0.16	0.21	0.38	0.38	0.20	0.14	0.03
	[0.08]**	[0.08]***	[0.10]***	[0.10]***	[0.09]**	[0.06]**	[0.11]
Const.	0.03	0.02	0.01	0.01	0.02	0.02	0.00
	[0.02]*	[0.01]	[0.02]	[0.02]	[0.02]	[0.01]*	[0.02]
Sharpe ratio	0.44	0.57	0.78	0.79	0.55	0.54	0.05
Observations	7,686	6,753	5,842	5,930	5,585	7,716	7,453
No. of FOMC	244	211	182	185	175	241	235
Sample period	1980:01–2011:03	1984:01–2011:03	1987:07–2011:03	1987:01–2011:03	1988:07–2011:03	1980:01–2011:03	1980:01–2011:03

The pre – FOMC dummy variables are highly satistically significant and economically large in most OECD indices except NIKKEI

International Equity Indices

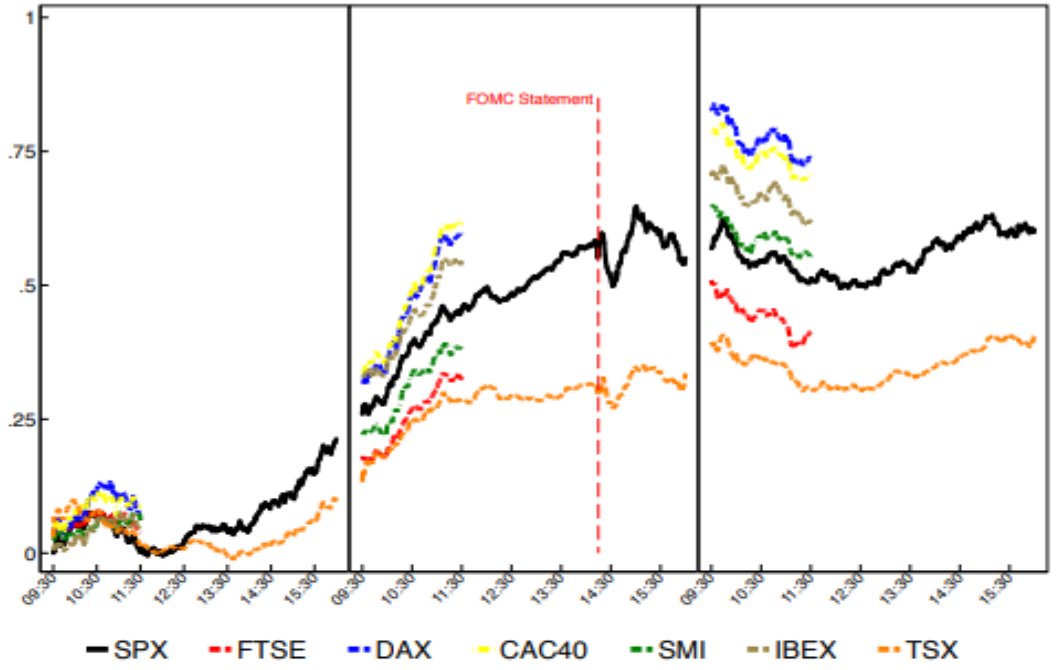


Figure IA.5. Cumulative returns on international stock market indices around FOMC announcements. This figure plots the average cumulative one-minute return on the SPX and other major international equity market indices over the three-day window around scheduled FOMC announcements. The solid black line shows the average cumulative return on the SPX from 9:30 am ET on the days before scheduled FOMC announcements until 4:00p.m. on days after scheduled FOMC announcements. The colored dashed lines show the cumulative returns on the German DAX, the British FTSE100, the French CAC40, the Spanish IBEX, the Swiss SMI, and the Canadian TSX over the same three-day window. All stock indices are shown only during hours of trading on the respective exchanges. The sample period is from January 1996 to March 2011. The dashed vertical line is set at 2:15pm ET, when FOMC announcements were typically released during that period.

Cross-Sectional Variation of US Equity Portfolios

Table IA.III CRSP Size Portfolio Regressions: 1994-2011

This table provides results for FOMC dummy variable regressions for different U.S. equity portfolios for the sample period from September 1, 1994 through March 30, 2011. The dependent variables are the daily excess returns on the value-weighted and equally weighted market portfolio from CRSP as well as the 10 size decile portfolios provided on Ken French's website. "FOMC dummy" takes a value of one on days of scheduled FOMC announcements and zero otherwise. "Annual ex-return FOMC" is the average cumulative annual excess return on FOMC days, and "Annual ex-return non-FOMC" is the average cumulative annual excess return on non-FOMC days. "Sharpe ratio" is the annualized Sharpe ratio on pre-FOMC returns.*** significant at 1%, ** significant at 5%, * significant at 10%. Robust standard errors are shown in brackets.

Dependent Variable: %Log Excess Return of CRSP Portfolio Index						
Portfolio:	Value Weighted	Equal Weighted	1st Decile	2nd Decile	3rd Decile	4th Decile
FOMC dummy	0.35	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	0.02	0.01
	[0.02]	[0.02]***	[0.02]	[0.02]	[0.02]	[0.02]
Annual ex-return FOMC	2.90	2.45	1.79	3.32	3.47	3.56
Annual ex-return non-FOMC	2.34	14.66	5.77	3.92	3.69	2.20
Sharpe ratio	0.92	0.93	0.71	0.86	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	3.73	3.26	3.26	3.20	3.10	2.52
Annual ex-return non-FOMC	2.61	3.35	4.23	3.36	3.66	1.80
Sharpe ratio	1.06	1.03	1.05	0.99	0.98	0.80

Cross-Sectional Variation of US Equity Portfolios

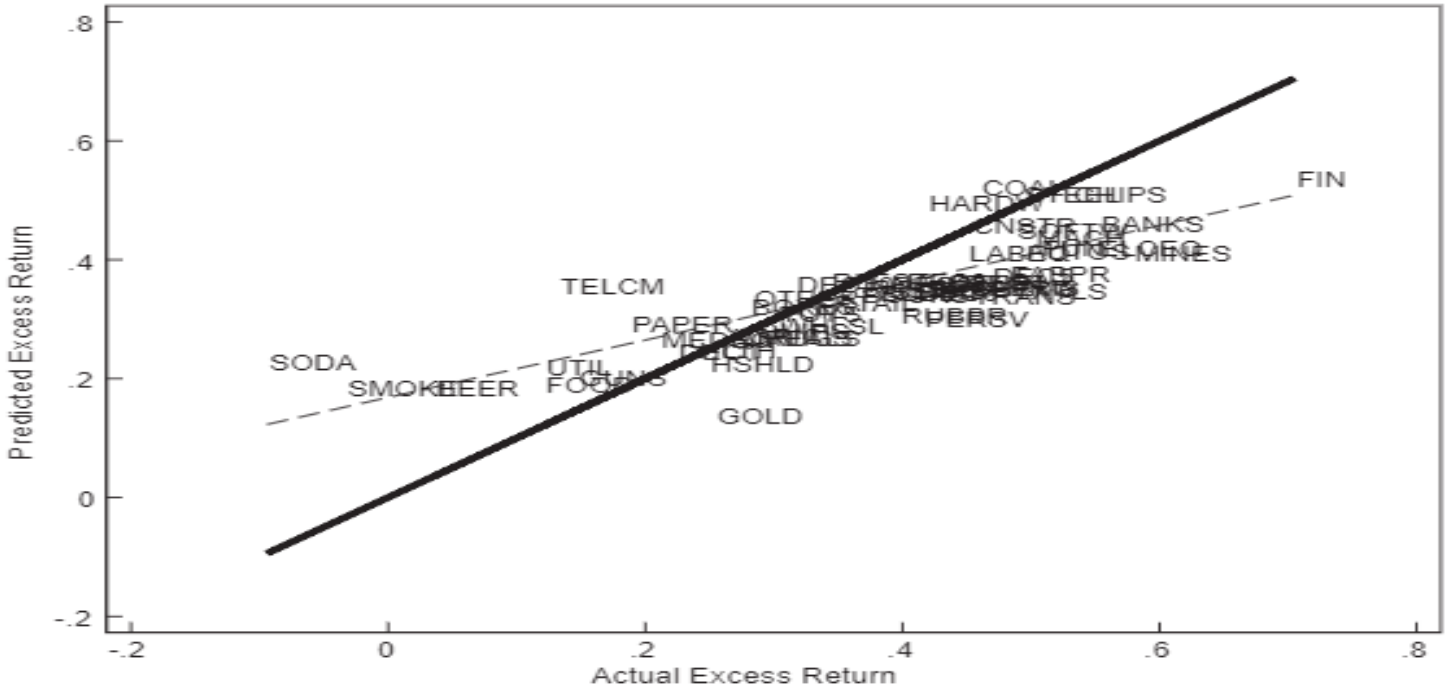


Figure 5. CAPM for industry and size portfolios on FOMC announcement days. This figure shows the fit of the CAPM for the 49 Fama-French industry portfolios and the 10 size decile portfolios on FOMC announcement days. For each portfolio, the horizontal axis shows the average excess return earned on scheduled FOMC announcement days (in percent) whereas the vertical axis shows the excess return implied by the CAPM. The sample period is from September 1994 through December 2010. The betas are estimated from a regression of the portfolio's excess return on the excess return of the market portfolio at a daily frequency (using all days in the sample). The result from the second-stage cross-sectional regression is $\bar{R}_{\text{FOMC}} = -0.099_{[0.10]} + 0.468_{[0.149]}\hat{\beta}$, where the standard errors are adjusted for the estimation error in betas following Shanken (1992). The R^2 of the regression is 65. The dashed line shows the estimated regression line and the solid black line shows the 45-degree line.

Cross-Sectional Variation of US Equity Portfolios

Compare comovement with market portfolio, implied by CAPM. Estimate portfolio betas from a regression of each portfolio´s excess return on the excess return of the CRSP value-weighted market portfolio.

Risk exposures are not different on FOMC announcement days and the additional risk factors do not earn differential excess return on these days in contrast to the market portfolio. **CAPM explains average excess equity return better on FOMC days than other days.**

Other Macroeconomic Announcements

Table VII
S&P500 Index Returns Ahead of Other Economic News

This table reports preannouncement dummy variable regressions for various macroeconomic news announcements as discussed in Section III.G. The dependent variable is the daily close-to-close cum-dividend log excess return on the S&P500. The sample in the top panel starts on September 1, 1994 and ends on March 30, 2011. The sample in the bottom panel starts on January 2, 1980 and ends on March 30, 2011. The table does not report the coefficient on a constant, which is always included. The macroeconomic releases are: employment report (NFPAY), initial claims (INCLM), advance GDP (GDPADV), ISM manufacturing index (ISM), industrial production (IP), housing starts (HS), producer price index (PPI), consumer price index (CPI), personal income (PI), and all economic releases (ALL).***Significant at 1%, **significant at 5%, *significant at 10%. Robust standard errors are shown in brackets.

Dependent Variable: %Log Return of SP&500 Stock Market Index										
	NFPAY	INCLM	GDPADV	ISM	IP	HSTART	PPI	CPI	PI	ALL
Post-1994 Sample										
Pre-news dummy	−0.08	−0.01	0.07	−0.09	0.01	0.13	−0.10	−0.09	−0.01	−0.04
	[0.09]	[0.05]	[0.14]	[0.08]	[0.09]	[0.09]	[0.08]	[0.10]	[0.08]	[0.04]
No. of events	198	861	66	199	211	197	204	206	201	1,866
Post-1980 Sample										
Pre-news dummy	−0.08	0.04	0.02	0.04	0.01	−0.02	−0.11	−0.08	0.04	−0.00
	[0.06]	[0.03]	[0.10]	[0.05]	[0.06]	[0.08]	[0.06]*	[0.07]	[0.05]	[0.03]
No. of events	369	1,627	125	375	386	372	375	381	374	3,561

None of the other macroeconomic releases feature satistically significant preannouncement return in the sample. The largest coefficient is for housing starts (post 1994 sample). PPI release is significant at 10% but negative.

Time-Series of Pre-FOMC Returns

S&P500 Index Return Time-Series Regressions (Post-1994)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NBER dummy	0.62 [0.33]*							
Δ^{12} Log(IP)		−0.13 [0.12]						
Δ^{12} Log(CPI)		−0.03 [0.13]						
Tightening cycle			0.06 [0.14]					
Easing cycle			0.48 [0.32]					
Level				−0.04 [0.11]				
Slope				−0.19 [0.10]*				−0.23 [0.08]***
VIX					0.31 [0.08]***			0.26 [0.10]***
SPX surprise						−0.12 [0.10]		
Kuttner surprise						0.04 [0.10]		
pre-FOMC(MA8)							0.28 [0.08]***	0.17 [0.08]**
Const.	0.33 [0.08]***	0.42 [0.08]***	0.33 [0.10]***	0.42 [0.08]***	0.42 [0.08]***	0.42 [0.08]***	0.42 [0.08]***	0.42 [0.07]***
Adjusted R^2	0.05	0.01	0.02	0.02	0.10	0.01	0.08	0.18
Obs.	130	130	130	130	130	130	130	130

Time-Series of Pre-FOMC Returns

S&P500 Index Return Time-Series Regressions (Post-1980)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample Start	1980:01	1980:01	1980:01	1980:01	1990:02	1988:11	1980:01	1990:02
NBER dummy	0.20							
	[0.21]							
Δ^{12} Log(IP)		−0.05						
		[0.07]						
Δ^{12} Log(CPI)		−0.01						
		[0.08]						
Tightening cycle			0.00					
			[0.14]					
Easing cycle			0.02					
			[0.15]					
Level				−0.05				
				[0.07]				
Slope				−0.15				−0.16
				[0.06]**				[0.06]**
VIX					0.26			0.19
					[0.08]***			[0.09]**
SPX surprise						−0.06		
						[0.09]		
Kuttner surprise						0.02		
						[0.07]		
pre-FOMC(MA8)							0.18	0.15
							[0.06]***	[0.08]**
Const.	0.29	0.33	0.32	0.33	0.37	0.35	0.33	0.37
	[0.06]***	[0.06]***	[0.09]***	[0.06]***	[0.07]***	[0.07]***	[0.06]***	[0.07]***
Adjusted R^2	0.00	−0.01	−0.01	0.02	0.08	−0.01	0.03	0.12
Obs.	243	243	243	243	161	169	243	161
No. of FOMC	243	243	243	243	161	169	243	161

Three Variables Retain Significance

To gauge whether there is a serial correlation in pre-FOMC returns beyond variation explained by these two variables, we run a regression that includes the slope, the VIX, as well as the past moving avg of pre-FOMC returns as regressors.

The results show that all three variables retain their significance in the joint regression In both samples and explain a sizeable fraction (18%) of the time-series variation in the pre-FOMC returns (c8).

In sum, the pre-FOMC returns tend to be higher when investors expect the FED to ease its monetary policy stance, when implied equity market volatility is high, and when past pre-FOMC returns have been positive.

Potential Explanations

Key information on FOMC days is received by investors nor surprisingly at the announcement and not in the preannouncement window. In contrast, returns are high in the pre-FOMC window but have averaged to zero at the announcement. **Explain the disconnect between the time when the returns are earned and when the news is revealed.**

Duffie (2010): Inattentive investors trade infrequently while smart investors trade frequently inattentive investors may sell out of their positions ahead of the event for fear of trading with better-informed specialists.

Potential Explanations

Positive news : pre FOMC returns earned as a result of news that positively surprised investors. Monetary policy news has on average been positive for stocks since the 1980s. **Under the put view, monetary policy as an asymmetric impact on stocks as it is eased during risk off but not tightened correspondingly in good times. Consistent with this view the pre FOMC drift is larger in periods of financial stress when the VIX is high.**

The economic magnitude of avg. pre- FOMC return is difficult to square with a good news story.

Based on a few articles, an unexpected decline in fed funds rates of 1 bp implies an increase in the SPX of 2 to 4 bps. Based on these estimates to account for a 49 (37) bps avg Pre FOMC return, equity investors would have to be surprised by at least 12 (9) bps.

The revision in FF rate expectation based on fed fund futures since 1989 averages only 1bp.

Potential Explanations

Consider two explanations that are motivated by lower levels of liquidity and volatility in the pre-FOMC window.

Assess the role of liquidity and volatility by including them as control X in our regression (1).

Decompose all measurers of volatility and liquidity into an innovation and a t-1 measurable component using simple univariate AR (1) models.

C(2) when including the 24-yours lagged trading volume on the (2pm-to-2pm), we find the coefficient of innovation to be negative and significant. The pre-FOMC dummy coef. drops to 48bps but remains significant.

Potential Explanations

Table XI
Liquidity and Volatility Risk

	(1)	(2)	(3)	(4)	(5)
pre-FOMC dummy	0.54	0.48	0.36	0.32	0.53
	[0.13]***	[0.13]***	[0.07]***	[0.07]***	[0.07]***
Trade Vol (innov.)		−0.61		−0.14	
		[0.06]***		[0.03]***	
Trade Vols (lag)		0.02		−0.08	−0.08
		[0.05]		[0.03]***	[0.03]***
VIX (innovat.)			−0.60	−0.60	
			[0.02]***	[0.02]***	
VIX (lag)			0.004	0.004	0.004
			[0.003]	[0.003]	[0.003]
Trade Vols. (FOMC-innov.)					−0.14
					[0.03]***
VIX (FOMC-innov.)					−0.60
					[0.02]***
Const.	−0.01	−0.01	−0.09	0.00	−0.01
	[0.02]	[0.06]	[0.06]	[0.07]	[0.07]
Adjusted R^2	0.01	0.04	0.69	0.69	0.69
Obs.					3,363
No. of FOMC					107

Potential Explanations

Adding VIX innovation as a control variable reduces the point estimate on the pre-FOMC Dummy by 18 bps, or a third of the average pre-FOMC return in this sample. The dummy coefficient of 36 bps is still economically and statistically significant.

When we control for liquidity and volatility in a joint regression (c4) we find that the innovations to both the VIX and trading volume remain significant. The coefficient on Pre-FOMC dummy is now 32 bps.

When we estimate the pre-FOMC regression controlling for the estimated innovations from these regressions (c(5)), the level of the pre-FOMC dummy is almost exactly equal to the benchmark (c(1)).

A fraction of the pre-FOMC returns could be accounted for by lower market volatility and liquidity immediately ahead of FOMC.