Monetary Momentum

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Introduction

- The paper documents a return drift around monetary policy announcements by the Federal Open Market Committee (FOMC)
- Stock returns start drifting up 25 days before expansionary monetary policy surprises and decrease before contractionary surprises
- The cumulative return difference across expansionary x contractionary surprises amounts to 2.5% before policy decisions and continues to increase to more than 4.5% 15 days after the meeting
- Standard return factors do not span the return drift around FOMC policy meetings

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Data

- **Stock Returns** are sampled from the CRSP value-weighted index directly from CRSP (an average of all common stocks trading on NYSE, Amex or Nasdaq)
- **Federal Funds Futures data**: is tick-by-tick data from the CME Globex electronic trading platform
- **The Sample Period** starts in 1994, when the FOMC started to communicate its decision by issuing press releases after meetings, and ends in 2009, just before the Zero Lower Bound in nominal interest rates

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Definitions

What are Fed Funds Futures?

Definitions

Let $ff_{t,0}$ denote the rate implied by the current-month federal funds futures on date t and assume that one FOMC meeting takes place during that month

- $ff_{t,0}$ can be written as the weighted average of the prevailing federal funds target rate, r_0, and the expectation of the target rate after the meeting, r_1 [1]

$$ff_{t,0} = \frac{t}{D} r_0 + \frac{D-t}{D} E_t(r_1) + \mu_{t,0}$$

Where D is the number of days in a given month, t is the day of the FOMC meeting, and $\mu_{t,0}$ is a risk premium, considered zero in this exercise as only intraday changes are calculated

[1] The effective federal funds rate should be used in this case, not the target rate, but this might not be a problem because only intraday calculations are made

Definitions

The surprise component of the announced change v_t is calculated as

$$v_t = \frac{D}{D-t}(ff_{t+\Delta t+,0} - ff_{t-\Delta t-,0})$$

where $ff_{t-\Delta t-,0}$ is the fed funds futures rate shortly before and $ff_{t+\Delta t+,0}$ is the fed funds futures rate shortly after the moment the FOMC issues an announcement.

Examples

If the announcement occurs within the last 7 days of the month, the unscaled change in the next-month futures contract is used

Definitions

Cumulative returns on CRSP value weighted index r_{t^-,t^-+s} are regressed on a constant and a dummy variable that equals 1 around expansionary monetary policy surprises D^{exp}

$$r_{t^-,t^-+s} = \beta_0 + \beta_1 x D^{exp} + \epsilon_{t^-,t^-+s}$$

where β_0 is the average cumulative return around contractionary monetary policy surprises and β_0 reports the average differential cumulative return around expansionary mon.pol. surprises relative to cumulative returns on contractionary mon.pol. meetings.

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Empirical Results

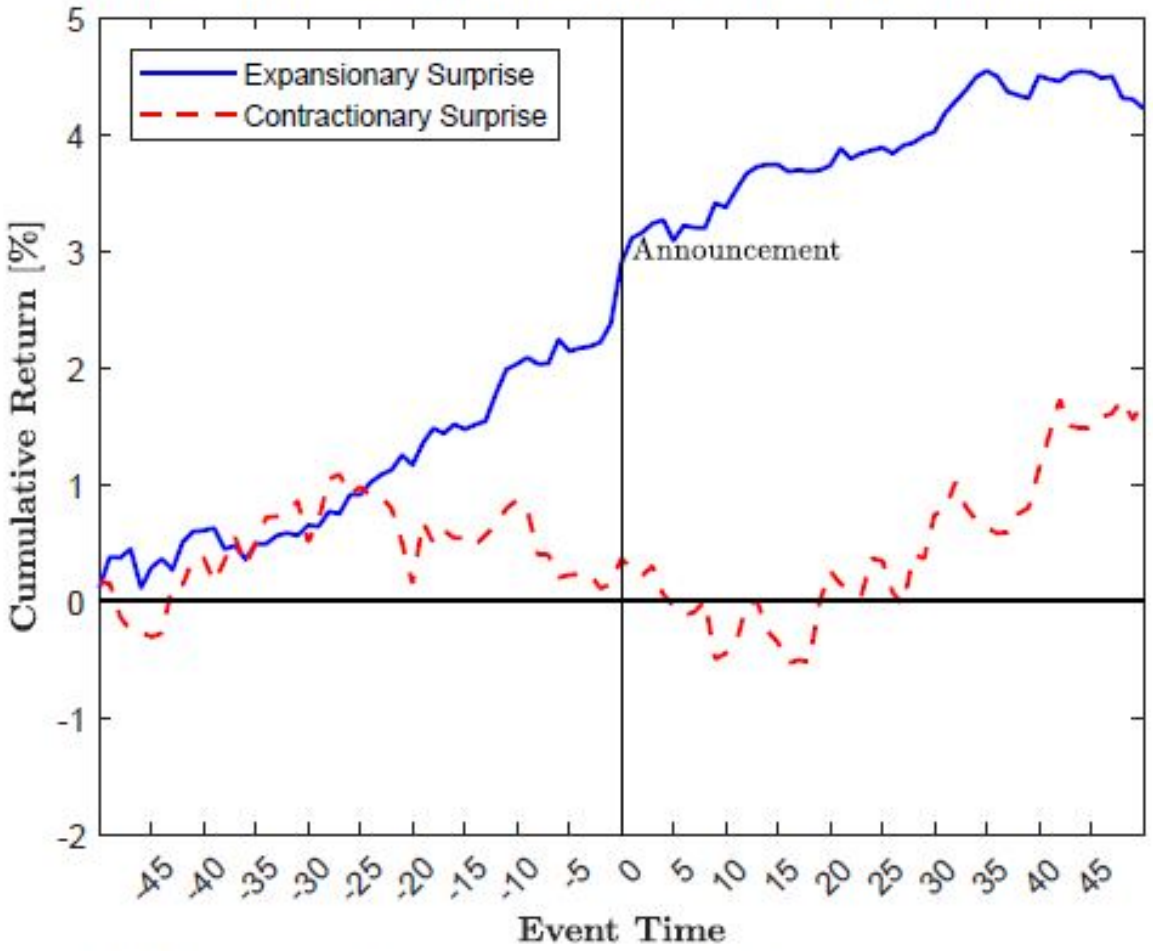
- The event-study literature is followed, but time frames are a number of days, and not 30/60 minutes time frames used in the literature

- FOMC policy day constitutes day 0, and returns are studied around this day, separating in conctractionary and expansionary Policy Meetings
- **Baseline**: focuses in regular meetings and excludes non-scheduled meetings, so-called intermeeting policy decisions [2]

[2] As intermeetings are not scheduled, no pre-drift would be expected

Empirical Results - Baseline

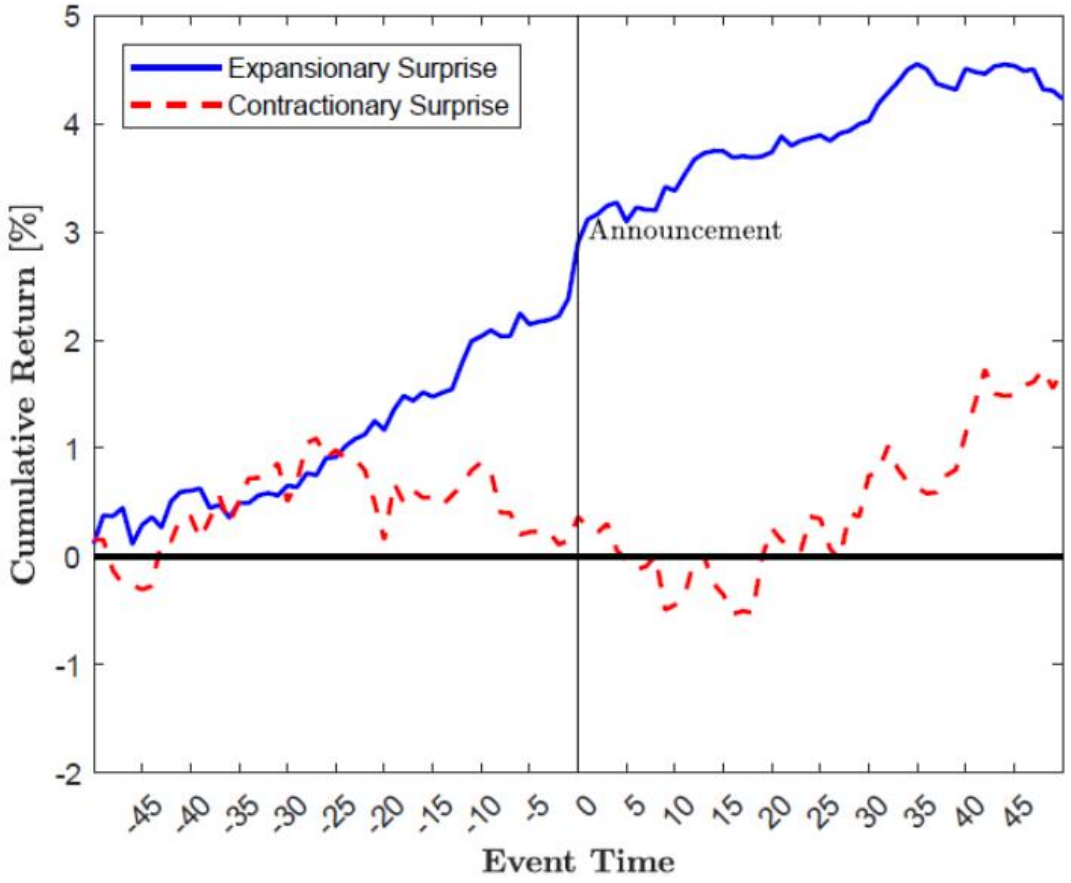
Figure 1: **Cumulative Returns around FOMC Policy Decisions**



This figure plots cumulative returns in percent around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample period is from 1994 to 2009.

Empirical Results - No Turning Points

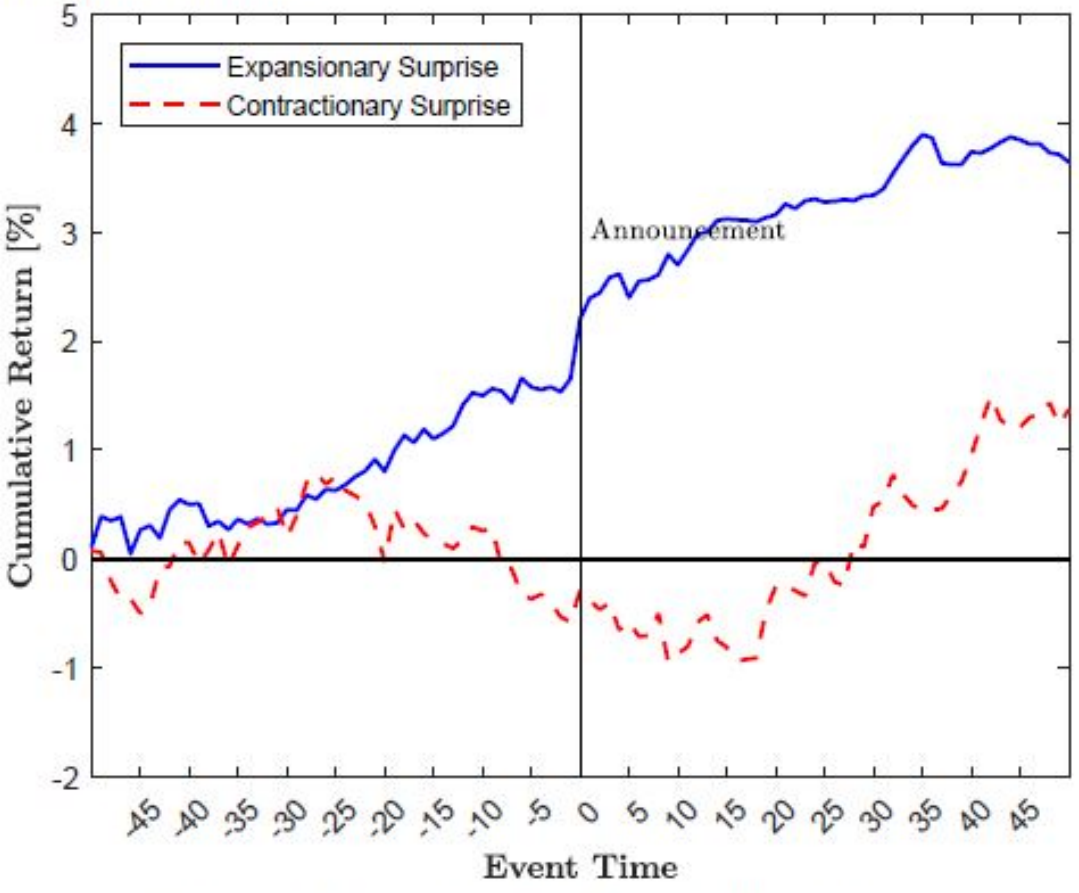
Figure 2: **Cumulative Returns around FOMC Policy Decisions: No Turning Points**



This figure plots cumulative returns in percent around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. We exclude turning points in federal funds target rates. The sample period is from 1994 to 2009.

Empirical Results - No Exclusions

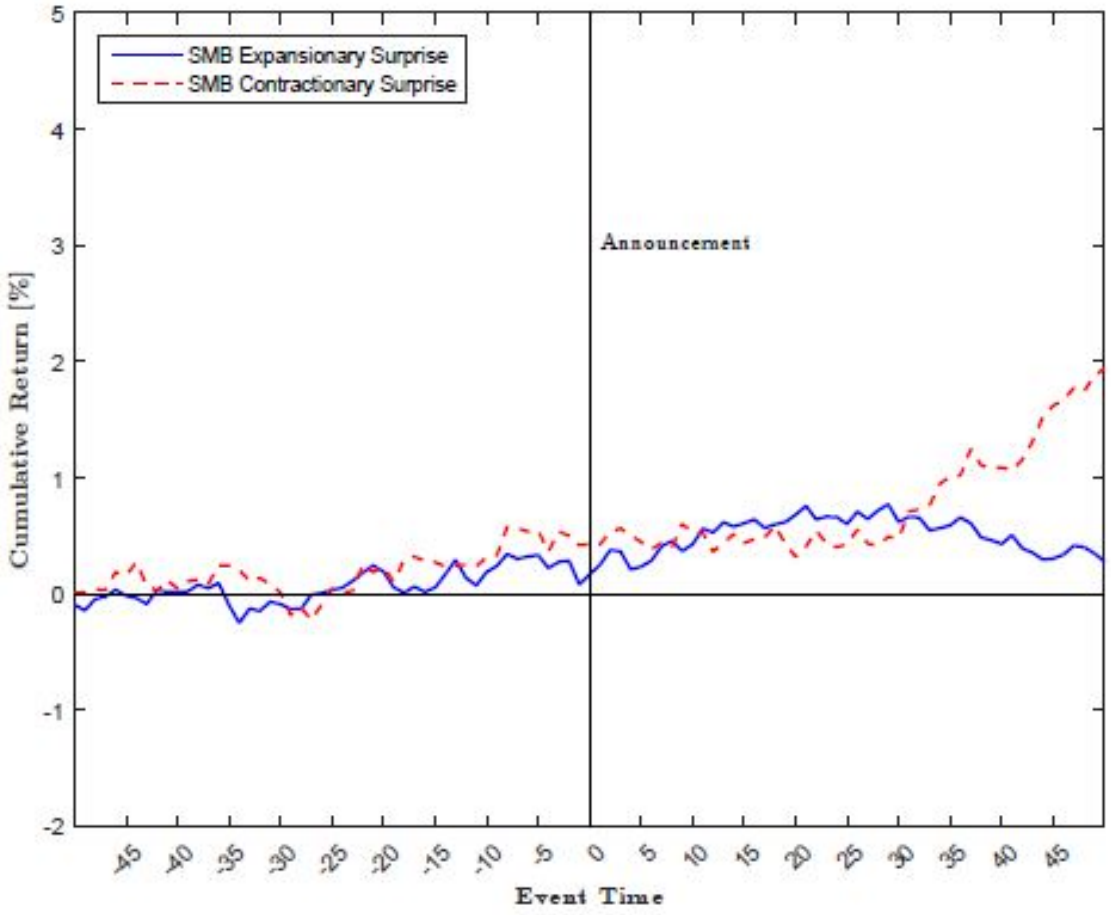
Figure 3: **Cumulative Returns around FOMC Policy Decisions: Including Intermeeting Decisions**



This figure plots cumulative returns in percent around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. We add intermeeting policy decisions to the sample. The sample period is from 1994 to 2009.

Empirical Results - SMB

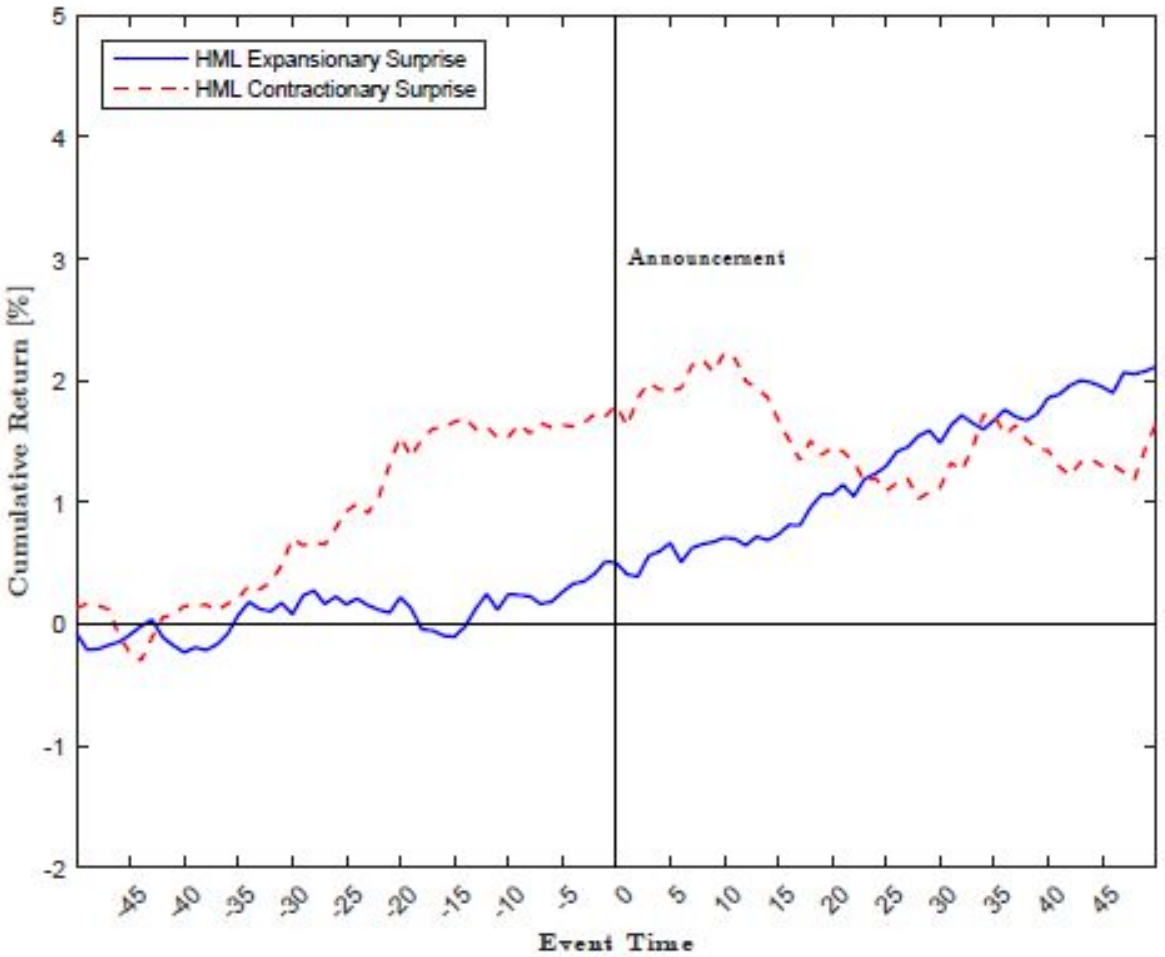
Figure 8: **Cumulative Returns around FOMC Policy Decisions: SMB**



This figure plots cumulative returns in percent for the SMB factor around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample period is from 1994 to 2009.

Empirical Results - HML

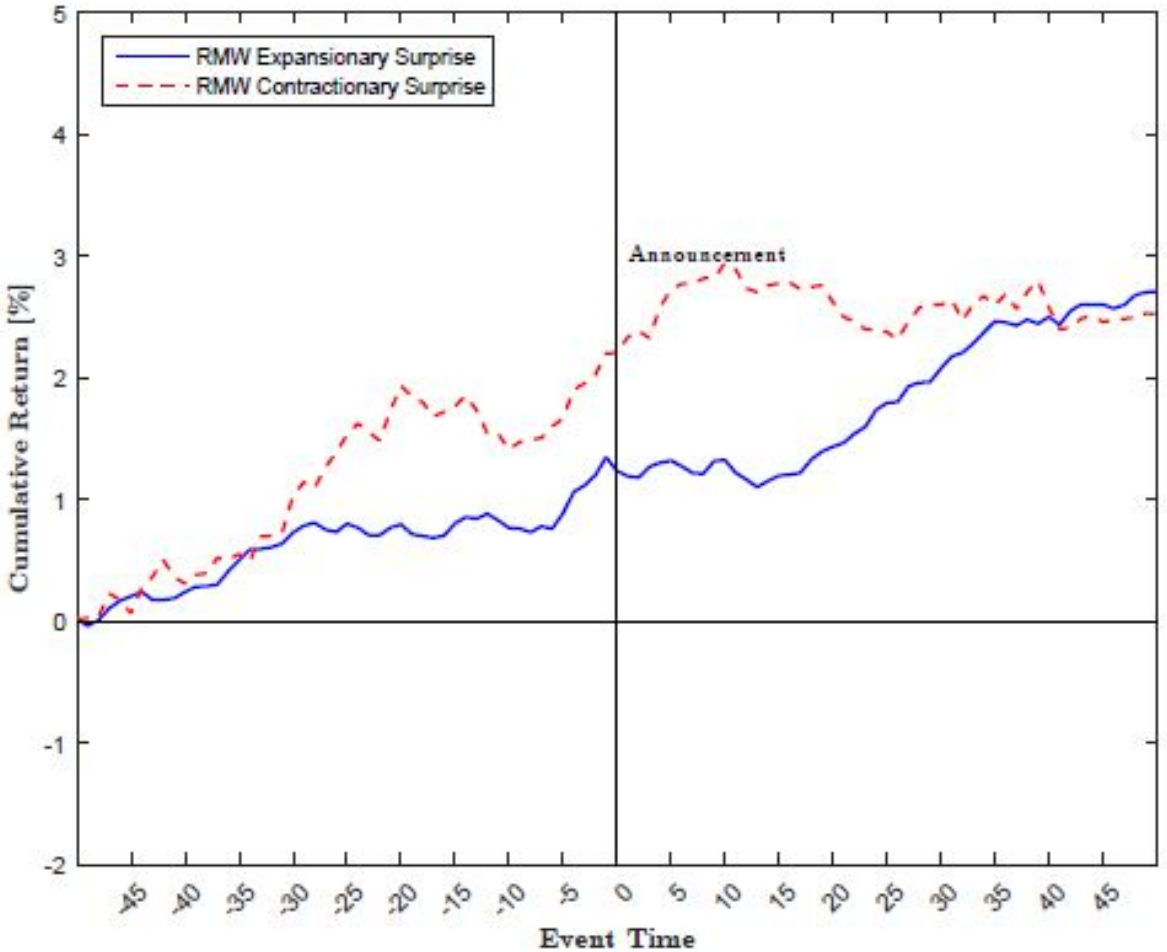
Figure 9: **Cumulative Returns around FOMC Policy Decisions: HML**



This figure plots cumulative returns in percent for the HML factor around FOMC policy decisions separately for positive (contractionary; red-dashed line) and

Empirical Results - RMW

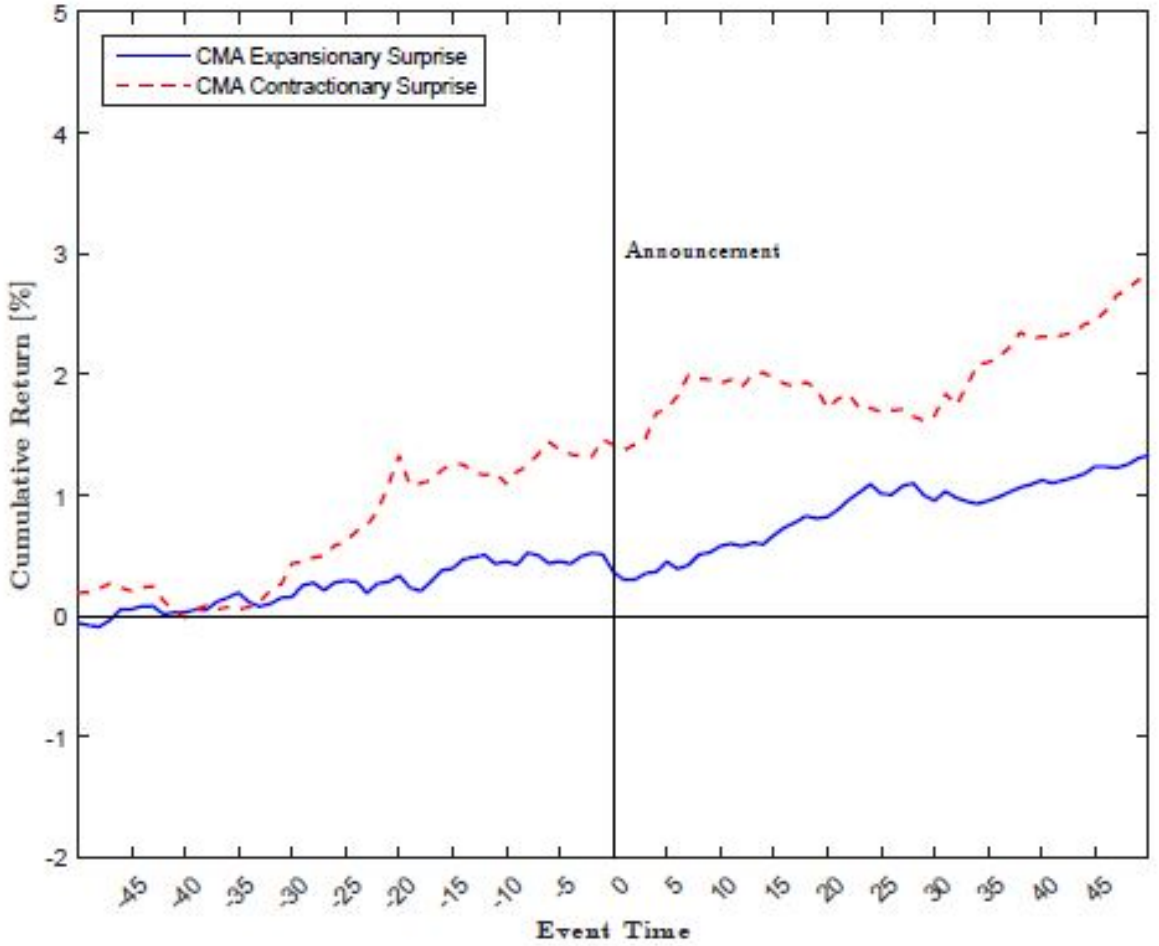
Figure 10: **Cumulative Returns around FOMC Policy Decisions: RMW**



This figure plots cumulative returns in percent for the RMW factor around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample

Empirical Results - CMA

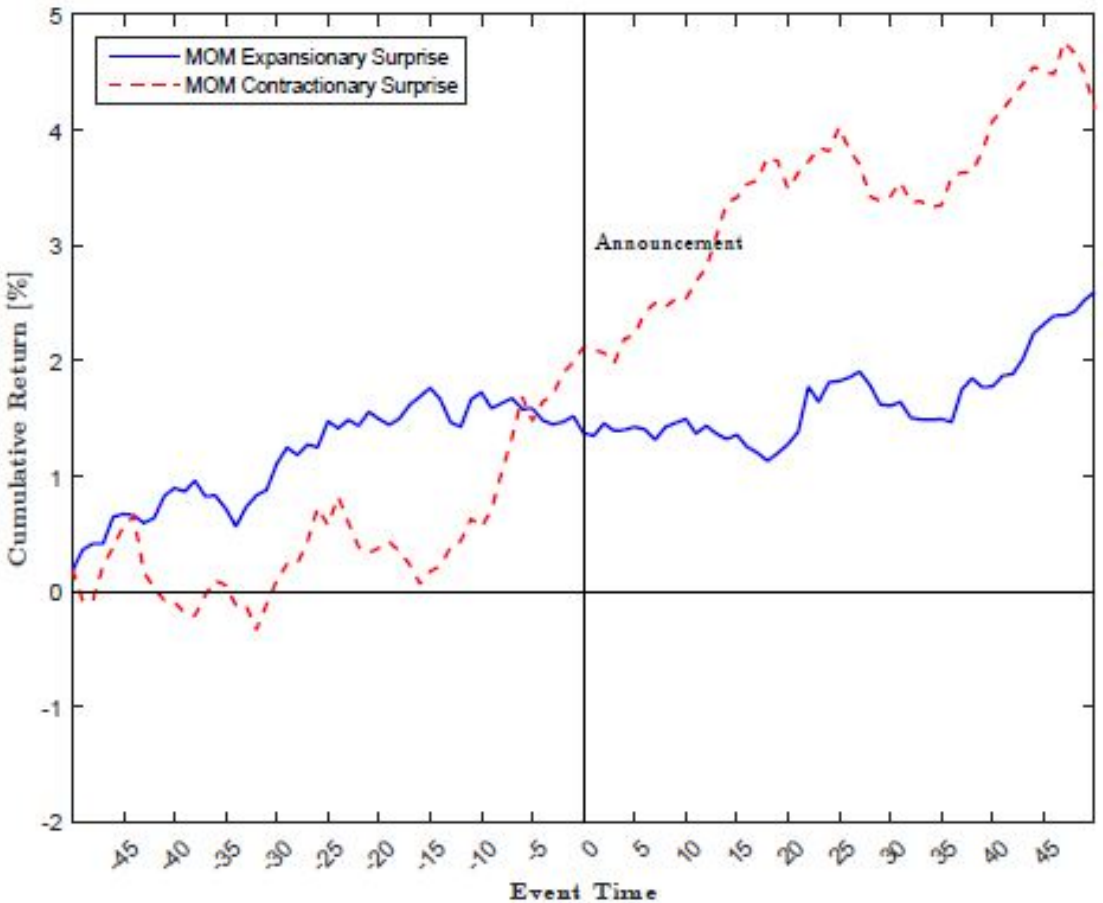
Figure 11: **Cumulative Returns around FOMC Policy Decisions: CMA**



This figure plots cumulative returns in percent for the CMA factor around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample

Empirical Results - Momentum

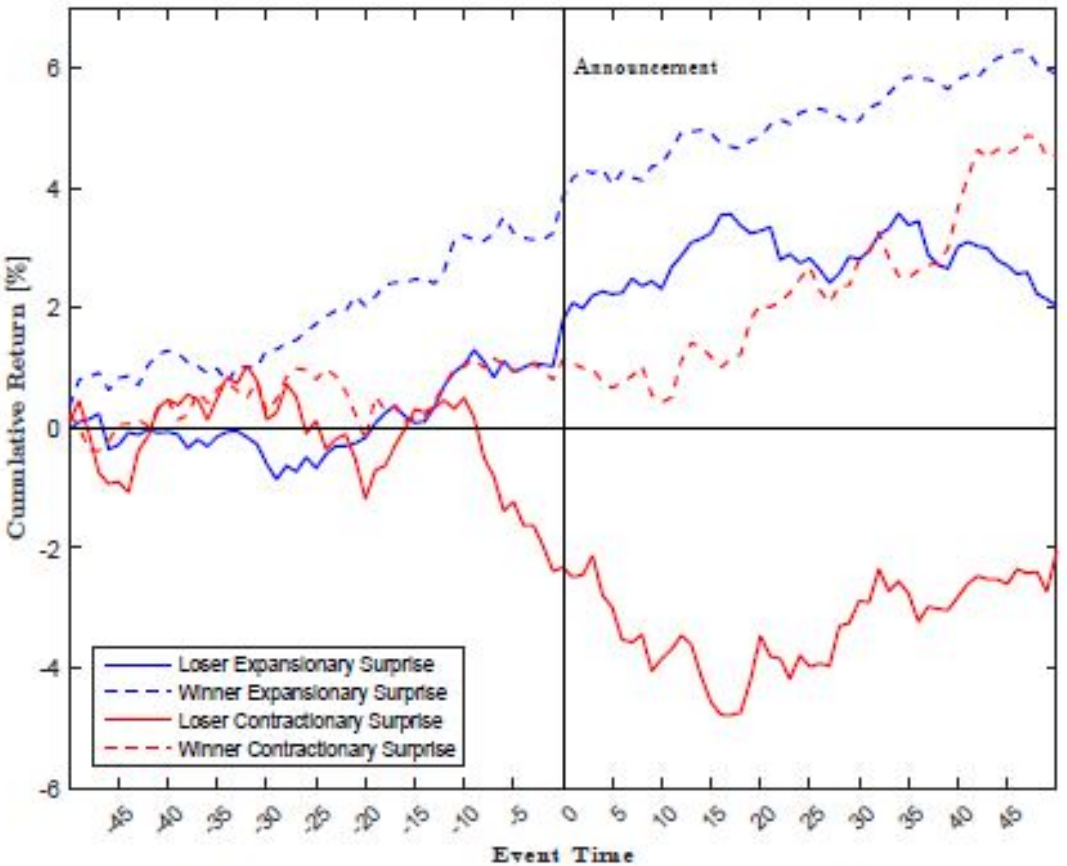
Figure 12: **Cumulative Returns around FOMC Policy Decisions: Momentum**



This figure plots cumulative returns in percent for the Momentum factor around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample period is from 1994 to 2009.

Empirical Results - Winners vs Loosers

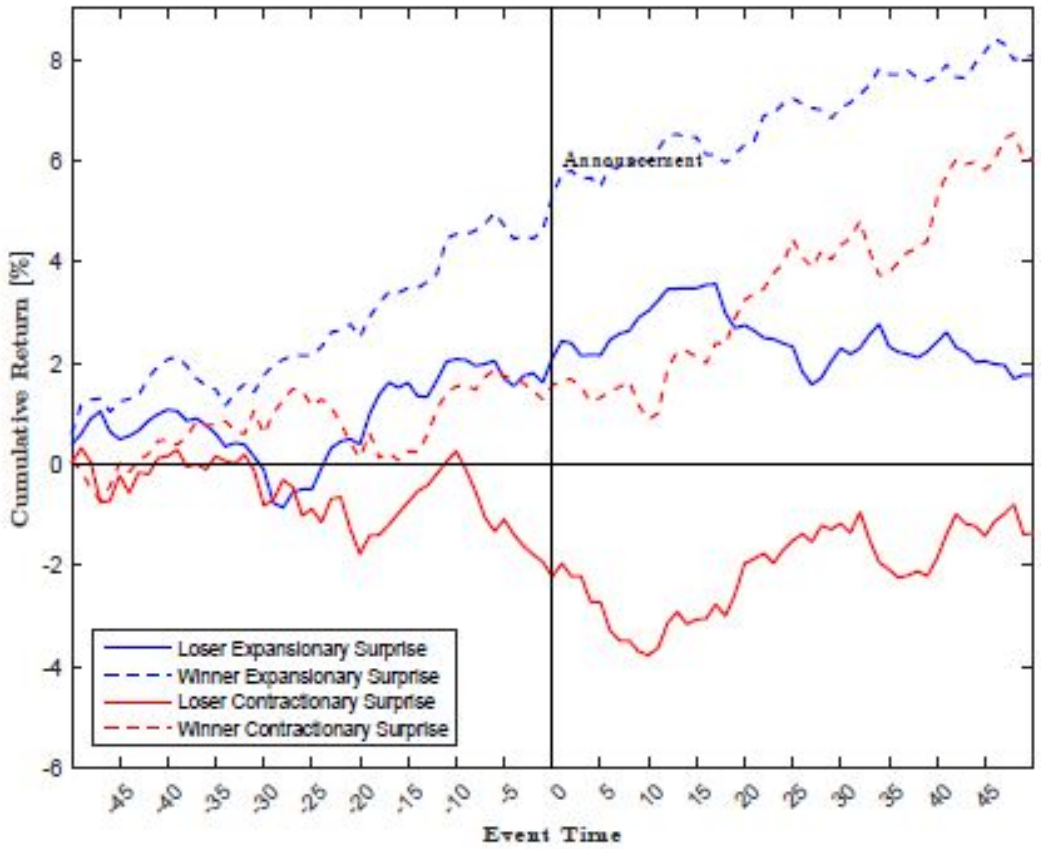
Figure 13: **Cumulative Returns around FOMC Policy Decisions: Winners vs Losers**



This figure plots cumulative returns in percent for past winners and losers around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample period is from 1994 to 2009.

Empirical Results - Winners vs Loosers

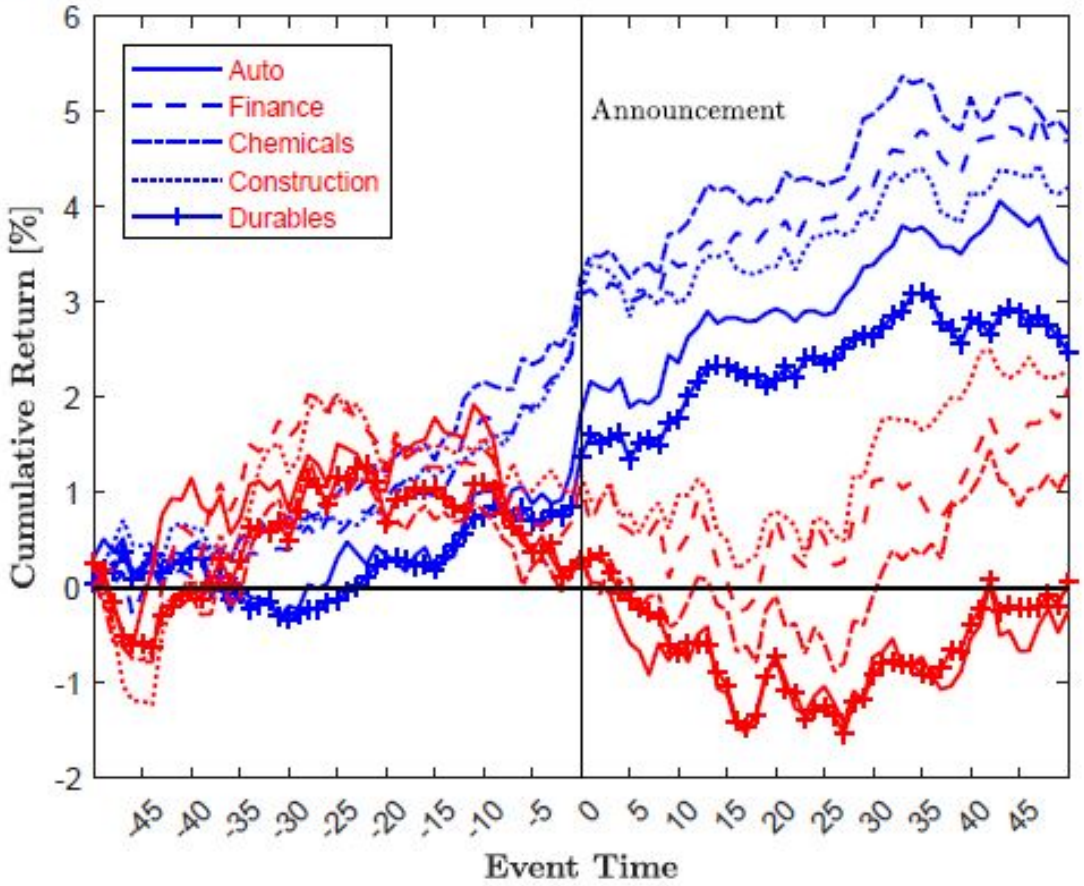
Figure 14: **Cumulative Returns around FOMC Policy Decisions: Winners vs Losers (1994–2004)**



This figure plots cumulative returns in percent for past winners and losers around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample period is from 1994 to 2004.

Empirical Results - Industry Returns I

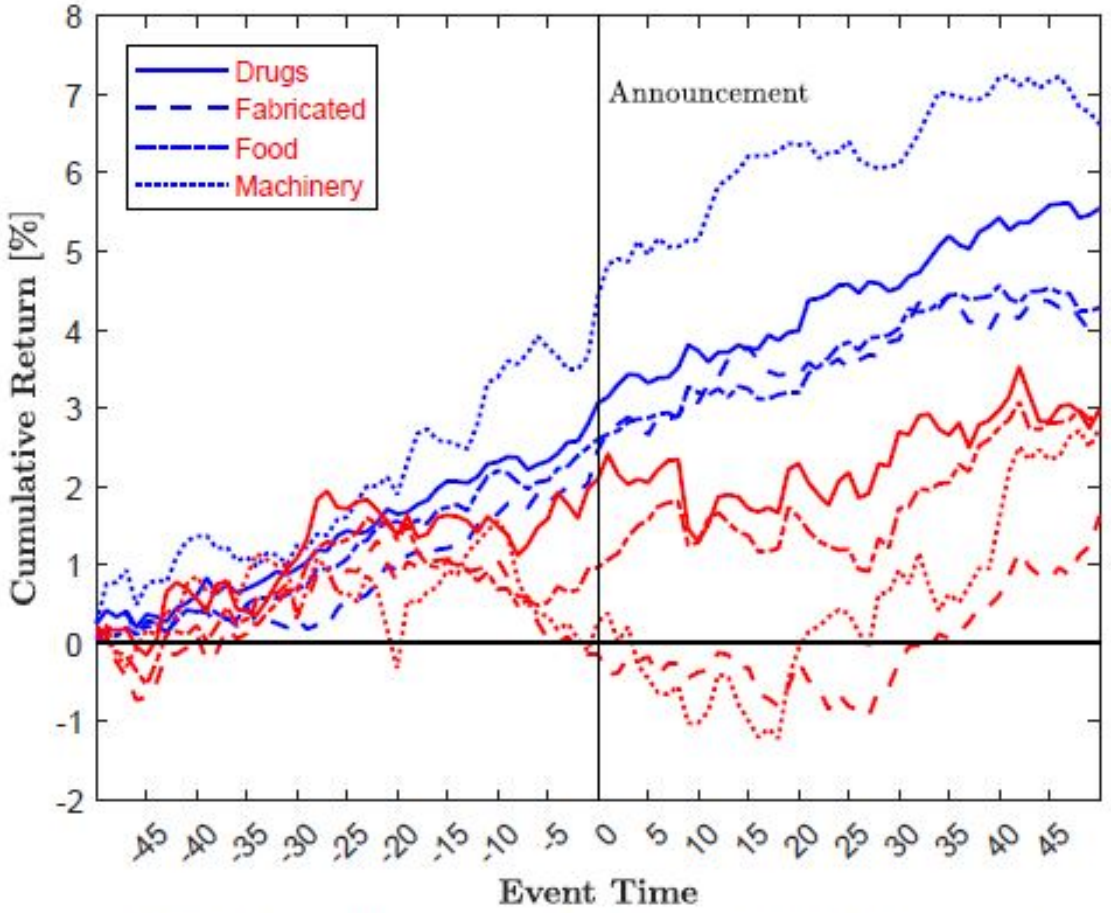
Figure 15: **Cumulative Returns around FOMC Policy Decisions: Industry Returns I**



This figure plots cumulative returns in percent at the industry level around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample period is from 1994 to 2009.

Empirical Results - Industry Returns II

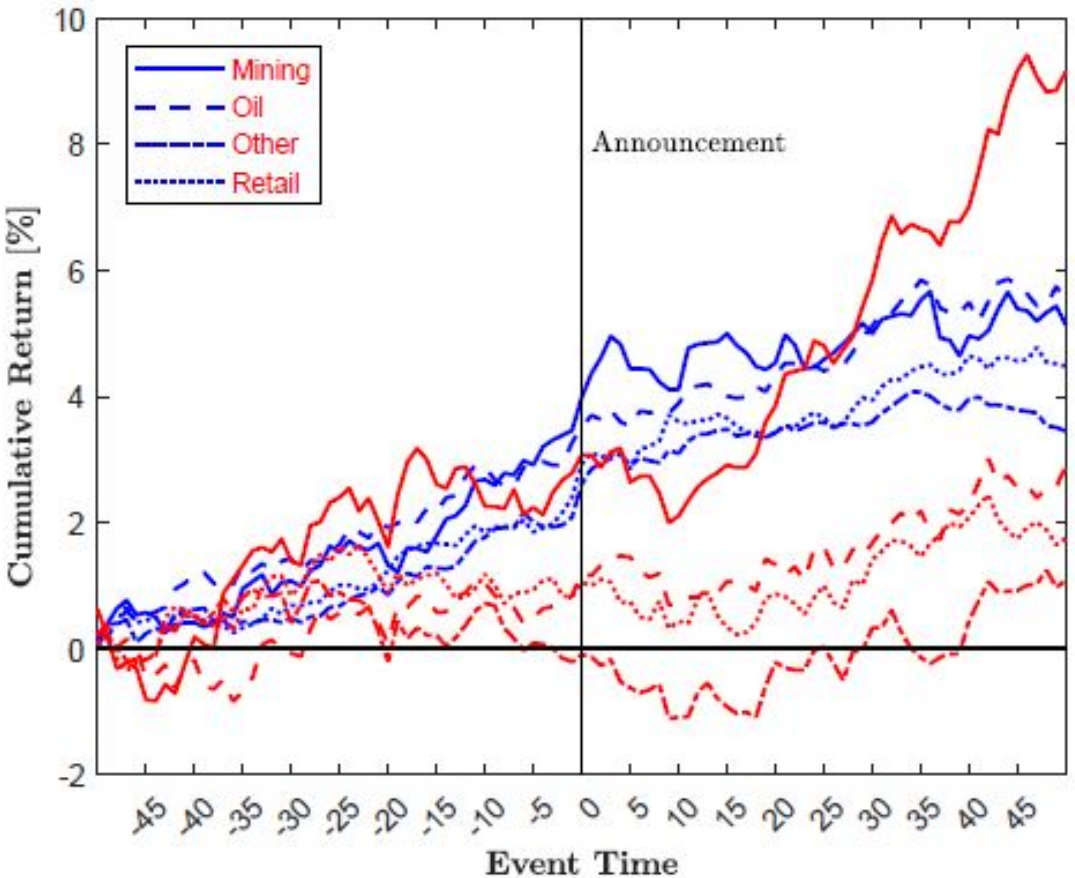
Figure 16: **Cumulative Returns around FOMC Policy Decisions: Industry Returns II**



This figure plots cumulative returns in percent at the industry level around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample

Empirical Results - Industry Returns III

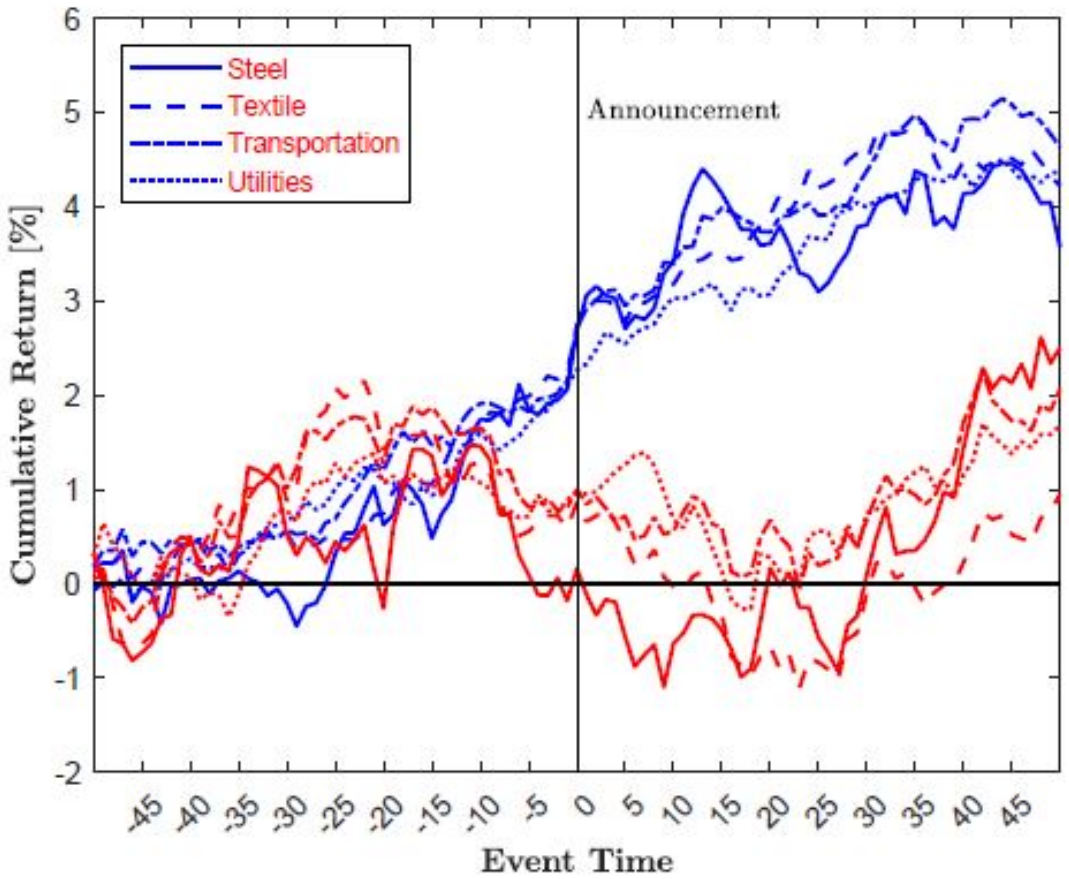
Figure 17: **Cumulative Returns around FOMC Policy Decisions: Industry Returns III**



This figure plots cumulative returns in percent at the industry level around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample period is from 1994 to 2009.

Empirical Results - Industry Returns IV

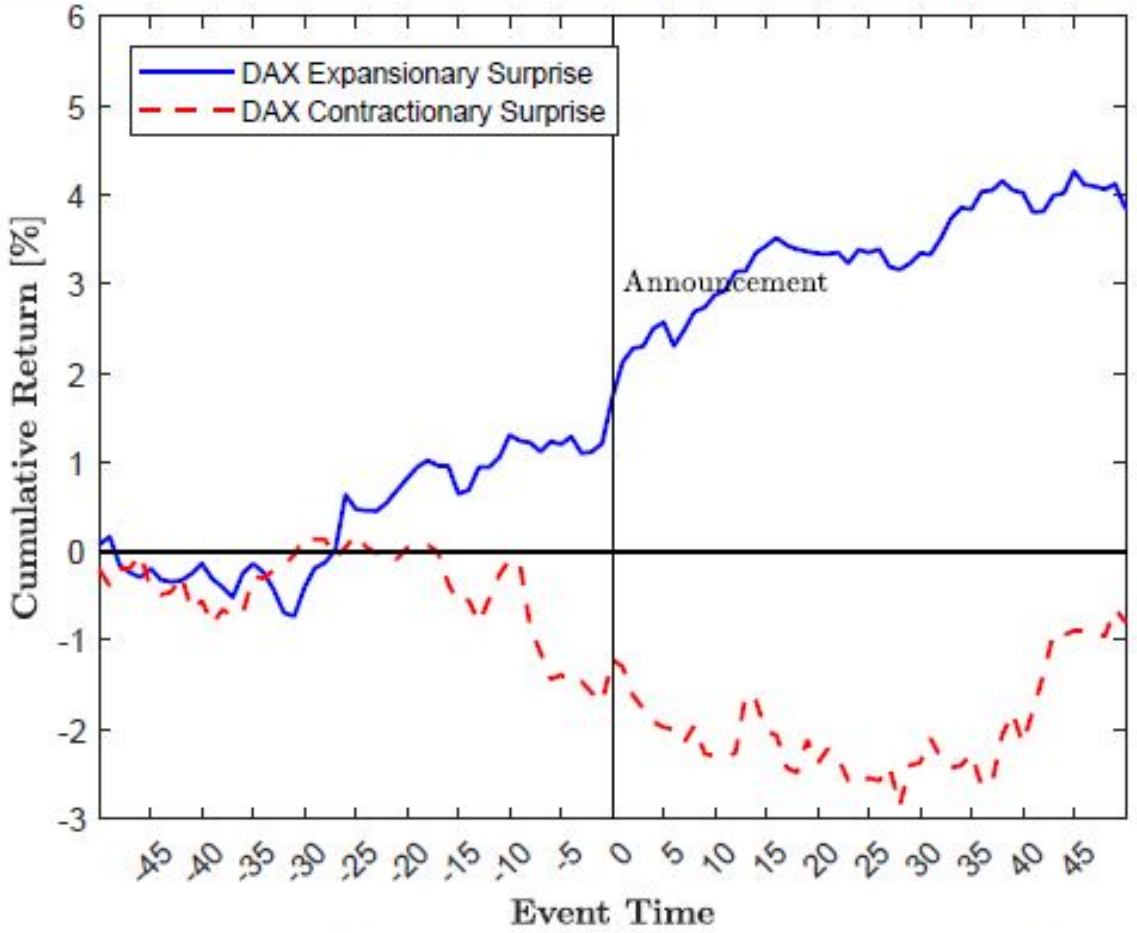
Figure 18: **Cumulative Returns around FOMC Policy Decisions: Industry Returns IV**



This figure plots cumulative returns in percent at the industry level around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample period is from 1994 to 2009.

Empirical Results - DAX

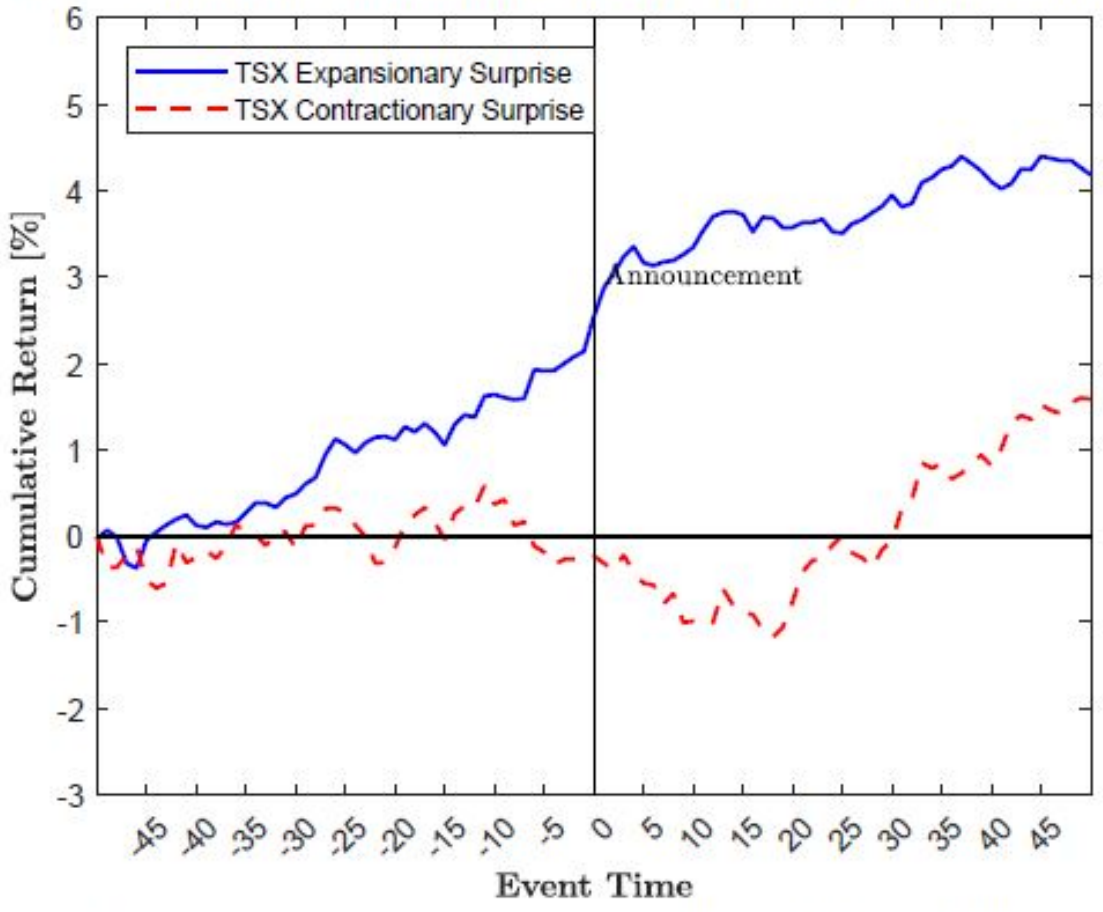
Figure A.1: **Cumulative Returns around FOMC Policy Decisions: DAX 30**



This figure plots cumulative returns in percent for the DAX 30 around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample period is from 1994 to 2009.

Empirical Results - TSX 300

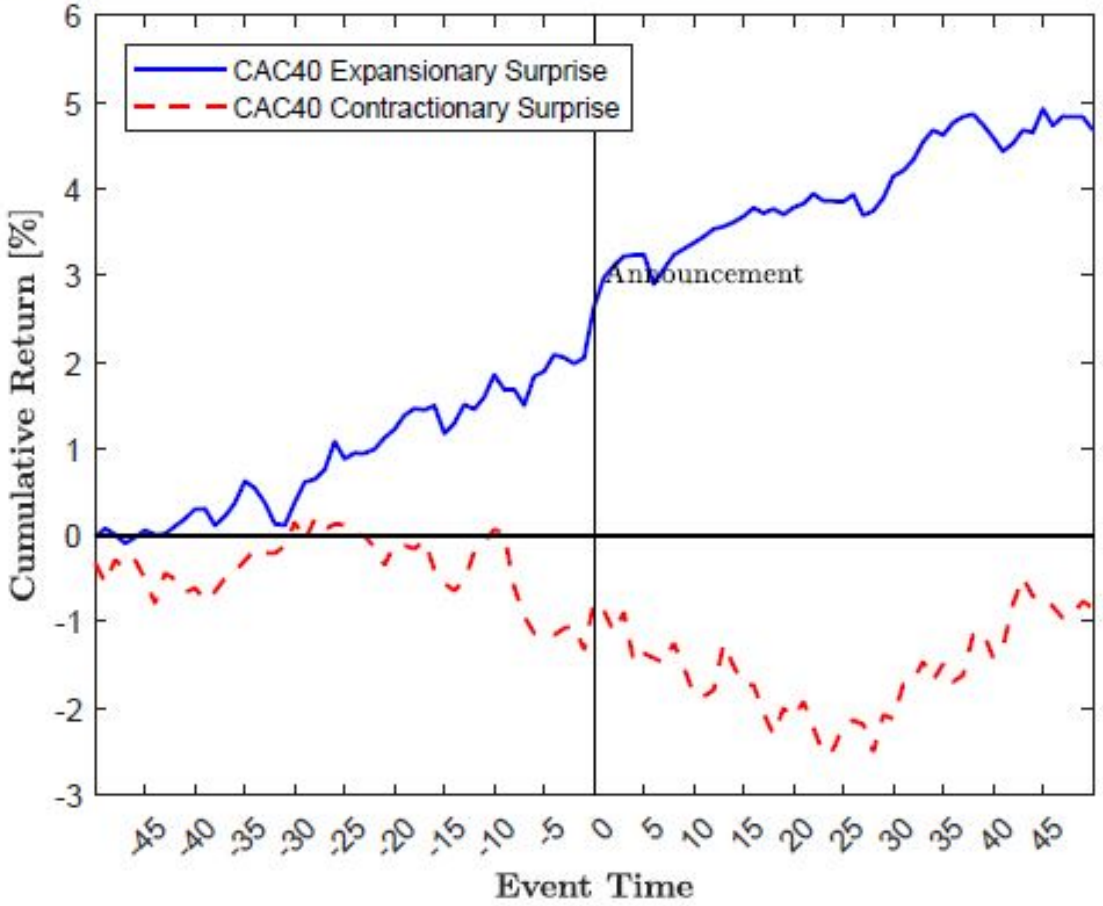
Figure A.2: **Cumulative Returns around FOMC Policy Decisions: TSX 300**



This figure plots cumulative returns in percent for the TSX 300 around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample period is from 1994 to 2009.

Empirical Results - CAC

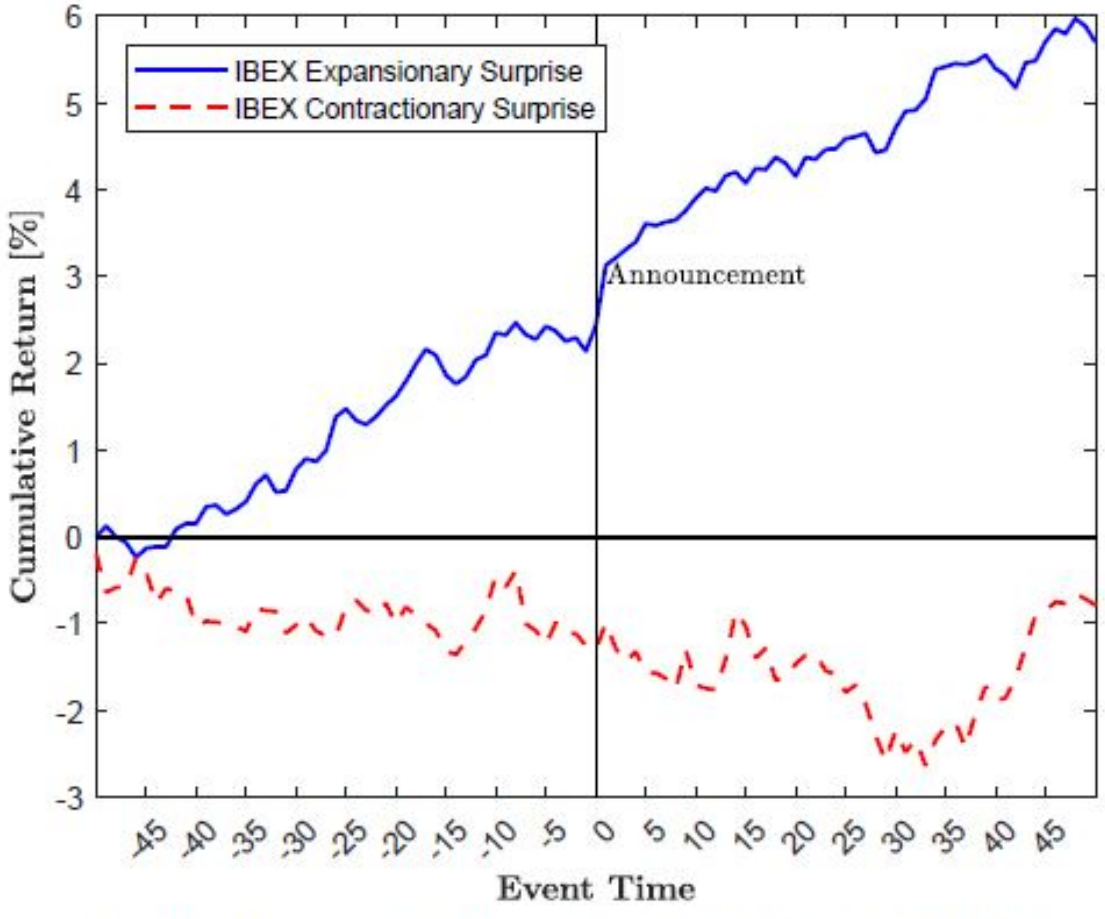
Figure A.3: **Cumulative Returns around FOMC Policy Decisions: CAC 40**



This figure plots cumulative returns in percent for the CAC 40 around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample period is from 1994 to 2009.

Empirical Results - IBEX 35

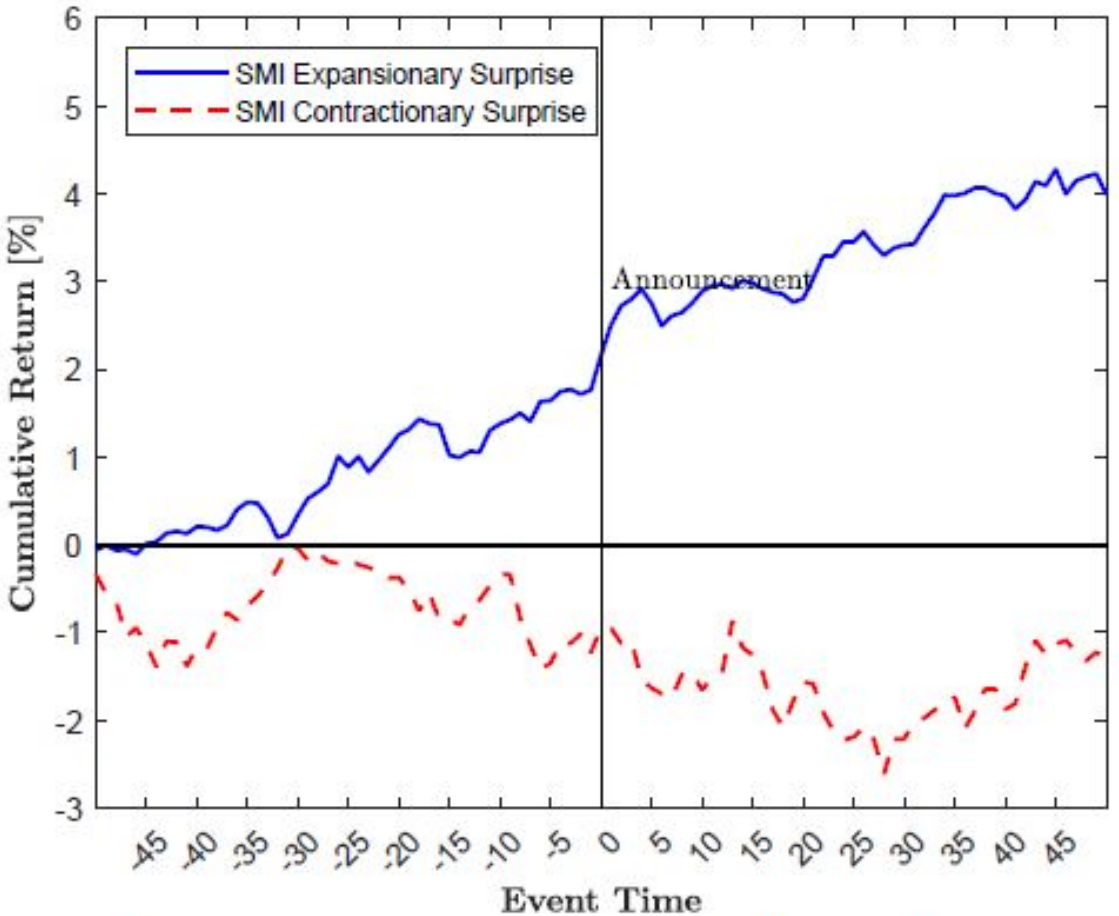
Figure A.4: **Cumulative Returns around FOMC Policy Decisions: IBEX 35**



This figure plots cumulative returns in percent for the IBEX 35 around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample period is from 1994 to 2009.

Empirical Results - SMI

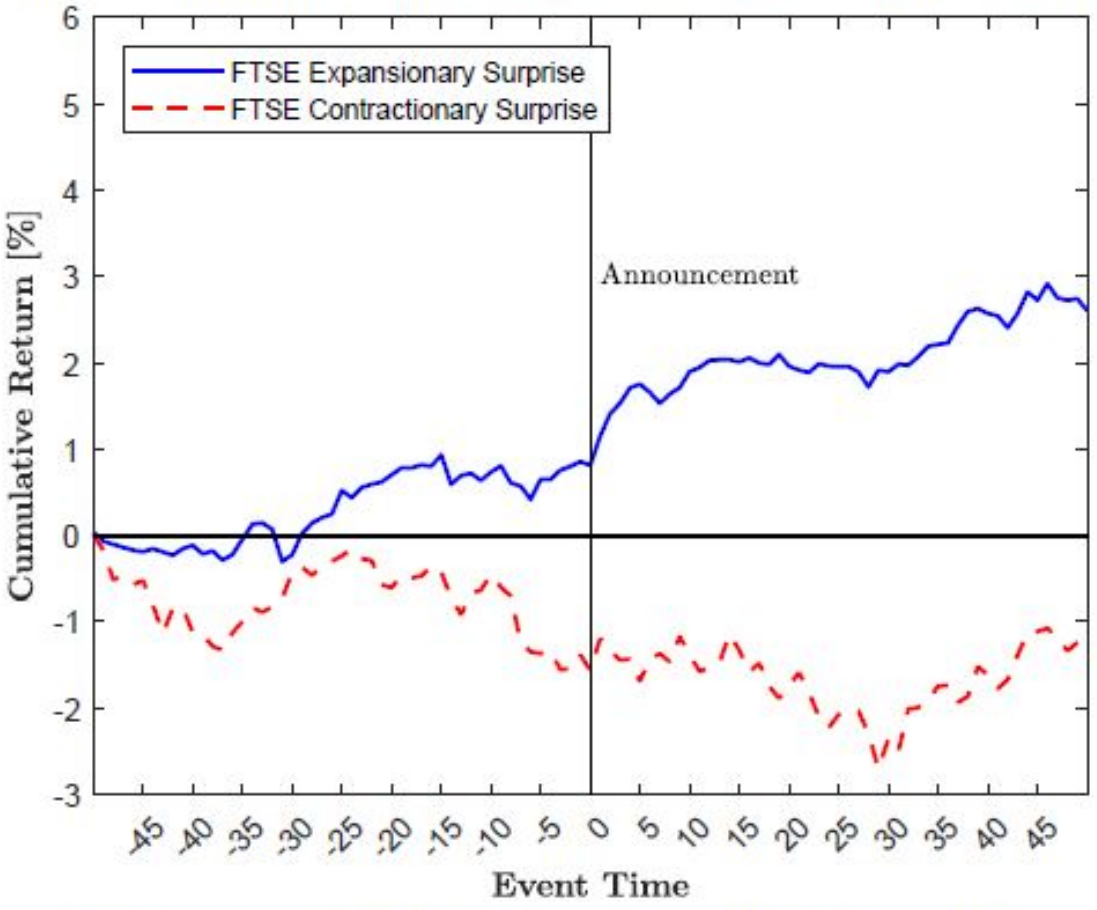
Figure A.5: **Cumulative Returns around FOMC Policy Decisions: SMI**



This figure plots cumulative returns in percent for the SMI around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample period is from 1994 to 2009.

Empirical Results - FTSE 100

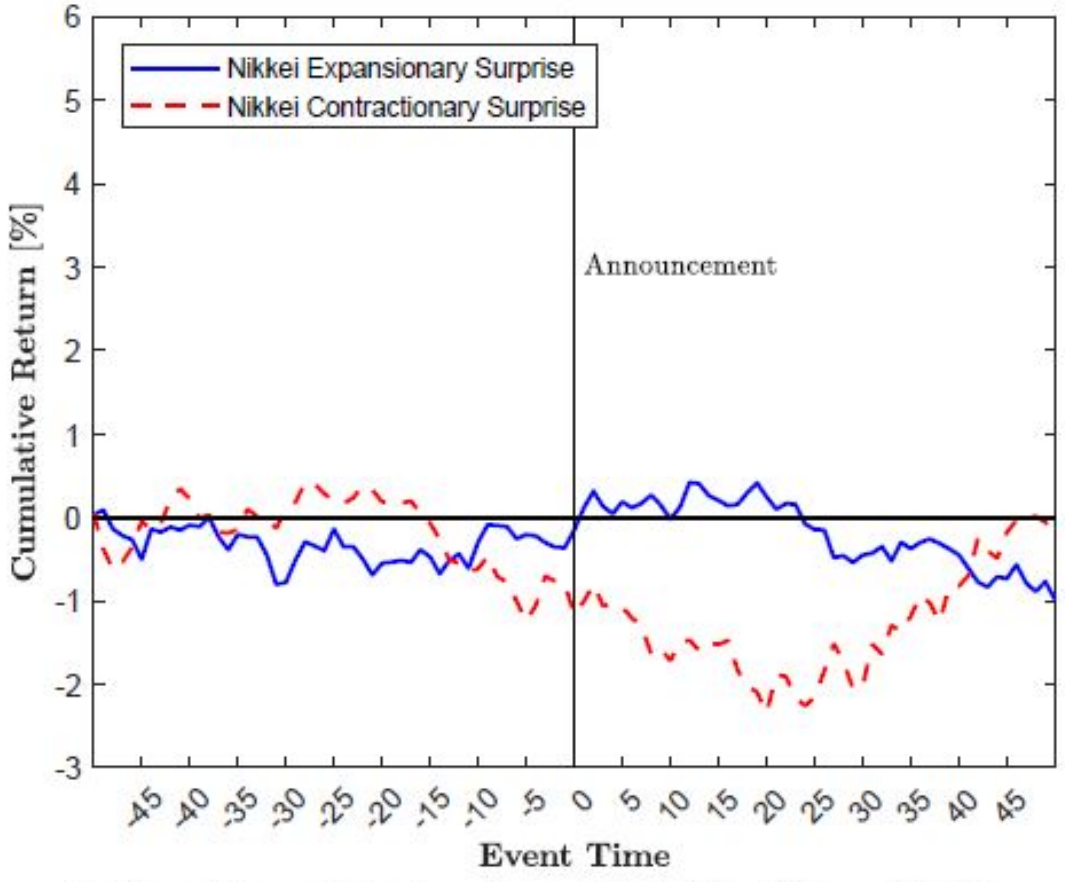
Figure A.6: **Cumulative Returns around FOMC Policy Decisions: FTSE 100**



This figure plots cumulative returns in percent for the FTSE 100 around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample period is from 1994 to 2009.

Empirical Results - Nikkei 225

Figure A.7: **Cumulative Returns around FOMC Policy Decisions: Nikkei 225**



This figure plots cumulative returns in percent for the Nikkei 225 around FOMC policy decisions separately for positive (contractionary; red-dashed line) and negative (expansionary; blue-solid line) monetary policy surprises. The sample period is from 1994 to 2009.

Empirical Results - Table I and II

Table 1: **Monetary Policy Shocks**

This table reports descriptive statistics for monetary policy shocks separately for all 137 event days between 1994 and 2009, turning points in monetary policy, and intermeeting policy decisions. The policy shock is calculated according to equation (1) as the scaled change in the current-month federal funds futures in a 30-minute window bracketing the FOMC press releases.

	All Event Days	Turning Points	Intermeeting Releases
Mean	−1.60	−6.09	−12.23
Median	0.00	−1.75	−5.73
Standard deviation	8.94	17.28	23.84
Min	−46.67	−39.30	−46.67
Max	16.30	16.30	15.00
Observations	137	8	8

Figure 22: Tables I and II

Table 2: **Shock Transition Matrix**

The table reports the transition matrix of shocks from contractionary to expansionary. The sample period is from 1994 until 2009.

	Contractionary	Expansionary
Contractionary	39	34
Expansionary	33	30

Empirical Results - Table 3

Table 3: **Cumulative Returns around FOMC Decisions**

Panel A reports the cumulative return of the CRSP value-weighted index around FOMC policy decisions, excluding policy decisions on intermeetings. $\mathcal{S}^{exp}$ is a dummy that equals 1 if the monetary policy surprise is negative (expansionary). 0 is the day of the FOMC meeting. Panel B adds intermeeting policy dates, Panel C excludes intermeetings and turning points in monetary policy, and Panel D excludes events with zero monetary policy surprises. The sample period is from 1994 until 2009.

	-15	-10	-5	-1	0	1	2	3	4	5	10	15
						Panel A. No Intermeetings						
$\mathcal{S}^{exp}$	−0.05	0.06	0.83	1.11	1.46*	1.75**	1.85**	1.83**	2.10**	2.02**	2.68**	2.92**
	(−0.17)	(0.10)	(1.22)	(1.35)	(1.78)	(2.01)	(2.13)	(2.05)	(2.29)	(2.19)	(2.52)	(2.32)
Constant	0.02	0.43	−0.23	−0.26	−0.07	−0.15	−0.21	−0.11	−0.36	−0.46	−0.87	−0.76
	(0.07)	(0.96)	(−0.40)	(−0.35)	(−0.09)	(−0.19)	(−0.27)	(−0.15)	(−0.45)	(−0.60)	(−0.96)	(−0.69)
Nobs						129						
Adjusted R^2	-0.01	-0.01	0.00	0.01	0.02	0.03	0.03	0.03	0.04	0.03	0.04	0.04
						Panel B. With Intermeetings						
$\mathcal{S}^{exp}$	−0.02	0.14	0.88	1.14	1.45*	1.73*	1.84**	1.91**	2.19**	1.89**	2.45**	2.79**
	(−0.07)	(0.26)	(1.30)	(1.37)	(1.74)	(1.93)	(2.05)	(2.12)	(2.39)	(2.03)	(2.33)	(2.28)
Constant	−0.05	0.12	−0.52	−0.70	−0.42	−0.52	−0.60	−0.53	−0.78	−0.70	−0.99	−0.91
	(−0.24)	(0.26)	(−0.95)	(−1.00)	(−0.62)	(−0.70)	(−0.81)	(−0.70)	(−1.02)	(−0.96)	(−1.19)	(−0.90)
Nobs						137						
Adjusted R^2	-0.01	-0.01	0.01	0.01	0.01	0.0 2	0.02	0.03	0.04	0.02	0.03	0.03
						Panel C. No Intermeetings & Turningpoints						
$\mathcal{S}^{exp}$	0.06	0.28	1.03	1.36	1.59*	1.84**	1.85**	1.82*	2.04**	1.91**	2.58**	3.03**
	(0.22)	(0.51)	(1.47)	(1.63)	(1.89)	(2.04)	(2.04)	(1.98)	(2.15)	(2.00)	(2.33)	(2.33)
Constant	−0.10	0.26	−0.36	−0.43	−0.22	−0.25	−0.18	−0.06	−0.27	−0.35	−0.81	−0.88
	(−0.44)	(0.57)	(−0.62)	(−0.58)	(−0.30)	(−0.31)	(−0.23)	(−0.08)	(−0.33)	(−0.43)	(−0.86)	(−0.78)
Nobs						122						
Adjusted R^2	-0.01	-0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.04	0.04
						Panel D. No Zero Surprises						
$\mathcal{S}^{exp}$	0.01	−0.05	0.75	1.25	1.60*	1.94**	2.04**	2.15**	2.46**	2.28**	2.91**	3.12**
	(0.03)	(−0.08)	(0.99)	(1.43)	(1.92)	(2.09)	(2.21)	(2.27)	(2.54)	(2.33)	(2.59)	(2.32)
Constant	0.02	0.43	−0.23	−0.26	−0.07	−0.15	−0.21	−0.11	−0.36	−0.46	−0.87	−0.76
	(0.07)	(0.96)	(−0.40)	(−0.35)	(−0.09)	(−0.19)	(−0.27)	(−0.15)	(−0.45)	(−0.60)	(−0.96)	(−0.69)
Nobs						103						
Adjusted R^2	-0.01	-0.01	0.00	0.01	0.03	0.04	0.04	0.04	0.05	0.04	0.06	0.04

Empirical Results - Table 4

Table 4: **Cumulative Returns around FOMC Decisions: Including Controls**

The table reports the cumulative return of the CRSP value-weighted index around FOMC policy decisions, excluding policy decisions on intermeetings. $\mathcal{D}^{exp}$ is a dummy that equals 1 if the monetary policy surprise is negative (expansionary). $Dummy^{inter}$ indicates an intermeeting policy move, $Dummy^{turn}$ indicates a turning point in monetary policy, and $\Delta FFTR$ is the actual change in federal funds target rates. 0 is the day of the FOMC meeting. The sample period is from 1994 until 2009.

	-15	-10	-5	-1	0	1	2	3	4	5	10	15
$\mathcal{D}^{exp}$	−0.09	0.08	0.83	1.09	1.34	1.63*	1.78*	1.80**	2.05**	1.79*	2.45**	2.82**
	(−0.34)	(0.15)	(1.23)	(1.30)	(1.60)	(1.76)	(1.94)	(1.99)	(2.22)	(1.88)	(2.23)	(2.25)
$\mathcal{D}^{inter}$	−0.91	−3.99***	−4.19***	−6.69***	−5.82**	−6.16*	−6.28*	−5.92**	−6.03**	−5.37	−4.21	−3.68
	(−1.30)	(−3.24)	(−2.72)	(−3.14)	(−2.17)	(−1.88)	(−1.89)	(−2.36)	(−2.45)	(−1.62)	(−1.14)	(−1.00)
$\mathcal{D}^{turn}$	0.80	0.58	0.13	0.30	1.41	0.88	−0.27	−0.72	−0.74	−0.71	0.35	1.21
	(1.19)	(0.53)	(0.10)	(0.18)	(1.03)	(0.67)	(−0.18)	(−0.42)	(−0.45)	(−0.43)	(0.22)	(0.56)
$\Delta FFTR$	−0.23	1.17	1.28	2.39	1.58	1.78	2.04	1.29	1.01	1.18	1.85	2.15
	(−0.27)	(0.87)	(0.65)	(1.21)	(0.66)	(0.74)	(0.95)	(0.63)	(0.54)	(0.61)	(0.70)	(0.74)
Constant	0.00	0.39	−0.23	−0.25	−0.05	−0.11	−0.14	−0.05	−0.28	−0.27	−0.72	−0.74
	(−0.00)	(0.85)	(−0.38)	(−0.33)	(−0.07)	(−0.13)	(−0.17)	(−0.06)	(−0.34)	(−0.33)	(−0.75)	(−0.66)
Nobs						137						
Adjusted R^2	0.01	0.10	0.07	0.15	0.11	0.11	0.11	0.10	0.10	0.06	0.05	0.04

Empirical Results - Table 6

Table 6: **Cumulative Returns after FOMC Decisions: Post Announcement**

The table reports the cumulative return of the CRSP value-weighted index following FOMC policy decisions, excluding policy decisions on intermeetings. $\mathscr{D}^{exp}$ is a dummy that equals 1 if the monetary policy surprise is negative (expansionary). 0 is the day of the FOMC meeting. The sample period is from 1994 until 2009.

	1	2	3	4	5	10	15
$\mathscr{D}^{exp}$	0.31	0.40	0.37	0.64	0.53	1.21**	1.47**
	(1.26)	(1.25)	(0.99)	(1.50)	(1.13)	(2.18)	(1.98)
Constant	−0.09	−0.14	−0.05	−0.29	−0.38	−0.82*	−0.74
	(−0.46)	(−0.56)	(−0.15)	(−0.84)	(−0.99)	(−1.81)	(−1.22)
Nobs				129			
Adjusted R^2	0.00	0.00	0.00	0.01	0.00	0.03	0.02

Figure 26: Table 6

Empirical Results - Table 8

Table 8.jpg

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Conclusion

- Monetary momentum is a market-wide phenomenon ans holds for all industries
- There is little differential drift for cross-sectional asset pricing factors - Momentum is an exception: there are large momentum turns around contractionary shocks (loser stocks tend to plummet)
- Monetary momentum also affects other indexes around the world (this time Nikkei is an exception)
- Surprise Changes in target rates night be partially predictable

Additional Comments

- Pre-Drift is not significant...
- ...therefore it's hard to say monetary surprises are predictable if the drift is used as input
- Probably the pre-drift is explained by the fed communication process and reinforced by data that are made public days before the monetary policy meeting - studies could have been made about this point
- The paper shows no relation between the size of the shocks and past/future returns