An Alternative Explanation for the "Fed Information Effect"

Michael D. Bauer

Universität Hamburg

Eric T. Swanson

University of California, Irvine

Trinity College, Dublin
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The "Fed Information Effect"

$$BCrev_t = \alpha + \theta\, mps_t + \varepsilon_t$$

- t indexes FOMC announcements
- $BCrev_t$ is one-month change in Blue Chip forecast around FOMC announcement
- mps_t is measure of FOMC announcement surprise in 30-min window around announcement

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- standard macro models, VARs predict $\theta < 0$ (for GDP, inflation)
- but empirical work sometimes estimates $\theta > 0$

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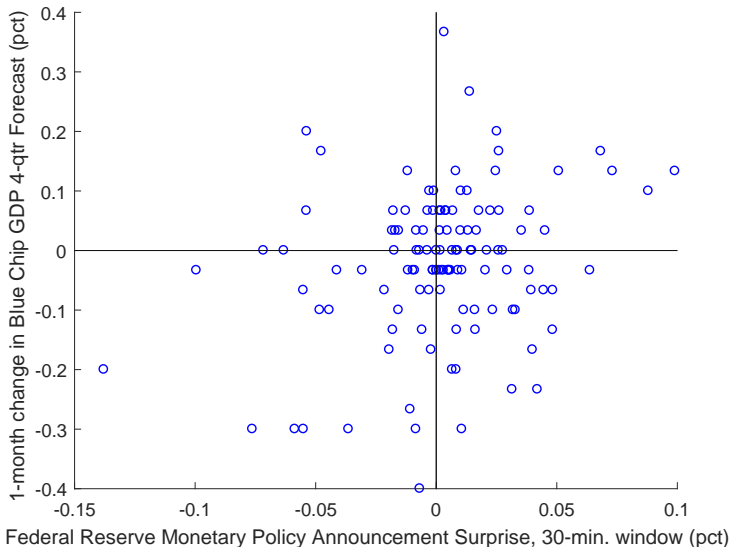
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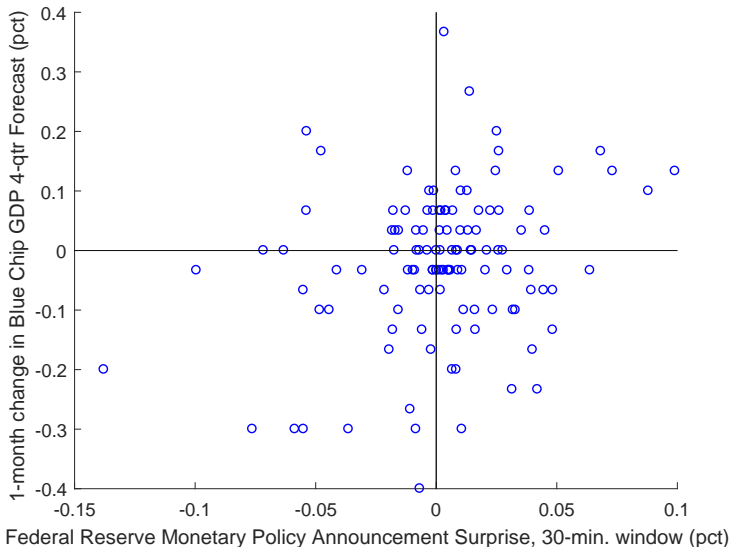
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See:

- Romer and Romer (2000 AER)
- Campbell, Evans, Fisher, Justiniano (2012 BPEA)
- Nakamura-Steinsson (2018 QJE)

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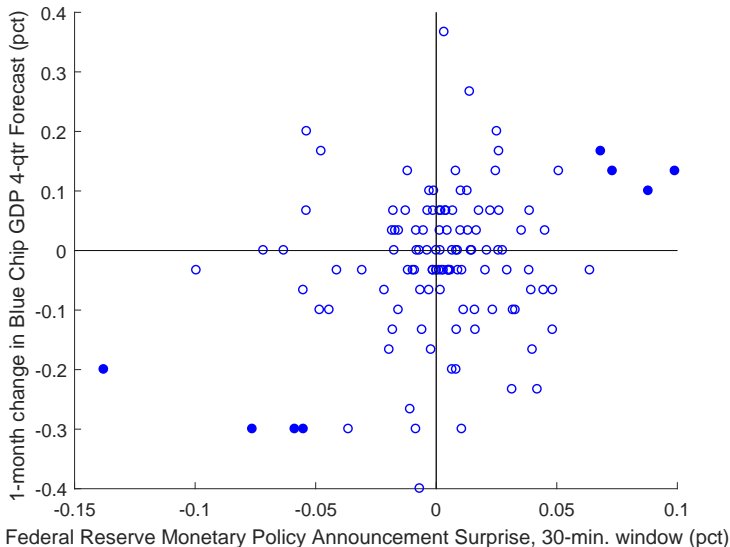
The "Fed Information Effect"

The "Fed Response to News" Channel

Background   Info Effect   Omitted Vars   Our Survey   Stock Market   Fed vs. BC   Model   Conclusions

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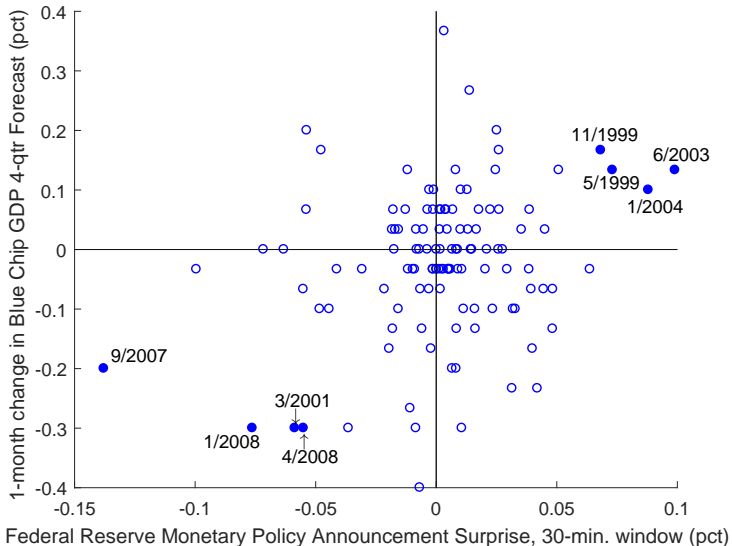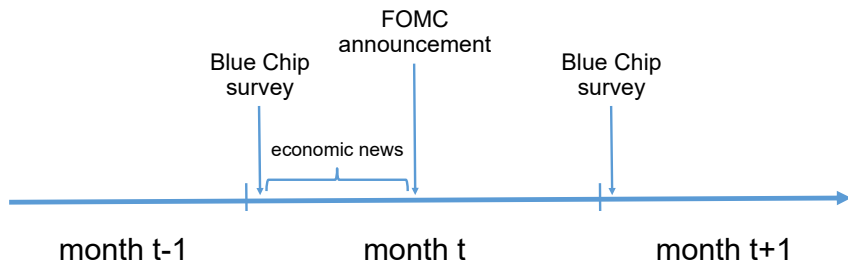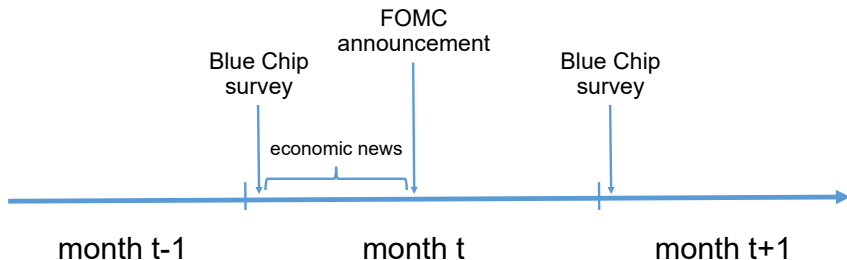
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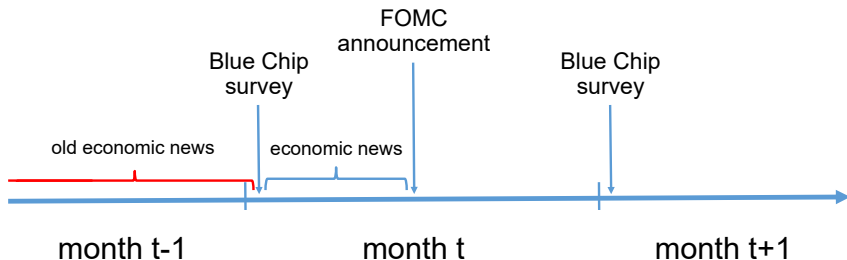
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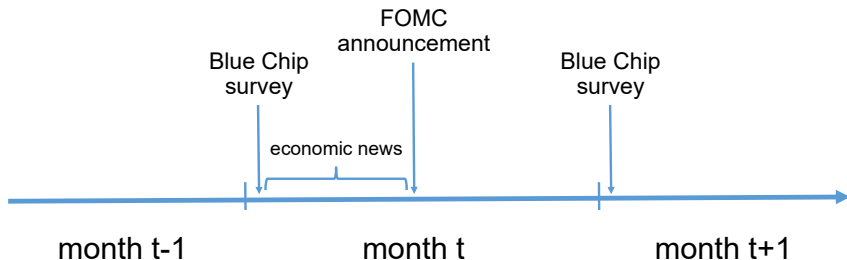$$BCrev_t = \phi + \theta \, mps_t + \varepsilon_t$$

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- Old economic news can also matter if Blue Chip forecasters revise forecasts a little slugglishly (Coibion-Gorodnichenko, 2015 AER)

Outline of Presentation

1. Replicate "Information Effect" regressions, check robustness

2. Repeat analysis with omitted variables included

3. Results from our own survey of Blue Chip forecasters

4. High-frequency stock market evidence

5. Forecast comparison: Fed vs. Blue Chip

6. Simple model of "Fed Response to News" channel

Information Effect Regressions

Campbell et al. (2012):

$$BCrev_t = \alpha + \beta \, target_t + \gamma \, path_t + \varepsilon_t$$

Nakamura-Steinsson (2018):

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- standard macro models, VARs predict $\beta, \gamma, \theta < 0$ (for GDP, infl)

Information Effect Regression Results

	Blue Chip forecast revision:					
	Unemployment rate		Real GDP growth		CPI inflation	
	(1)	(2)	(3)	(4)	(5)	(6)
(A) Campbell et al. replication sample: 1/1990–6/2007 ($N = 129$)						
target	−0.114 (0.102)		0.097 (0.187)		0.146 (0.115)	
path	−0.226 (0.139)		0.273 (0.264)		0.102 (0.154)	
R^2	0.04		0.02		0.02	
(B) Nakamura-Steinsson replication sample: 1/1995–3/2014, excluding unscheduled FOMC announcements and 7/2008–6/2009 ($N = 120$)						
NS surprise		−0.165 (0.294)		0.920** (0.373)		0.062 (0.249)
R^2		0.00		0.06		0.00

Information Effect Regression Results (cont.)

			Blue Chip forecast revision:			
	Unemployment rate		Real GDP growth		CPI inflation	
	(1)	(2)	(3)	(4)	(5)	(6)
(C) Full sample: 1/1990–6/2019 ($N = 217$)						
target	−0.161		0.162		0.163*	
	(0.112)		(0.171)		(0.096)	
path	−0.237		0.139		0.084	
	(0.146)		(0.229)		(0.123)	
NS surprise		−0.391**		0.325		0.288*
		(0.194)		(0.298)		(0.167)
R^2	0.03	0.02	0.01	0.01	0.02	0.02

Information Effect Regressions Summary

- Replicated basic "Fed Information Effect" findings:
  - coefficients have puzzling signs

- Statistical significance not very robust, depends on:
  - sample period
  - variable being forecast (unemployment, GDP, inflation)

- "Fed Information Effect" story has changed over time:
  - Romer-Romer (2000): inflation
  - Campbell et al. (2012): unemployment
  - Nakamura-Steinsson (2018): GDP

- But: coefficient signs are robust across samples, specifications

Economic News Is an Omitted Variable
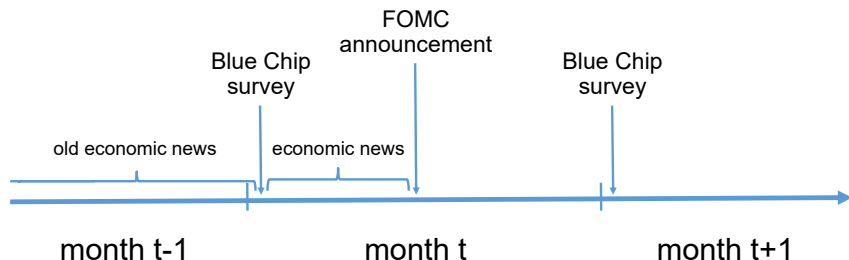
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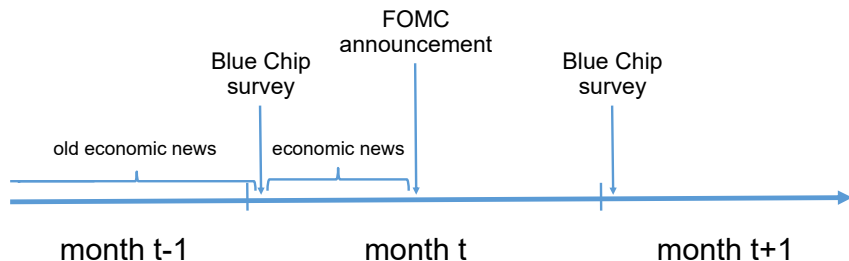
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Economic News Predicts Blue Chip Forecast Revisions

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- t indexes FOMC announcements
- $news_t$ is a vector of economic news released before FOMC announcement:
  - macroeconomic data release surprises
  - financial market changes
  - some old economic news

Economic News Predicts Blue Chip Forecast Revisions

	Blue Chip forecast revision:		
	Unemployment	Real GDP	inflation
	(1)	(2)	(3)
Macroeconomic news			
unemployment surprise	0.308***	−0.010	0.027
	(0.037)	(0.073)	(0.045)
payrolls surprise	−0.121**	−0.100	−0.127*
	(0.056)	(0.110)	(0.067)
GDP surprise	−0.020**	0.064***	0.010
	(0.008)	(0.016)	(0.009)
BBK index	−0.047***	0.031	0.008
	(0.013)	(0.026)	(0.016)
core CPI surprise	0.097	−0.187	0.209**
	(0.071)	(0.139)	(0.084)
change in core CPI inflation from 6 mos. previous	−0.025***	−0.016	0.032***
	(0.009)	(0.019)	(0.011)

(cont.)

Economic News Predicts Blue Chip Forecast Revisions

	Blue Chip forecast revision:		
	Unemployment	Real GDP	inflation
	(1)	(2)	(3)
Financial news			
Δ log S&P500	-0.212^{**}	0.620^{***}	0.009
	(0.086)	(0.168)	(0.101)
Δ yield curve slope	-0.023^{**}	-0.012	0.013
	(0.011)	(0.022)	(0.014)
Δ log pcommodity	-0.111	0.145	0.429^{***}
	(0.103)	(0.206)	(0.125)
R^2	0.64	0.40	0.31

Economic News Predicts Monetary Policy Surprises

Regress

$$mps_t = \alpha + \beta' \, news_t + \varepsilon_t$$

- mps_t is 30-min measure of monetary policy surprise (target, path, or NS measure)

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- under standard FIRE assumption, mps_t should be unpredictable: $\alpha, \beta = 0$ (even if Fed Information Effect is true)
- but if markets don't know Fed's monetary policy rule, then mps_t can be correlated with economy *ex post*, resulting in $\alpha, \beta \neq 0$ (see also Cieslak, 2018 RFS; Schmeling et al., 2020)

Economic News Predicts Monetary Policy Surprises

	Monetary policy surprise measure:		
	target	path	NS surprise
	(1)	(2)	(3)
Macroeconomic news			
unemployment surprise	−0.010	−0.020	−0.013
	(0.044)	(0.030)	(0.024)
payrolls surprise	0.125*	0.018	0.070*
	(0.066)	(0.046)	(0.036)
GDP surprise	0.003	0.015**	0.008*
	(0.009)	(0.006)	(0.005)
BBK index	0.003	0.000	0.002
	(0.016)	(0.011)	(0.009)
core CPI surprise	0.042	0.079	0.054
	(0.080)	(0.055)	(0.043)
change in core CPI inflation from 6 mos. previous	0.004	0.009	0.006
	(0.011)	(0.008)	(0.006)

(cont.)

Economic News Predicts Monetary Policy Surprises

	Monetary policy surprise measure:		
	target	path	NS surprise
	(1)	(2)	(3)
Financial news			
Δ log S&P500	0.155*	0.150**	0.141***
	(0.094)	(0.064)	(0.052)
Δ yield curve slope	−0.022*	−0.011	−0.016**
	(0.013)	(0.009)	(0.007)
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- news$_t$ is correlated with mps$_t$, will cause omitted variable bias in "Fed Information Effect" regressions

Economic News Drives Out "Fed Information Effect"

Repeat "Fed Information Effect" regressions with omitted variable included:

$$BCrev_t = \alpha + \beta\,target_t + \gamma\,path_t + \delta'\,news_t + \varepsilon_t,$$

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	Blue Chip forecast revision:					
	Unemployment rate		Real GDP growth		CPI inflation	
	(1)	(2)	(3)	(4)	(5)	(6)

Reminder: results excluding controls for economic news (full sample):

	(1)	(2)	(3)	(4)	(5)	(6)
target	-0.161		0.162		0.163^*	
	(0.112)		(0.171)		(0.096)	
path	-0.237		0.139		0.084	
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NS surprise		0.328***		−0.588**		−0.035
		(0.135)		(0.258)		(0.160)
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- standard errors are smaller, statistical significance is larger

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- R^2 are much larger
- essentially all coefficients now have standard sign
- standard errors are smaller, statistical significance is larger
- coefficients are quantitatively similar to DSGE models, VARs
- results are very similar for other samples (see paper)

Omitted Variables Summary

- Economic news is an omitted variable in "Fed Information Effect" regressions
  - economic news predicts Blue Chip forecast revisions
  - economic news predicts monetary policy surprises
  - coefficients in standard "Fed Information Effect" regressions are biased
  - including economic news drives out the "Fed Information Effect"

Our Survey of Blue Chip Forecasters

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- We collected contact information for all 52 forecasters in the Blue Chip panel
- emailed them a survey asking how they revised their GDP, unemployment, and inflation forecasts in response to FOMC announcements, in particular:
  - federal funds rate decision
  - FOMC statement
  - interest rate "dot plot"
  - Summary of Economic Projections (SEP) forecasts for GDP, unemployment, and inflation

Results from Our Survey

36 responses out of 52 possible:

	Response to hawkish surprise in:		
	fed funds rate	FOMC statement	"dot plot"
Do not revise GDP forecast	13	16	14
Revise GDP forecast downward	18	15	18
Revise GDP forecast, but direction depends on other factors	5	5	4
Revise GDP forecast upward	0	0	0

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- The last row contradicts Nakamura-Steinsson (2018)

Results from Our Survey

	Response to FOMC's Summary of Economic Projections (SEP)
Do not revise GDP forecast	24
Revise GDP forecast towards SEP forecast, if substantially different	4
Use SEP to help forecast fed funds rate, effect on GDP standard	3
Use SEP to help forecast fed funds rate, effect on GDP depends on other factors	1
Revise GDP, but revision depends on multiple factors	2

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Revise GDP, but revision depends on multiple factors	2

- If there was a Fed information effect, we ought to see it here

Typical Quotes from Our Survey

24 out of 34 survey respondents do not find SEP forecasts useful:

"I trust my outlook more than the Fed's. . . Their forecasting ability is pretty poor."

"My view is that the Fed does not have superior information. . . The FOMC forecast tends to be off by a lot."

"We tend to find that the Fed has no better information advantage over economists like myself. . . In fact, what we have found many times is Fed forecasts (per the SEP) tend to be somewhat stale."

"I would be responding to the change in the policy outlook, not to the possibility that the Fed 'knew' something that I did not."

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Typical Quotes from Our Survey (cont.)

"I have not been surprised by an FOMC announcement since well before 2008 (including January 2008 [a 75bp intermeeting rate cut])."

"In the end, we are likely to get more information from speeches and press conferences than we are from the statement, the decision, or the dots. So by the time we get those things, it tends to be relatively 'old news', if you will."

"I make my forecasts based on the data, not Fed assumptions. I haven't been surprised by them in a very long time."

"If we think the Fed is about to make a decision that is inconsistent with our expected outlook, we often think that will lead to a change in financial conditions that will in turn push the Fed back to where we think is appropriate for the economy."

"I could never find an effect of interest rates on any component of investment except residential [which was too small to have a significant effect on the GDP forecast]."

Results from Our Survey: Summary

- Large majority of survey respondents do not find FOMC's SEP forecasts useful

- Overwhelming majority do *not* revise GDP forecasts in "information effect" direction:
    - 13–14 do not revise macro forecasts at all in response to FOMC
    - 18 revise macro forecasts in traditional direction
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- But:
    - 5 forecasters did say "it depends"

Stock Market Response to FOMC Announcements

Consider high-frequency stock market response regressions:

$$\Delta \log \text{S\&P500}_t = \alpha + \beta \, target_t + \gamma \, path_t + \varepsilon_t$$

$$\Delta \log \text{S\&P500}_t = \phi + \theta \, mps_t + \eta_t$$

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  - in any case, β, γ, θ should at least be less negative if information effect is substantial

Top 10 Influential Announcements from NS Regression

Date	Effect on t-statistic	MP surprise mps_t	$BCrev_t$, GDP	$\Delta \log$ S&P500$_t$	bus. cycle indicator
9/2007	0.554	-0.138	-0.2	1.33	-0.29
1/2008	0.351	-0.076	-0.3	0.76	-0.81
6/2003	0.312	0.099	0.133	-0.27	-0.38
3/2001	0.291	-0.059	-0.3	-0.68	-1.45
4/2008	0.278	-0.055	-0.3	0.31	-1.52
11/1999	0.240	0.068	0.167	-0.42	0.86
1/2004	0.224	0.088	0.1	-0.97	0.38
5/1999	0.224	0.073	0.133	-1.44	0.19
12/1995	0.207	-0.036	-0.3	0.26	-0.08
3/1997	0.155	0.051	0.133	-0.67	0.80

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Stock Market Responses by Subsample

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	Ten strongest information effect observations (1)	Sample excluding 10 strongest observations (2)
NS surprise	-8.04^{***}	-7.14^{***}
	(1.91)	(1.84)
R^2	0.64	0.14
N	10	110

Stock Market Regressions Summary

- Stock market responses do not support "Fed Information Effect"
  - $\beta < 0$, $\gamma < 0$, $\theta < 0$ on average
  - $\beta < 0$, $\gamma < 0$, $\theta < 0$ for influential "Information Effect" observations
  - β, γ, θ are *not* less negative for influential "Information Effect" observations

- Results are highly statistically significant and very robust

Fed vs. Blue Chip Forecasts

Horizon (quarters)	GB	RMSEs BC	H_0: $GB = BC$
(A) Unemployment rate			
0	0.18	0.17	.412
1	0.34	0.34	.831
2	0.54	0.53	.842
3	0.73	0.73	.952
0-3 avg.	0.42	0.42	.923

Fed vs. Blue Chip Forecasts

Horizon (quarters)	GB	RMSEs BC	H_0: $GB = BC$
(B) Real GDP growth			
0	1.96	1.97	.741
1	2.44	2.32	.030
2	2.46	2.49	.739
3	2.55	2.52	.710
0-3 avg.	1.64	1.60	.447

Fed vs. Blue Chip Forecasts

Horizon		RMSEs	
(quarters)	GB	BC	H_0: $GB = BC$
(C) CPI inflation			
0	0.89	1.15	.012
1	2.01	2.07	.554
2	1.92	1.80	.092
3	1.96	1.87	.191
0-3 avg.	1.13	1.05	.242

A Simple Model

Let x_t denote state of the economy (e.g., GDP):

$$x_t = \rho_x x_{t-1} + \eta_t$$

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Private sector observes x_t, i_t every period, knows ρ_x, but not ε_t or a.

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Let $\hat{a}_t \equiv E[a | \mathcal{H}_{t-1}]$

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$\eta_t, \varepsilon_t \perp \mathcal{H}_{t-1}$

A Simple Model

Private sector ex ante expected interest rate at time t is:

$$\begin{aligned}
E\left[i_t \,|\, x_t, \mathcal{H}_{t-1}\right] &= E\left[ax_t + \varepsilon_t \,|\, x_t, \mathcal{H}_{t-1}\right] \\
&= E\left[ax_t \,|\, x_t, \mathcal{H}_{t-1}\right] \\
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Private sector ex ante expected *path* of interest rates at time t is:

$$
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E\big[i_{t+j}\,|\,x_t, \mathcal{H}_{t-1}\big] &= E\big[ax_{t+j}\,|\,x_t, \mathcal{H}_{t-1}\big] \\
&= \hat{a}_t \rho_x^j\, x_t
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&= \hat{a}_t \rho_x^j \, x_t
\end{aligned}
$$

When central bank announces i_t, private sector is surprised by:

$$
\begin{aligned}
mps_t &\equiv i_t - E\big[i_t \,|\, x_t, \mathcal{H}_{t-1}\big] \\
&= (a - \hat{a}_t)x_t + \varepsilon_t
\end{aligned}
$$

A Simple Model

Kalman filtering/optimal Bayesian updating of *a* implies:

$$E\left[a\,|\,\mathcal{H}_t\right] = \hat{a}_t + \theta\,\frac{1}{x_t}\,mps_t$$

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Private sector revises forecasts of interest rate path by:

$$
\begin{aligned}
E\big[i_{t+j}|\mathcal{H}_t\big] - E\big[i_{t+j}|x_t, \mathcal{H}_{t-1}\big] &= E\big[ax_{t+j}|\mathcal{H}_t\big] - E\big[ax_{t+j}|x_t, \mathcal{H}_{t-1}\big] \\
&= \big(E\big[a|\mathcal{H}_t\big] - \hat{a}_t\big)\,\rho_x^j x_t \\
&= \rho_x^j\,\theta\,mps_t
\end{aligned}
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Implications of the Simple Model

Key equations:

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- However, for high-frequency identification of a VAR, mps_t is correlated with x_t, must be orthogonalized to be used as external instrument (e.g., Miranda-Agrippino and Ricco, 2021).

Conclusions

1. Economic news is an omitted variable in "Information Effect" regs.
   - "Fed Information Effect" regressions suffer from omitted variable bias
   - including the omitted variable drives out "Fed Information Effect"

2. Stock market responses to FOMC announcements do not support "Fed Information Effect"

3. Our survey of Blue Chip forecasters contradicts "Fed Information Effect"

4. Evidence for "Fed Information Effect" is weak

5. We propose alternative "Fed Response to News" channel that can explain all of the empirical findings

6. High-frequency monetary policy surprises can be used:
   - in high-frequency regressions to estimate effects of monetary policy
   - to help identify VARs (but some adjustment here can be necessary)

The Stock Market, March 2–6, 2020
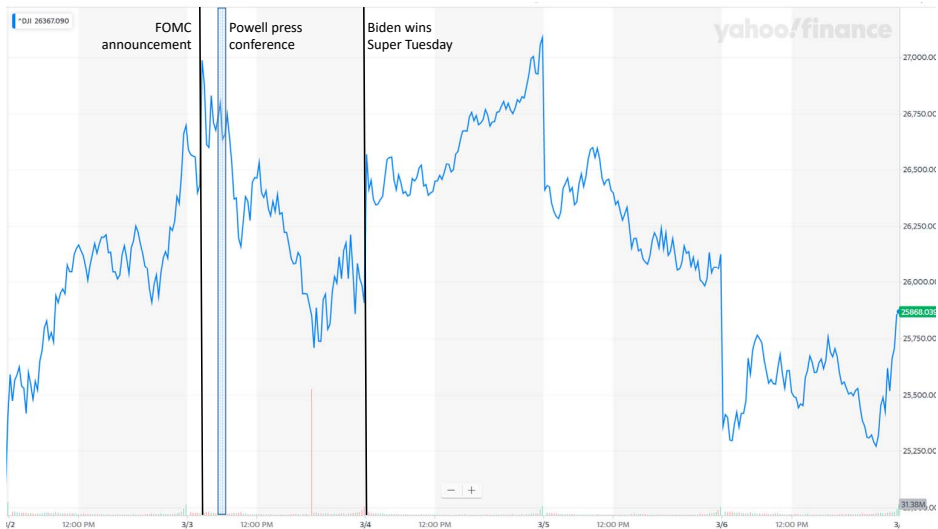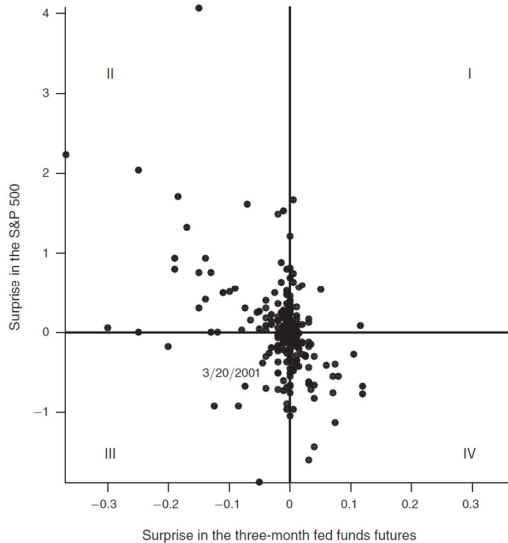
Jarocinski and Karadi (2020)

FIGURE 1. SCATTERPLOT OF INTEREST RATE AND STOCK PRICE SURPRISES
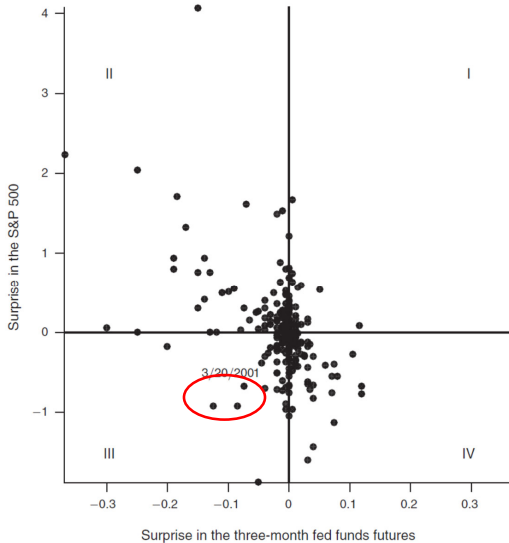
Jarocinski and Karadi (2020)

FIGURE 1. SCATTERPLOT OF INTEREST RATE AND STOCK PRICE SURPRISES

STOCKS & BONDS

Shares Fall Hard as Fed Rate Cut Disappoints Inves

By MICHAEL BRICK

Dow Jones Industrial Average

After weeks of anticipation, investors were disappointed yesterday after the Federal Reserve cut interest rates less than they had wanted.

Stocks fell sharply, with technology issues suffering big losses. The afternoon selloff partly reflected the misplaced bets of investors who had hoped the Fed would reduce short-term interest rates by three-quarters of a percentage point. Instead, the central bank cut its target for the federal funds rate by a widely anticipated half a point, to 5 percent.

The Nasdaq composite index fell 93.74 points, or 4.8 percent, to 1,857.44. The Nasdaq is down 24.6 percent so far this year. The Dow Jones industrial average fell 238.35 points, or 2.4 percent, to 9,720.76. It fell below 10,000 last week as investors' fears spread beyond the technology sector, and it has now declined 9.9 percent this year.

The Standard & Poor's 500-stock index fell 18.19 points, or 2.4 percent, to 1,142.62. It has declined 13.5 percent this year.

The Fed made its announcement around 2:15 p.m. Eastern time. Until then, the stock market was sluggish, showing modest gains. Immediately afterward, the Nasdaq dropped about seven-tenths of a percent, then jumped back up about 2 percent.

"The indecision is rampant," said Jeffrey D. Saut, chief investment strategist for Raymond James & Associates. "It's up, it's down, it's down, it's up."

After that, though, stocks began a rapid and steady descent. The losses carved deeply into technology stocks, which some investors had hoped would surge, at least temporarily, after the move by the Fed

"Investors just don't know how they want to be positioned," said Brett Gallagher, a vice president of Julius Baer Investment Management. Mr. Gallagher, who helped manage $400 million in equity holdings for fanations and wealthy individuals. After some heady adjustments, they seemed struck by a realization that "the next scheduled releases we're going to see are going to be first-quarter earnings and we don't expect those to be brilliant."

Treasury Prices Rise

By Bloomberg News

Treasury bond prices rose yesterday after the Federal Reserve lowered interest rates to 5 percent and the stocks of intrinsically fiscal companies, said Jon Brower, director of equities for North Trust, the money management unit of Julius Baer Co.

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Alcoa rose 35 cents, to $36.28, International Paper gained $1.10 to $37.36.

Treasury Yield Cu...
Yields of selected Tre...
securities Short-term   ...ties
are shown on a bond-ew... ...gent
base Horizontal scale
ratio scale

Hot & Cold
A look at stocks with large price percentage gains and losses

STOCK EX-SYMBOL	YESTERDAY CLOSE	CHANGE	YEAR TO DATE	COMMENT
Plantronics NM PLT	$16.97	-$8.03 -26.9%	-63.9%	Maker of cellular phone headsets says earnings will be 16 cents to 19 cents a share in its fourth quarter; analysts had expected 36 cents
Three-Five Systems N TFS	$12.39	-$3.36 -20.8%	-31.2%	Maker of liquid-crystal displays expects to break even in the first quarter; analysts had one-cast a profit of 8 cents a share
Flextronics International NNM FLEX	$19.06	-$4.38 -18.7%	-30.3%	Several analysts lower their earnings estimates for the electronics manufacturing services provider
Solectron N SLR	$19.08	-$2.40 -11.2%	-40.7%	The contract manufacturer of electronics is cutting 8,208 jobs, or 10 percent of its workers, and will miss profit forecasts for the current quarter because demand is falling
Exfo Electro-Optical Engineering NNM EXFO	$25.25	+$2.00 +8.6%	-3.4%	Maker of gear for testing fiber optic equipment reports fiscal second-quarter profit, excluding costs, that tops analysts' estimates The company cites higher-than-expected demand
Oracle NNM ORCL	$14.38	-$1.06 -6.88%	-50.5%	Software maker is cutting its work force by up to 2 percent, or 900 jobs, in an attempt to bolster its sagging profits

Compiled from staff reports, The Associated Press, Bloomberg News Bridge News Dow Jones, Reuters

Reckonings
PAUL KRUGMAN

Half a Loaf

Central banks do it partway.

The New York Times

Fed Disappoints Wall Street With Half-Point Cut in Rates

By Richard W. Stevenson

March 20, 2001

WASHINGTON, March 20 - The Federal Reserve cut interest rates today by half a percentage point, continuing its aggressive effort to resuscitate the faltering economy but disappointing investors who had hoped for more.

Stock prices fell sharply after the Fed's announcement. The Dow Jones industrial average and the broader Standard & Poor's 500-stock index both dropped more than 2 percent, while technology-heavy Nasdaq composite index lost more than 4 percent.