

An Alternative Explanation for the “Fed Information Effect”

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ECB Conference on Monetary Policy

October 11, 2021

Common approach for estimating effects of monetary policy

- “*Monetary policy surprises*” – high-frequency changes in interest rates around central bank policy announcements
- Key assumption: monetary policy predetermined over event window and thus not affected by financial market reaction
- Widely used in macro-finance to estimate *causal effects* of monetary policy
 - Impact on *financial markets*: Kuttner (2001), Gürkaynak et al. (2005), Bernanke and Kuttner (2005), Bauer and Rudebusch (2014), ...
 - Impact on *macroeconomy*: Stock and Watson (2012), Gertler and Karadi (2015), Ramey (2016), ...

Puzzling response of macroeconomic forecasts

- Puzzle: macro survey forecasts respond in the “wrong” direction to high-frequency Federal Reserve policy surprises
 - Standard New Keynesian macro: tightening surprise (rates increase) causes *negative response* of output, employment, inflation
 - Survey regressions in some cases show significantly *positive response* of forecasts about output, employment, inflation
 - Campbell et al. (2012), Nakamura & Steinsson (2018), Lunsford (2020)
- Related puzzling findings about stock market and macro responses
 - Miranda-Agrippino and Ricco (2018), Cieslak and Schrimpf (2019), Jarocinski and Karadi (2020)
- Common explanation: “Fed information effect”

The “Fed information effect”

- Potential explanation of puzzling empirical evidence:

Fed announcements convey private information about economy and therefore directly affect beliefs about economic fundamentals.

- Monetary policy surprise contains information effects. Example:
 1. *Tightening surprise* – higher policy rate/forward guidance than expected
 2. Signals that Fed sees more positive economic outlook
 3. Forecasters and investors *revise up* their outlook about output/inflation/employment
- Implications for empirical macro and monetary policy:
 - Policy surprises problematic for estimating effects of MP
 - May reduce effectiveness of monetary policy

This paper: an alternative explanation

- *Fed response to news* channel
 - Survey forecasts and Fed policy actions both respond to macroeconomic news
 - Even monetary policy *surprises* systematically respond to macro news
 - Cannot ignore macro news in estimation
- New evidence supporting this alternative explanation
 - Economic news is omitted variable in survey regressions
 - New survey of Blue Chip forecasters suggests they respond in conventional way
 - Response of stock market and exchange rates has conventional sign
 - Fed forecasts not more accurate than private sector
- No evidence for information effects in FOMC announcements
- Predictability of monetary policy “surprises” may be due to learning about the Fed’s policy rule
 - Simple learning model illustrates how learning can explain empirical evidence

Revisiting the survey response puzzle

Puzzle: response of macroeconomic surveys to policy surprises

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

- mps_t : interest rate surprise due to FOMC announcement
 - First PC of high-frequency changes in futures rates
- $BCrev_t$: monthly revision in Blue Chip GDP forecast
- Standard macro theory and evidence implies $\theta < 0$
- But Nakamura & Steinsson (2018) estimate:

TABLE III
RESPONSE OF EXPECTED OUTPUT GROWTH OVER THE NEXT YEAR

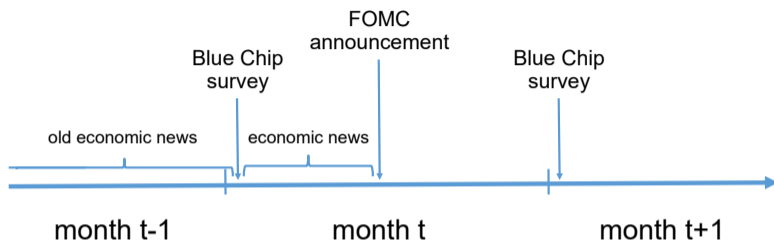
	1995–2014	2000–2014	2000–2007	1995–2000
Policy news shock	1.01 (0.32)	1.04 (0.35)	0.95 (0.32)	0.79 (0.63)
Observations	120	90	52	30

Updated estimates

	Unemployment rate	Real GDP growth	CPI inflation
	(1)	(2)	(3)
NS surprise	-0.391 (0.194)	0.325 (0.298)	0.288 (0.167)
R^2	0.02	0.01	0.02
Target surprise	-0.161 (0.112)	0.162 (0.171)	0.163 (0.096)
Path surprise	-0.237 (0.146)	0.139 (0.229)	0.084 (0.123)
R^2	0.03	0.01	0.02

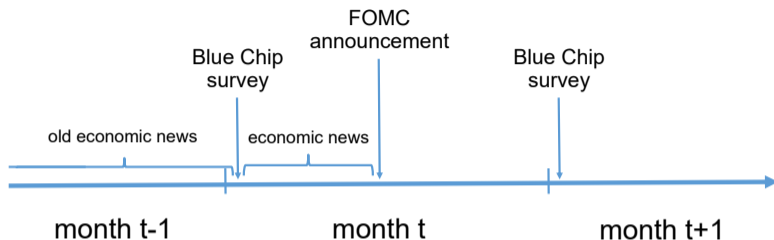
Sample: 1/1990–6/2019, incl. unscheduled announcements ($N = 217$)

“Fed response to news” channel



- Public release of new macroeconomic data
 - Surprisingly positive BLS Employment Report
- Fed responds and adjusts policy stance, possibly *more than expected*
 - Hawkish monetary policy surprise
- Blue Chip respondents update their forecasts
 - Higher GDP growth, lower unemployment, higher inflation

“Fed response to news” channel



- Economic news is omitted variable:

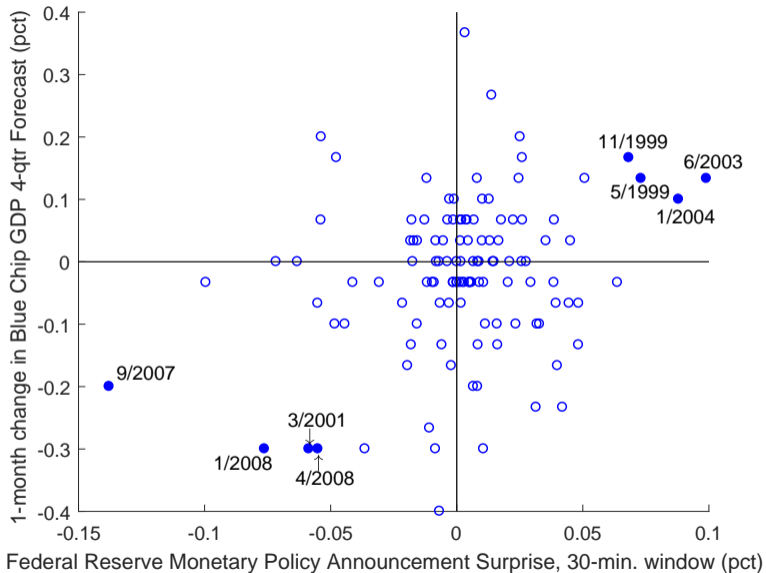
$$BCrev_t = \alpha + \theta mps_t + \psi' news_t + \varepsilon_t$$

- *Omitted variable bias* in estimates of θ if $news_t$ correlated with

1. Survey forecasts $\Rightarrow \beta \neq 0$ in $BCrev_t = \beta' news_t + \varepsilon_t$
2. Monetary policy surprises $\Rightarrow \gamma \neq 0$ in $mps_t = \gamma' news_t + \varepsilon_t$

- Can bias explain puzzling estimates of θ ?

Nakamura-Steinsson regressions



Survey forecasts respond to macro news (of course)

		Unemployment rate	Real GDP growth	CPI inflation
<i>Macroeconomic news</i>	unemployment surprise	0.308 (0.037)	-0.010 (0.073)	0.027 (0.045)
	payrolls surprise	-0.121 (0.056)	-0.100 (0.110)	-0.127 (0.067)
	GDP surprise	-0.020 (0.008)	0.064 (0.016)	0.010 (0.009)
	BBK index	-0.047 (0.013)	0.031 (0.026)	0.008 (0.016)
	change in core CPI inflation from 6 mos. previous	-0.025 (0.009)	-0.016 (0.019)	0.032 (0.011)
	expectation of core CPI release	0.157 (0.099)	-0.361 (0.195)	0.200 (0.119)
	core CPI surprise	0.097 (0.071)	-0.187 (0.139)	0.209 (0.084)
	<i>Financial news</i>	$\Delta \log$ S&P500	-0.212 (0.086)	0.620 (0.168)
Δ yield curve slope		-0.023 (0.011)	-0.012 (0.022)	0.013 (0.014)
$\Delta \log$ pcommodity		-0.111 (0.103)	0.145 (0.206)	0.429 (0.125)
R^2		0.64	0.40	0.31

Monetary policy surprise predictable with macro news

		Target	Path	NS surprise
<i>Macroeconomic news</i>	unemployment surprise	-0.010 (0.044)	-0.020 (0.030)	-0.013 (0.024)
	payrolls surprise	0.125 (0.066)	0.018 (0.046)	0.070 (0.036)
	GDP surprise	0.003 (0.009)	0.015 (0.006)	0.008 (0.005)
	BBK index	0.003 (0.016)	0.000 (0.011)	0.002 (0.009)
	change in core CPI inflation from 6 mos. previous	0.004 (0.011)	0.009 (0.008)	0.006 (0.006)
	expectation of core CPI release	-0.124 (0.101)	0.081 (0.068)	-0.029 (0.054)
	core CPI surprise	0.042 (0.080)	0.079 (0.055)	0.054 (0.043)
	<i>Financial news</i>	$\Delta \log$ S&P500	0.155 (0.094)	0.150 (0.064)
Δ yield curve slope		-0.022 (0.013)	-0.011 (0.009)	-0.016 (0.007)
$\Delta \log$ pcommodity		0.076 (0.108)	0.171 (0.073)	0.110 (0.058)
R^2		0.12	0.15	0.20

Controlling for news drives out information effects

	Unemployment rate		Real GDP growth		CPI inflation	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Without controls</i>						
Target	-0.161 (0.112)		0.162 (0.171)		0.163 (0.096)	
Path	-0.237 (0.146)		0.139 (0.229)		0.084 (0.123)	
NS surprise		-0.391 (0.194)		0.325 (0.298)		0.288 (0.167)
R^2	0.03	0.02	0.01	0.01	0.02	0.02
<i>With controls</i>						
Target surprise	0.152 (0.073)		-0.241 (0.144)		0.067 (0.088)	
Path surprise	0.167 (0.096)		-0.373 (0.192)		-0.212 (0.114)	
NS surprise		0.328 (0.135)		-0.588 (0.258)		-0.035 (0.160)
R^2	0.65	0.65	0.42	0.42	0.32	0.31

How could monetary policy “surprises” be predictable?

- Crucial part of our evidence: predictable high-frequency rate changes around FOMC announcements. Possible explanations?
- Risk premium too small to account for predictability (Piazzesi and Swanson, 2008; Cieslak, 2018)
- *Learning*: violations of Full Information Rational Expectations (FIRE)
 - Evidence: *forecast errors* for fed funds rate also predictable
 - Suggests that markets *did not know Fed's policy rule* and *underestimated* responsiveness to macro data (see also Cieslak, 2018; Schmeling et al., 2021)
 - Can explain predictability of monetary policy “surprises” with publicly observable macroeconomic data and omitted variable bias

Our own survey of Blue Chip forecasters

Our survey of Blue Chip forecasters

- High-frequency financial data can isolate effects of FOMC, but surveys are monthly/quarterly
- Solution: ask Blue Chip forecasters about effects of FOMC announcements on their forecasts
 - Tracked down 52 chief economists and sent them our questionnaire
- *How do you revise GDP/unemployment/inflation forecasts in response to:*
 - FOMC interest rate decision
 - FOMC statement
 - FOMC interest rate projections – “dot plot”
 - FOMC forecasts for GDP, unemployment, inflation (SEP)

Results from our survey

36 responses out of 52:

	Response to hawkish surprise in		
	Interest rate decision	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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- Many forecasters don't revise outlook in response to FOMC
- If they do, it's generally not in “information effect” direction
 - Survey evidence is 31:5 *against* an information effect

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“Fed information effect” interpretation of survey regression evidence is *not consistent* with what survey respondents say!

Financial market evidence

Top 10 influential announcements in Nakamura-Steinsson regressions

Date (1)	Effect on t -statistic (2)	NS surprise (3)	$BCrev_t$ GDP (4)	$\Delta \log$ S&P500 $_t$ (5)	$\Delta \log$ USD/EUR $_t$ (6)	BBK index (7)
9/2007	0.554	-0.138	-0.20	1.33	0.50	-0.28
1/2008	0.351	-0.076	-0.30	0.76	0.49	-0.81
6/2003	0.312	0.099	0.13	-0.27	-0.22	-0.38
3/2001	0.291	-0.059	-0.30	-0.68	0.77	-1.45
4/2008	0.278	-0.055	-0.30	0.31	0.23	-1.52
11/1999	0.240	0.068	0.17	-0.42	-0.03	0.86
1/2004	0.224	0.088	0.10	-0.97	-1.18	0.38
5/1999	0.224	0.073	0.13	-1.44	0.00	0.19
12/1995	0.207	-0.036	-0.30	0.26	-0.52	-0.08
3/1997	0.155	0.051	0.13	-0.67	-0.26	0.80

Stock market response

- Event study regressions (30min FOMC windows)

$$\Delta \log x_t = \phi + \theta mps_t + \varepsilon_t$$

- Standard theory predicts $\theta < 0$ for stock prices (Bernanke and Kuttner, 2005)
 - Tighter policy lowers stock prices (higher discount rate, lower profits)
- Information effect prediction ambiguous for θ
 - Higher discount rate lowers stock prices
 - Higher future profits *raises* stock prices
 - Cieslak & Schrimpf (2019), Jarocinski & Karadi (2020) argue net effect is positive

Financial market response to most influential vs. other observations

	S&P500		USD/EUR FX rate	
	Top 10 observations (1)	Other observations (2)	Top ten observations (3)	Other observations (4)
NS surprise	-8.04 (1.91)	-7.14 (1.84)	-4.55 (1.42)	-5.34 (1.30)
R^2	0.64	0.14	0.45	0.14
N	10	110	10	110

► Jarocinski and Karadi (2020)

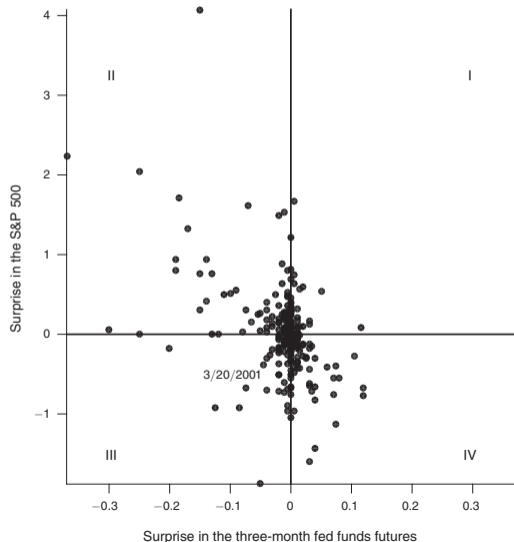
Additional evidence in paper: forecast accuracy

- Does the Fed really know more about the current and future economy?
 - First paper about information effect: Romer and Romer (2000) showed that Fed appears to have more information about current and future *inflation*
 - Even though superior Fed forecasts neither necessary nor sufficient for information effects, this is the common explanation
- We find that the Fed's Greenbook (Tealbook) forecasts are no more accurate than Blue Chip forecasts
 - Consistent with other papers showing that Fed's edge in forecasting, if it ever had one, has disappeared
 - D'Agostino and Whelan (2008), Gamber and Smith (2009), Rossi and Sekhposyan (2016), Hoesch et al. (2020)

Conclusions

- Extensive evidence against information effects in FOMC announcements
- Economic news omitted variable in popular survey regressions
 - Accounting for macro news resolves puzzle and yields plausible, conventional estimated effects of monetary policy
- Additional evidence:
 - New survey of Blue Chip forecasters
 - Stock market and FX rates
 - Forecast accuracy of Fed vs. professional forecasters
- *Ex post* predictable high-frequency policy surprises and “Fed response to news” channel consistent with learning about monetary policy rule
- *Implications for empirical macro*: monetary policy surprises not exogenous, need to project out macro news
- *Implications for monetary policy communication*: surprises not counterproductive due to information effects

“But what about Jarocinski and Karadi (2020, AEJ-Macro)?”



- About one third of FOMC meetings show “wrong-signed” stock market response

However:

- Rate or survey surprises typically very small. For larger surprises ratio of wrong- to right-signed surprises only about 1 to 7.
- Larger surprises typically have good explanation, e.g., March 20, 2001
- And tend to be *different* meetings than those that drive survey results