Discussion of

Central Bank Information Shocks

by M. Jarociński and P. Karadi

Ambrogio Cesa-Bianchi (BoE and CfM)

First Annual Workshop
ESCB Research Cluster 1 on Monetary Economics

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*The views expressed in this paper do not necessarily reflect the position of the Bank of England.

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- **A more subtle 'identification' problem** It is well known that monetary policy news convey information about
  (1) Current and future path of monetary policy ('traditional' channel)
  (2) Central bank's view about economic fundamentals (signalling channel)
- **This paper** Develops a (smart) way of disentangling these two channels
  - Crucial to understand monetary policy transmission mechanism!

High frequency identification

Monetary policy shocks vs. Information shocks: A simple example

- Assume the Central Bank (CB) and market participants (Mkt) have **noisy information** about the state of the economy (x_t), and CB **gets a better signal**

Realized policy rate $$i = \phi \mathbb{E}^{CB}[x_t] + \varepsilon_t^{mp}$$

Expected policy rate $$\mathbb{E}^{Mkt}[i] = \phi \mathbb{E}^{Mkt}[x_t]$$

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30-mins surprise	$s_t = i - \mathbb{E}^{Mkt}[i] = \varepsilon_t^{mp} + \mathbb{E}^{CB}[x_t] - \mathbb{E}^{Mkt}[x_t]$

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- Surprise s_t is a linear combination of two shocks

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$$s_t = a\varepsilon_t^{mp} + b\varepsilon_t^{info}$$

- **How to disentangle the two?**

How to disentangle mp shocks from $info$ shocks?

- High frequency surprise

$$s_t = a\varepsilon_t^{mp} + b\varepsilon_t^{info}$$

- **Traditionally** Orthogonalize surprises to CB private information [Gertler and Karadi (2015, AEJ:M)]
  - Use Greenbook forecasts as a proxy for ε_t^{info}
  - Regress s_t on Greenbook forecasts
  - Residual gives an estimate (up to scale) of ε_t^{mp}

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  - See also Miranda-Agrippino and Ricco (2017), Lakdawala (2017), Hubert (2017)

How to disentangle *mp* shocks from *info* shocks?

- High frequency surprise

$$s_t = a\varepsilon_t^{mp} + b\varepsilon_t^{info}$$

- **New approach** Exploit the fact that ε_t^{mp} and ε_t^{info} have same theoretical prediction for interest rates, but different for equity prices

$$\begin{aligned} s_t^{FF} &= a\varepsilon_t^{mp} + b\varepsilon_t^{info} \\ s_t^{EQ} &= a\varepsilon_t^{mp} + b\varepsilon_t^{info} \end{aligned}$$

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- Features I like a lot about this approach
  - Not subject to publication lags
  - Equity prices sufficient statistic of how market participants incorporated *CB* private info

[#1] Absorbing the news: Small vs. large windows?

- Authors extract the shocks from surprises computed over an interval of $[-10, +20]$ minutes around FOMC meetings

- 8 scheduled FOMC meetings per year
  - 8 FOMC meeting statements (released at 2pm)
  - 4 summaries of economic projections (released at 2pm)
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  - 4 summaries of economic projections (released at 2pm)
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- How long does it take to 'digest' the news embedded in the surprises? Are 20 minutes enough to disentangle ε^{mp} from ε^{info}?
- Would it make sense to enlarge the window to include the press conference?

[#1] Absorbing the news: Small vs. large windows?

- FOMC statement is typically short and informative

Federal Reserve Release

Press Release

Release Date: February 1, 1995

For immediate release

The Federal Reserve Board today approved an increase in the discount rate from 4 3/4 percent to 5 1/4 percent, effective immediately.

In a related move, the Federal Open Market Committee agreed that this increase should be reflected fully in interest rates in the reserve markets.

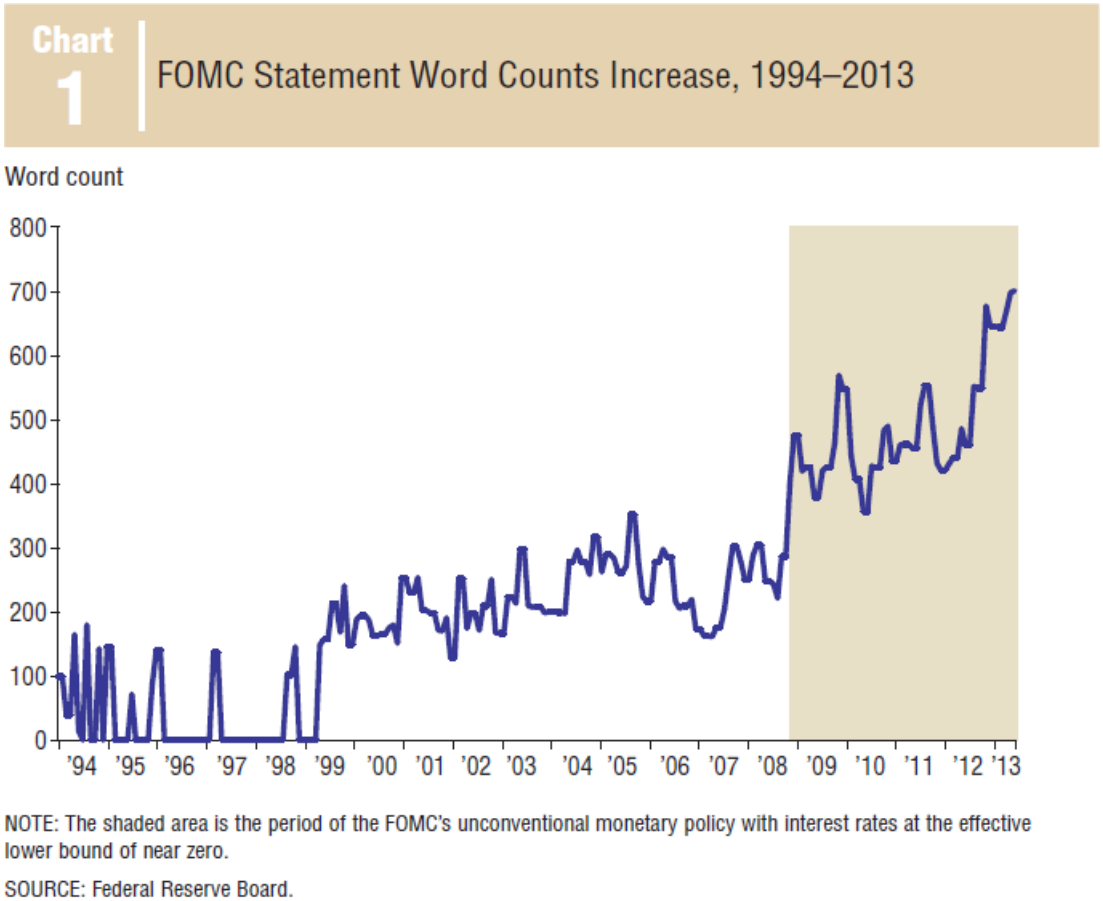
Despite tentative signs of some moderation in growth, economic activity has continued to advance at a substantial pace, while resource utilization has risen further. In these circumstances, the Federal Reserve views these actions as necessary to keep inflation contained, and thereby foster sustainable economic growth.

In taking the discount action, the Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of Boston, New York, Richmond, Chicago, St. Louis, Kansas City and San Francisco. The discount rate is the interest rate that is charged depository institutions when they borrow from their district Federal Reserve Banks.

NOTE. Source: https://www.federalreserve.gov/fomc/19950201default.htm

[#1] Absorbing the news: Small vs. large windows?

- But the amount of information the CB releases is increasing over time



NOTE. Chart from Mark A. Wynne, 2013. "A short history of FOMC communication," Economic Letter, Federal Reserve Bank of Dallas, vol. 8(sep).

[#1] Absorbing the news: Small vs. large windows?

- Press conference can reveal important information
- An example: ECB (Mar 10, 2016) announcement...

NOTE. Chart is from https://www.theguardian.com/business/live/2016/mar/10/ecb-stimulus-measures-mario-draghi-negative-rates-qe-business-live

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[#2] Importance of information shock

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- **Cesa-Bianchi, Thwaites, Vicondoa (2016)** Using UK data, a different instrument, and sample period, find that ε_t^{info} is not likely to play a major role
  - Proxy for ε_t^{mp} that controls for ε_t^{info}
    - Narrative series of Cloyne and Huertgen, 2014
  - Overidentification test in a proxy SVAR using s_t and ε_t^{mp}
  - Test the null hypothesis that our exclusion restrictions hold with the Hansen-Sargan statistic
  - We do not reject the null

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TABLE 4—EFFECTS OF PRIVATE INFORMATION ON TIGHT WINDOW MONETARY POLICY SURPRISE (1991–2007)

Variables	FF1 (1)	FF4 (2)	ED4 (3)
π	0.0227**	0.0145**	0.0152
	(2.161)	(2.109)	(1.611)
dy	0.0166*	0.0209***	0.0256***
	(1.724)	(3.077)	(3.072)
$\Delta\pi$	−0.0289**	−0.0178*	−0.0185
	(−2.387)	(−1.925)	(−1.528)
Δdy	−0.00663	−0.00755*	−0.00627
	(−1.309)	(−1.881)	(−1.033)
Observations	141	141	141
R^2	0.108	0.155	0.135
F-statistic	2.175	3.243	3.368
prob $> F$	0.0751	0.0141	0.0116

NOTE. Table 4 from Gertler and Karadi (2015, AEJ:M)

- Results seem to be large relative to Gertler and Karadi's (2015) regressions of s_t on Fed private info

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- Results seem to be large relative to Gertler and Karadi's (2015) regressions of s_t on Fed private info
- How to reconcile the low R^2 from this regression and the results from the VAR?
- Role of noise (η)?

[#3] Dealing with noise

- Asset prices are typically very noisy, i.e. $s_t = a\varepsilon_t^{mp} + b\varepsilon_t^{info} + \eta_t$
  - Authors address this concern with a principal component approach

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- **Alternative approach** Is it possible to quantify noise by adding other high frequency variables to the system?

- Consider for example the following n high-frequency variables

	s_t^{FF}	s_t^{SP}	s_t^{WIL}	s_t^{EUR}	s_t^{YEN}	s_t^{Other}
ε_t^{mp}	> 0	< 0	< 0	< 0	< 0	...
ε_t^{info}	> 0	> 0	> 0	$\cdot$	$\cdot$	...

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ε_t^{mp}	> 0	< 0	< 0	< 0	< 0	...
ε_t^{info}	> 0	> 0	> 0	$\cdot$	$\cdot$	...

- Noise component (η_t) would be the linear combination of the $n-2$ unidentified shocks

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- Information component (ε_t^{info}) embedded in financial market surprises could be about both
  - Current and future demand conditions
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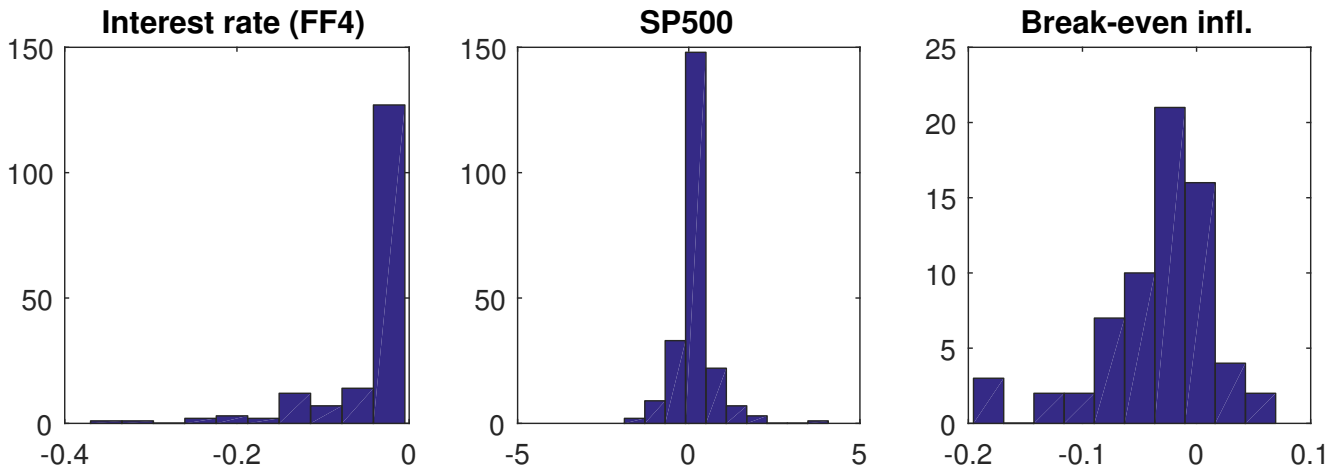
  - Current and future demand conditions
  - Potential supply

- Might be interesting to try and separate those components
  - Data on Tips is available from early 2000s.
  - Could use an additional sign restriction to back out $\varepsilon_{dem,t}^{info}$ and $\varepsilon_{sup,t}^{info}$



NOTE. 30 minutes surprises around FOMC meetings. All observations with non-zero FF4 surprises.

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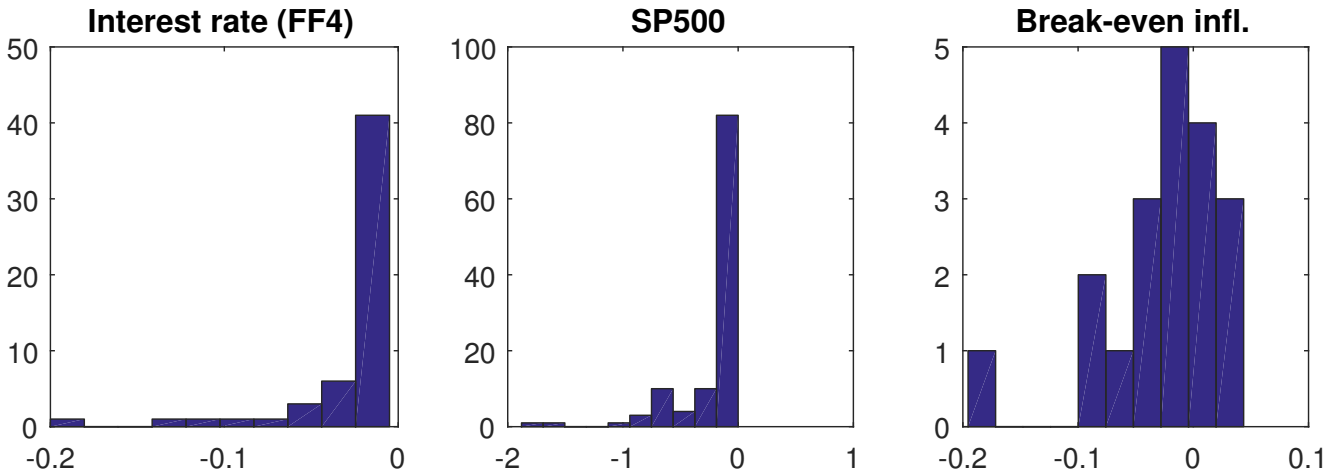

NOTE. 30 minutes surprises around FOMC meetings. Observations with negative equity surprises (and non-zero FF4 surprises) only.

Summing up

- **Great and important paper** Better understanding of monetary policy transmission mechanism
- Understand more and reconcile existing evidence on the quantitative importance of information shocks
- Role of information shock (and severity of the bias from ignoring it) should be a function of instrument used, sample period, and country. E.g.:
  - FF1 vs. FF4?
  - Increasing central banks' transparency?
  - Crisis vs. normal times? Booms vs. recessions?
  - Unconstrained monetary policy vs. ZLB?
- Opens up many interesting new dimensions for research

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Appendix

Traditional identification problem: The high frequency approach

- How to disentangle systematic vs. non-systematic component?
- Paper builds on high frequency identification approach [Cook and Hahn (1989), Kuttner (2001), Cochrane and Piazzesi (2002), Gurkaynak et al (2005)]
- Focus on movements (*surprises*) in asset prices in a narrow window around FOMC meetings
  - A disproportionate amount of monetary news is revealed within this narrow window
- Because of the short window, the surprise cannot represent the Fed's response to other shocks
  - Rules out systematic component $\Rightarrow$ 'Exogenous' monetary news

High frequency identification

Systematic component vs. Monetary policy news

- Assume the Central Bank (CB) and market participants (Mkt) have full information about the state of the economy x_t

Realized policy rate	$i = \phi x_t + \varepsilon_t^{mp}$
Expected policy rate	$\mathbb{E}^{Mkt}[i] = \phi x_t$
30-mins surprise	$s_t = i - \mathbb{E}^{Mkt}[i] = \varepsilon_t^{mp}$

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