

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

Banco de España – October 9-10, 2017

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

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  - (1) Current and future path of monetary policy ('traditional' channel)
  - (2) Central bank's view about economic fundamentals (signalling channel)

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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**

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

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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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- ▶ **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  $\varepsilon_t^{info}$
  - Regress  $s_t$  on Greenbook forecasts
  - Residual gives an estimate (up to scale) of  $\varepsilon_t^{mp}$

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  - See also [Miranda-Agrippino and Ricco \(2017\)](#), [Lakdawala \(2017\)](#), [Hubert \(2017\)](#)

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

- ▶ **New approach** Exploit the fact that  $\varepsilon_t^{mp}$  and  $\varepsilon_t^{info}$  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)
  - 4 press conferences by the Chair (at 2:30pm)
- ▶ How long does it take to 'digest' the news embedded in the surprises? Are 20 minutes enough to disentangle  $\varepsilon^{mp}$  from  $\varepsilon^{info}$ ?
- ▶ 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.

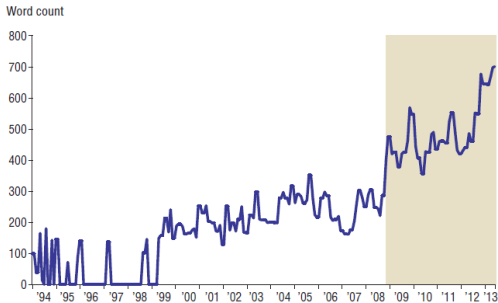
In taking the discount action, the Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of Boston, New York, Richmond, Chicago, St. Louis, Kansas City and San Francisco. The discount rate is the interest rate that is charged depository institutions when they borrow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

Chart 1 FOMC Statement Word Counts Increase, 1994–2013



NOTE: The shaded area is the period of the FOMC's unconventional monetary policy with interest rates at the effective lower bound of near zero.

SOURCE: Federal Reserve Board.

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

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- ▶ 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

- ▶ Authors find that 1/3 of the variation in the financial market surprises are due to information shock ( $\varepsilon_t^{info}$ )

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- ▶ **Cesa-Bianchi, Thwaites, Vicendoa (2016)** Using UK data, a different instrument, and sample period, find that  $\varepsilon_t^{info}$  is not likely to play a major role
  - Proxy for  $\varepsilon_t^{mp}$  that controls for  $\varepsilon_t^{info}$ 
    - \* Narrative series of [Cloyne and Huertgen, 2014](#)
  - Overidentification test in a proxy SVAR using  $s_t$  and  $\varepsilon_t^{mp}$
  - 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)
$\pi$	0.0227** (2.161)	0.0145** (2.109)	0.0152 (1.611)
$dy$	0.0166* (1.724)	0.0209*** (3.077)	0.0256*** (3.072)
$\Delta\pi$	-0.0289** (-2.387)	-0.0178* (-1.925)	-0.0185 (-1.528)
$\Delta dy$	-0.00663 (-1.309)	-0.00755* (-1.881)	-0.00627 (-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

- ▶ 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 ( $\eta$ )?

## [#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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  - Authors address this concern with a principal component approach
- ▶ **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

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

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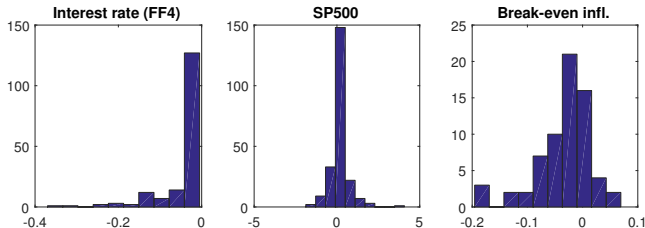
- ▶ Noise component ( $\eta_t$ ) would be the linear combination of the  $n - 2$  unidentified shocks

## [#4] Demand and supply information shocks

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

# [#4] Demand and supply information shocks

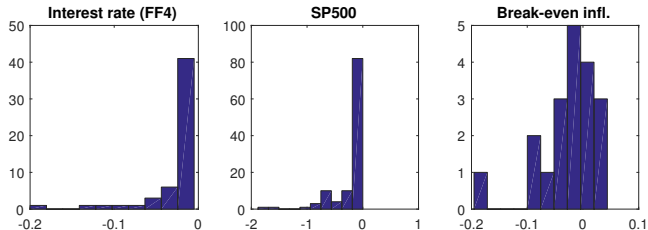
- ▶ Information component ( $\varepsilon_t^{info}$ ) embedded in financial market surprises could be about both
  - Current and future demand conditions
  - Potential supply
- ▶ Might be interesting to try and separate those components
  - Data on Tips is available from early 2000s.
  - Could use an 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  $x_t$

$$\text{Realized policy rate} \quad i = \phi x_t + \varepsilon_t^{mp}$$

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