Systematic Monetary Policy and the Effects of Government Spending

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The views expressed in this paper are those of the authors and do not necessarily reflect those of the Banque de France or the Eurosystem.

Motivation

- How does systematic monetary policy shape the fiscal spending multiplier?

- Theory is well understood
  - In a stylized Taylor rule

$$i_t = \phi_t \pi_t + \varepsilon_t$$

    ϕ_t is time-varying systematic monetary policy
  - Fiscal spending affects inflation (expectations)
  - Monetary offset: a larger ϕ_t typically dampens the effects of spending

- Empirically identifying the monetary offset is challenging
  - Endogeneity of systematic MP
  - Lucas critique

What we do

- **New identification design to study the effects of Fed's systematic MP**
  - Measure and model historical variation in perceived systematic MP (Istrefi, 2019)
    ↪ *address Lucas critique*
  - Propose FOMC rotation instrument
    ↪ *address endogeneity of FOMC composition*

- **New empirical evidence on gov't spending and systematic MP in the US**
  - Average FOMC: fiscal multipliers of 1
  - Dovish FOMC: fiscal multiplier of 2
  - Hawkish FOMC: fiscal multiplier of 0
  - Consistent responses of interest rates and inflation

Related literature

- **Systematic MP:** Sims (82), Primiceri (05), Leeper/Zha (03), Sims/Zha (06), Leeper/Traum/Walker (17), Eberly/Stock/Wright (19), Antolin-Diaz/Petrella/Rubio-Ramires (21), Benati(21), Cloyne/Jorda/Taylor (21), McKay/Wolf(22),...

  → **contribution: address endogeneity & Lucas critique in reduced-form**

- **Gov't spending:** Blanchard/Perotti (02), Mountford/Uhlig (09), Canova/Pappa (11), Ramey (11), Auerbach/Gorodnichenko (12, 13), Bachmann/Sims (12), Caldara (17), Ramey/Zubairy (18), Barnichon/Debortoli/Matthes (forthc.),...

  → **contribution: causal effect of systematic monetary policy**

Identification of systematic monetary policy in the US

PERMANENT VOTING MEMBERS

New York Fed President | Board of Governors (including Chair)

Voting Rotation Schedule of Federal Reserve Bank Presidents

YEAR 1 — VOTING MEMBERS			
Boston	Cleveland*	St. Louis	Kansas City

YEAR 2 — VOTING MEMBERS			
Philadelphia	Chicago*	Dallas	Minneapolis

YEAR 3 — VOTING MEMBERS			
Richmond	Cleveland*	Atlanta	San Francisco

*Cleveland and Chicago are on a two-year rotating schedule.

The Federal Open Market Committee (FOMC)

Policy preferences of FOMC members

- Istrefi's (19) provides news-based **classification** of 130 FOMC members (1960-2014)
  - ↪ Hawk: most concerned about stable and low inflation
  - ↪ Dove: most concerned about employment & stimulating growth

- Measure of **perceived policy preferences** in US newspapers and financial media
  - ↪ Captures true tendencies (dissents, preferred rates, forecasts) and shaped by education/experience (Istrefi, 2019 and Bordo/Istrefi, 2021)

- **Aggregate Hawk-Dove balance**

$$Hawk_\tau = \frac{1}{|\mathcal{M}_\tau|} \sum_{i \in \mathcal{M}_\tau} Hawk_{i\tau}, \quad |\mathcal{M}_\tau| \approx 12 \text{ FOMC members}, \quad Hawk_{i\tau} = \begin{cases} +1 & \textit{Hawk} \\ +\frac{1}{2} & \textit{Swinging hawk} \\ \pm 0 & \textit{No information} \\ -\frac{1}{2} & \textit{Swinging dove} \\ -1 & \textit{Dove} \end{cases}$$

  - ↪ Avoids specification of policy rule and policy instruments

FOMC rotation instrument

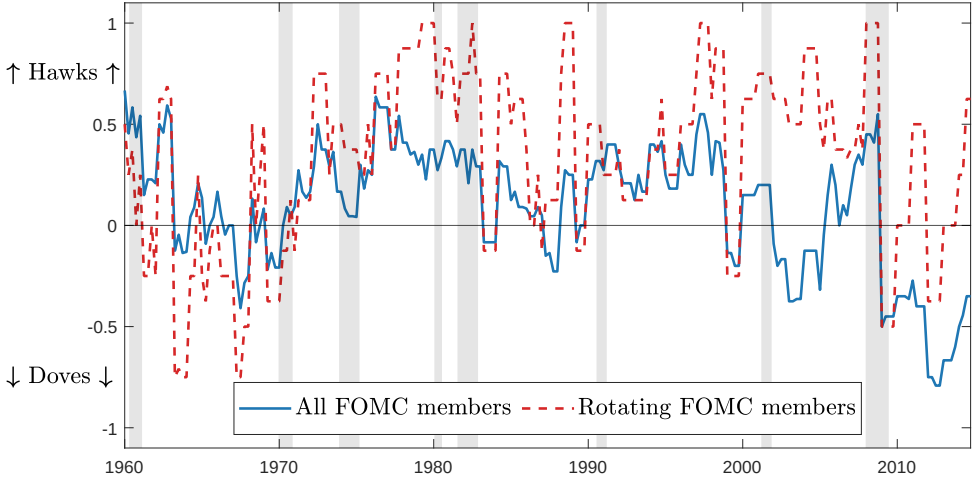
- Hawk-Dove balance may be **endogeneous** to state of the economy
  (*e.g., Nixon pressed governors into dovish policy to support 1972 re-election campaign*)

- **FOMC rotation instrument**

$$Hawk_t^{IV} = \frac{1}{|\mathcal{R}_t|} \sum_{i \in \mathcal{R}_t} Hawk_{it}, \qquad |\mathcal{R}_t| \approx 4 \text{ rotating FOMC members}$$

- Instrument **plausibly exogenous**
  - **Rotation** of voting rights is **mechanical**: orthogonal to state of the economy
  - FRB presidents serve long terms (avg: 11 years)
  - Appointments of FRB presidents are decided regionally
    (*e.g., five hawks were appointed regional FRB presidents 1970-72*)
  - Swings rarely happen

Hawk-Dove balance and rotation instrument



Government spending and monetary policy

How do the effects of spending shocks depend on systematic MP?

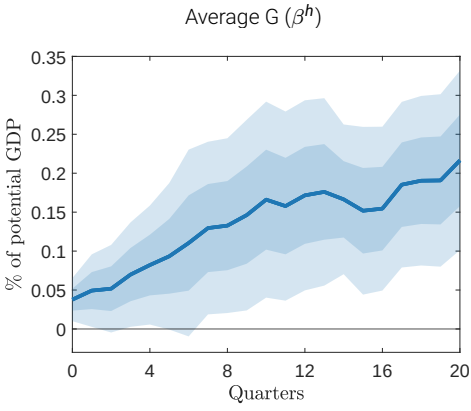
- **Identification design**: estimate how systematic U.S. monetary policy shapes the propagation of any shock via the IV estimates of the interacted LP

$$x_{t+h} = \alpha^h + \boxed{\beta^h}\, s_t + \boxed{\gamma^h}\, s_t(Hawk_t - \overline{Hawk}) + \delta^h(Hawk_t - \overline{Hawk}) + \zeta^h Z_{t-1} + v^h_{t+h}$$

  - Quarterly data, 1960-2014
  - x_{t+h}: outcome of interest (e.g., GDP)
  - s_t: military spending news shock (Ramey/Zubairy, 18)
  - Z_{t-1}: 4 lags of GDP, G, and s_t
  - Q_t: Instrument vector (omitting constant and controls)

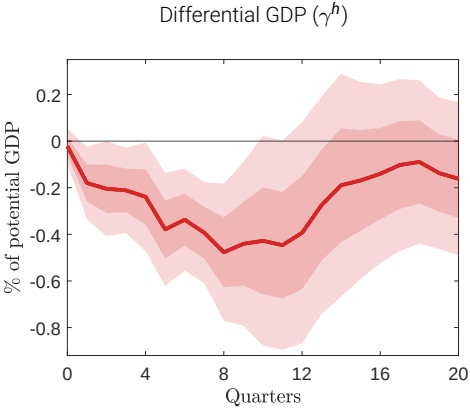
$$Q_t = \left[\, s_t,\ s_t \left(Hawk_t^{IV} - \overline{Hawk_t}^{IV}\right),\ Hawk_t^{IV} - \overline{Hawk_t}^{IV} \,\right]$$

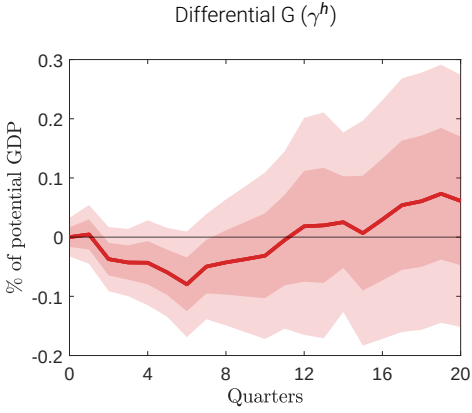
Average response of GDP and G



Note: IV estimates and their 68% and 95% confidence intervals (Newey-West).

Differential response of GDP and G





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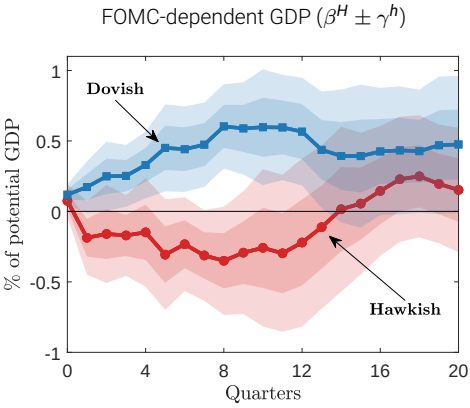
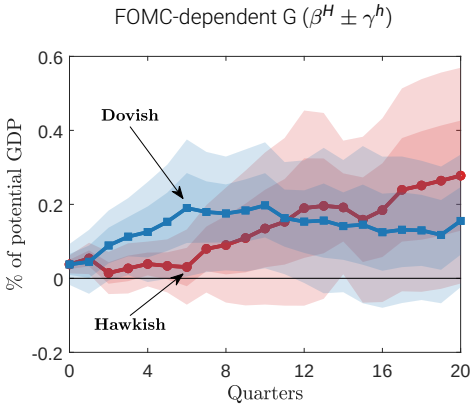
State-dependent response of GDP and G





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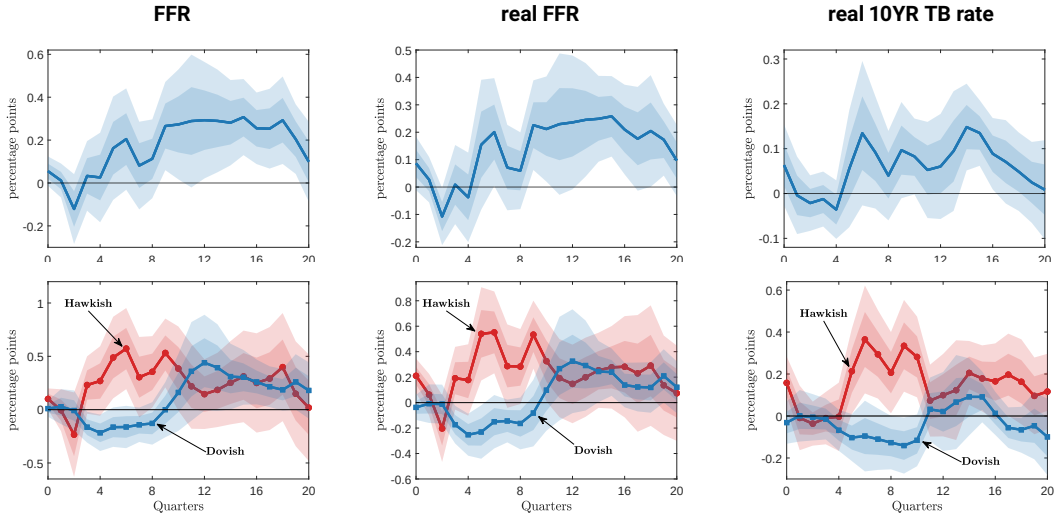
Fiscal multipliers

$$\text{FM}^h(\chi) = \frac{\sum_{i=0}^{h} \beta^i_{\text{GDP}} + \gamma^i_{\text{GDP}}\chi}{\sum_{i=0}^{h} \beta^i_{\text{G}} + \gamma^i_{\text{G}}\chi}$$

	Non-linear model					Linear model
Outcome	+2 Hawks	+1 Hawk	Average	+1 Dove	+2 Doves	Average
			Four-year horizon			
Multiplier	-1.852 (2.807)	-0.007 (0.880)	1.305 (0.467)	2.286 (0.793)	3.047 (1.128)	0.845 (1.392)
GDP (*cum*)	-2.781 (2.535)	-0.013 (1.586)	2.756 (0.891)	5.524 (1.123)	8.293 (1.979)	1.557 (2.714)
G (*cum*)	1.501 (1.059)	1.806 (0.851)	2.111 (0.787)	2.416 (0.898)	2.721 (1.134)	1.844 (0.713)

Note: Driscoll-Kraay standard errors are in parenthesis. Details

Responses of interest rates



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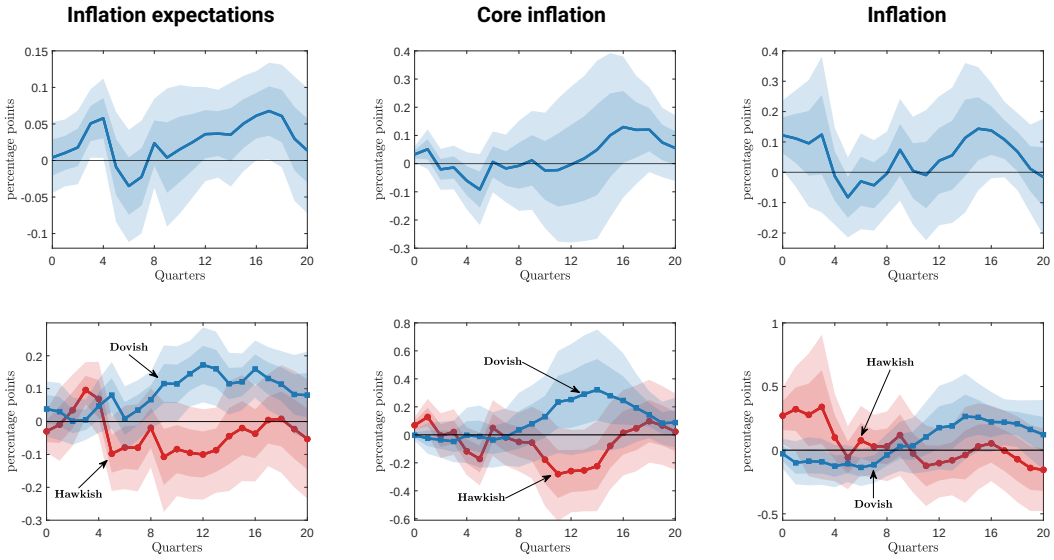
Responses of inflation



Note: IV estimates and their 68% and 95% confidence intervals (Newey-West).

Additional results

- Crowding-in/out of consumption and investment go
- Crowding-in/out of non-defense spending go
- Relation to monetary policy shocks go
- Blanchard/Perotti spending shocks go
- Non-linear controls go
- Hawk-Dove aggregation (trends, median, fed chair) go
- Fed Chair fixed effects go
- Pre-Great Recession go
- Shadow interest rates go
- OLS estimation go

Conclusion

- **New identification design to study the effects of Fed's systematic MP**
  - Measure historical variation in perceived systematic MP
  - Propose FOMC rotation instrument
- **New empirical evidence on gov't spending and systematic MP in the US**
  - Effects of fiscal policy crucially depend on monetary response
  - Fiscal spending multiplier 1 for average FOMC, 0 for hawkish FOMC, 2 for dovish FOMC