Measuring the Fed-Information Effect

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Introduction

- Monetary Policy

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    - Crucial for stabilizing the business cycle

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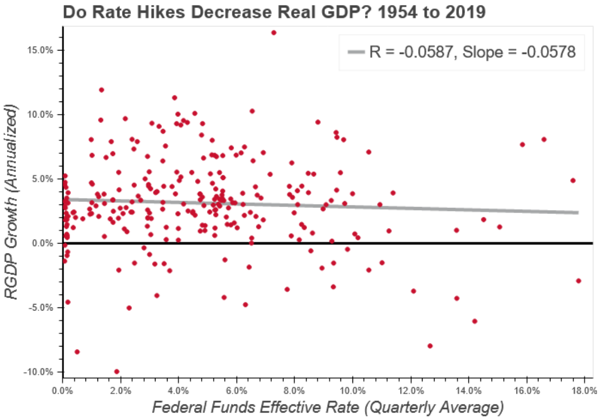

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- Bauer and Swanson (2020)
    - Presents "Fed-information effect"
    - Implies Nakamura indicator has omitted variable bias

Economic Theory

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- $$i_m = i_m^p(\text{PubInfo}_m) + X_m(\text{FedInfo}_m)'\alpha + \epsilon_m$$
  - i_m^p: Private sector forecast of i_m
  - X_m: Vector of state variable forecasts
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- $$\begin{aligned} i_m - i_m^p(\text{PubInfo}_m) &= X_m(\text{FedInfo}_m)'\alpha + \epsilon_m \\ FS_m &= X_m(\text{FedInfo}_m)'\alpha + \epsilon_m \end{aligned}$$

  FS_m: Change in FFR Futures price over a 30 minute window around FOMC announcement corresponding to meeting m

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- Suppose we have some variable y_m...

$$
\begin{aligned}
y_m &= \beta_0 + \beta_1 \epsilon_m + v \\
y_m &= \beta_0 + \beta_1 (FS_m - X_m(\text{FedInfo}_m)'\alpha) + v \\
y_m &= \beta_0 + \beta_1 FS_m - \beta_1 X_m(\text{FedInfo}_m)'\alpha + v \\
y_m &= \beta_0 + \beta_1 FS_m + u
\end{aligned}
\tag{4}
$$

$$\mathrm{Cov}(FS_m, u) \neq 0$$

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$$
\begin{aligned}
FS_m = \alpha &+ \sum_{i=0}^{2} \gamma_i \widetilde{\Delta y}_{mi} + \sum_{i=0}^{2} \lambda_i \left(\widetilde{\Delta y}_{mi} - \widetilde{\Delta y}_{m-1,i} \right) \\
&+ \sum_{i=0}^{2} \phi_i \tilde{\pi}_{mi} + \sum_{i=0}^{2} \theta_i \left(\tilde{\pi}_{mi} - \tilde{\pi}_{m-1,i} \right) + \rho \tilde{u}_{m0} + \epsilon_m
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- For y_m, I follow the methodology of Bauer and Swanson (Bauer and Swanson) and use the 24 hour change in the log of the S&P500 stock market index.

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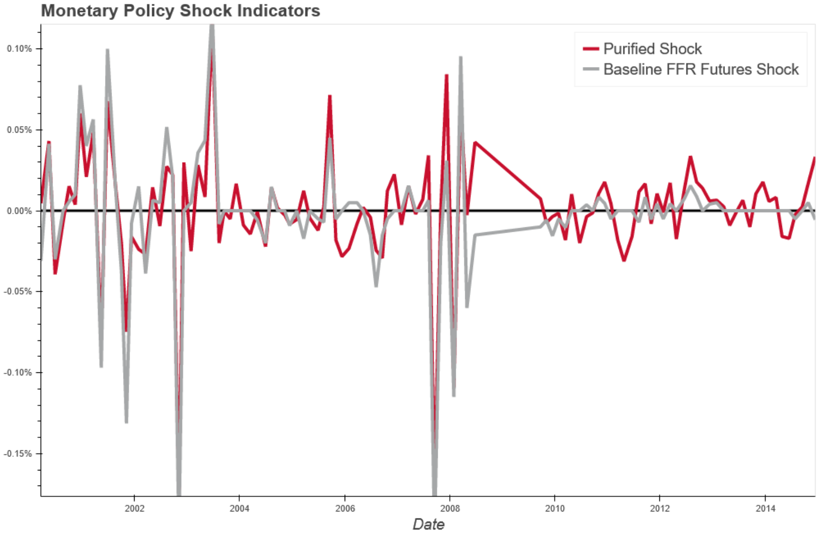

Monetary Policy Shock Indicators
Purified Shock
Baseline FFR Futures Shock
0.10%
0.05%
0.00%
-0.05%
-0.10%
-0.15%
2002
2004
2006
2008
2010
2012
2014
Date

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$$\Delta \log (\text{S\&P500}_m) = \beta_0 + \beta_1 FS_m + u$$

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$$\Delta \log \left(\mathrm{S\&P500}_m\right) = \beta_0 + \beta_1 FS_m + u$$

- Model 2:

$$\Delta \log \left(\mathrm{S\&P500}_m\right) = \delta_0 + \delta_1 \hat{\epsilon}_m + w$$

Empirical Analysis: Wu-Hausman Test

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H_0 :δ_1 and β_1 are consistent.

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$$\text{Test statistic: } H = \frac{(\hat{\delta}_1 - \hat{\beta}_1^R)^2}{\mathrm{Var}(\hat{\delta}_1) - \mathrm{Var}(\hat{\beta}_1^R)} \sim \chi_1^2$$

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$$H = \frac{(-7.154 + 6.518)^2}{2.919^2 - 2.601^2} = .2304$$

References

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