

PRESENTATION TITLE

Alexander Vlasov (avlasov@nes.ru)

New Economic School – 2024-06-20

Available at <https://github.com/avlsv/CheckingHank>

RESEARCH QUESTION

SYSTEMATIC MONETARY POLICY IDENTIFICATION

Monetary Policy Rule Counterfactuals

- McKay and Wolf (2023); Barnichon and Mesters (2023) use the identified shocks and impulse responses to them to minimize a loss function.

FOMC Preferences

- Hack, Istrefi, and Meier (2023) use Istrefi (2019) data on preferences of FOMC members and using the FOMC rotation mechanism they are able to construct an IV.

EMPIRICAL APPROACH

STATE-DEPENDENT LP MODEL

Based on method of Hack, Istrefi, and Meier (2023).

I assume that the monetary policy rule is

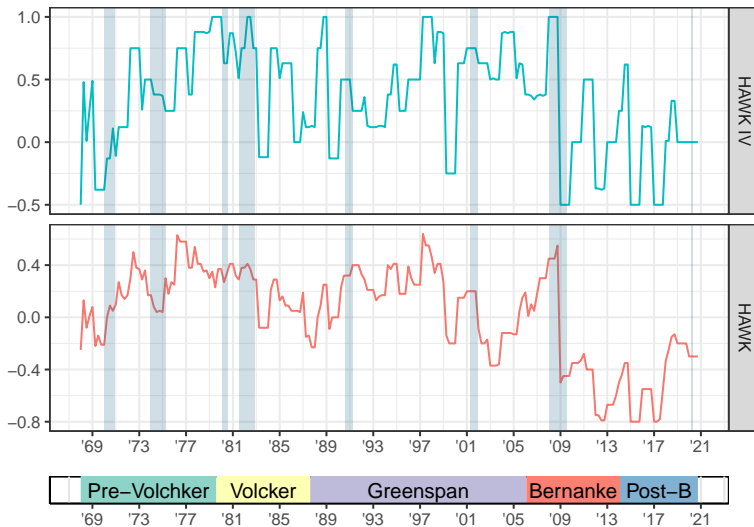
$$(r - r^*)_{t+h} = \phi_t^h \mathbb{E} [\pi_{t+1} \mid \mathcal{I}_t] + \psi_t^h \mathbb{E} [x_{t+1} \mid \mathcal{I}_t] + \varepsilon_t.$$

$\mathbb{E}_t \pi_{t+1}$ and $\mathbb{E}_t x_{t+1}$ are the expectations of monetary authority about inflation (deflator/CPI) and output gap (or unemployment gap) at quarter $t + 1$.

Then assuming stimate the following State-Dependent LP-IV.

$$\begin{aligned} (r - r^*)_{t+h} = & \alpha^h + \beta_\pi^h \hat{\pi}_t + \gamma_\pi^h \hat{\pi}_t (\text{Hawk}_t - \overline{\text{Hawk}}) \\ & \beta_u^h \hat{x}_t + \gamma_u^h \hat{u}_t (\text{Hawk}_t - \overline{\text{Hawk}}) \\ & + \delta^h (\text{Hawk}_t - \overline{\text{Hawk}}) + \zeta^h Z + e_{t+h}^h, \end{aligned}$$

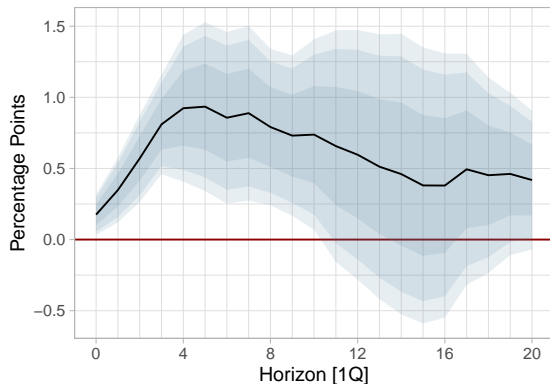
HAWK AND HAWK IV INDEXES FROM HACK, ISTREFI, AND MEIER (2023)



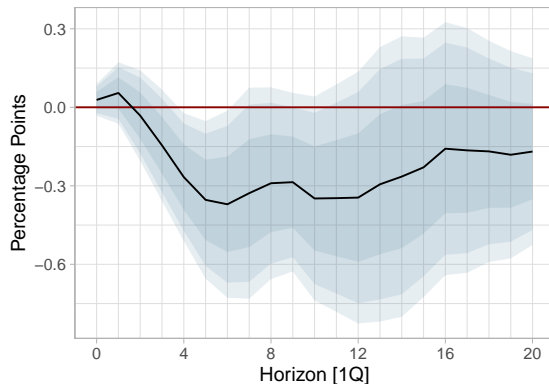
SHORT AND LONG MODELS

SHORT MODEL. $r - r^*$ RESPONSE TO PROJECTED CPI INFLATION

(a) Average Resp. to Projected CPI Inflation



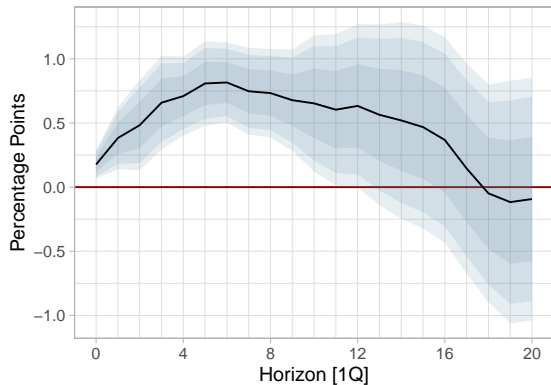
(b) Differential Resp. to Projected CPI Inflation



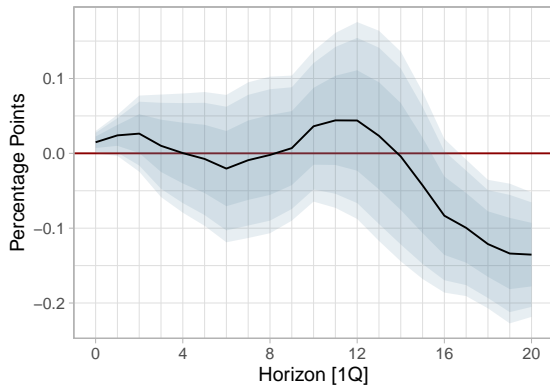
Notes: This figure reports the responses of the $(r - r^*)_t$ to an increase in the Tealbook CPI inflation projection and GDP gap projection of 1 p.p. The subfigure 1a reports the response of $(r - r^*)_t$ to projected CPI inflation for the *HAWK* index equal to the sample average; 1b is the addition to the response in case there are 2 (out of 12 in total) additional consistent hawks in the FOMC. The shaded areas correspond to 68%, 90% and 95% confidence intervals calculated with Andrews (1991) HAC estimator.

SHORT MODEL. $r - r^*$ RESPONSE TO PROJECTED GDP GAP

(a) Average Response to Projected GDP Gap

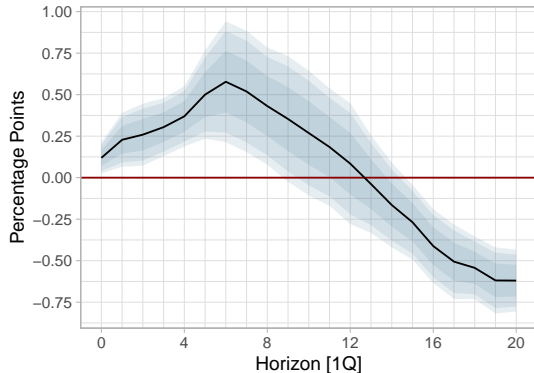
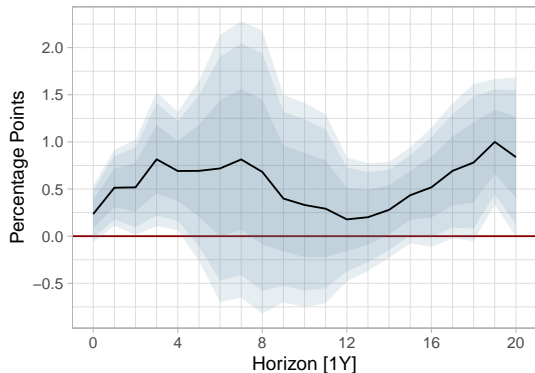


(b) Differential Response to Projected GDP Gap



Notes: This figure reports the responses of the $(r - r^*)_t$ to an increase in the Tealbook GDP gap projection of 1 p.p. The subfigure 2a reports the response of $(r - r^*)_t$ to projected output gap increase for the *Hawk* index equal to the sample average; 2b is the addition to the previous response in case there are 2 (out of 12 in total) additional consistent hawks in the FOMC. The shaded areas correspond to 68%, 90% and 95% confidence intervals calculated with Andrews (1991) HAC estimator.

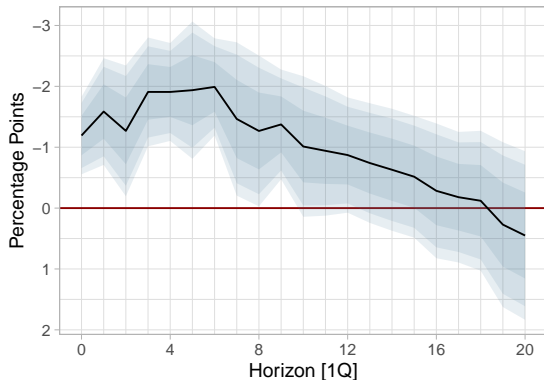
LONG MODEL. $r - r^*$ RESPONSE TO PROJECTED DEFLATOR INFLATION



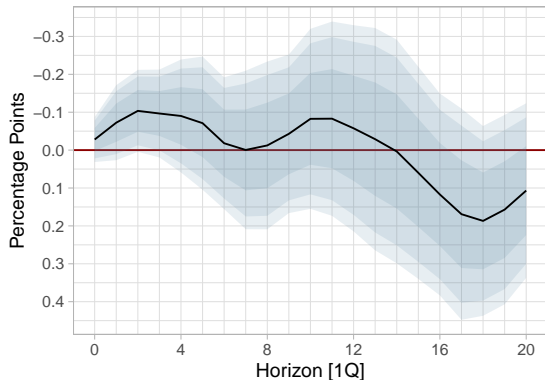
Notes: This figure reports the responses of the $(r - r^*)_t$ to an increase in the Tealbook GDP gap projection of 1 p.p. The subfigure 2a reports the response of $(r - r^*)_t$ to projected output gap increase for the *Hawk* index equal to the sample average; 2b is the addition to the previous response in case there are 2 (out of 12 in total) additional consistent hawks in the FOMC. The shaded areas correspond to 68%, 90% and 95% confidence intervals calculated with Andrews (1991) HAC estimator.

LONG MODEL. $r - r^*$ RESPONSE TO PROJECTED UNEMPLOYMENT GAP

(a) Average Response to Unempl. (β_u^h)



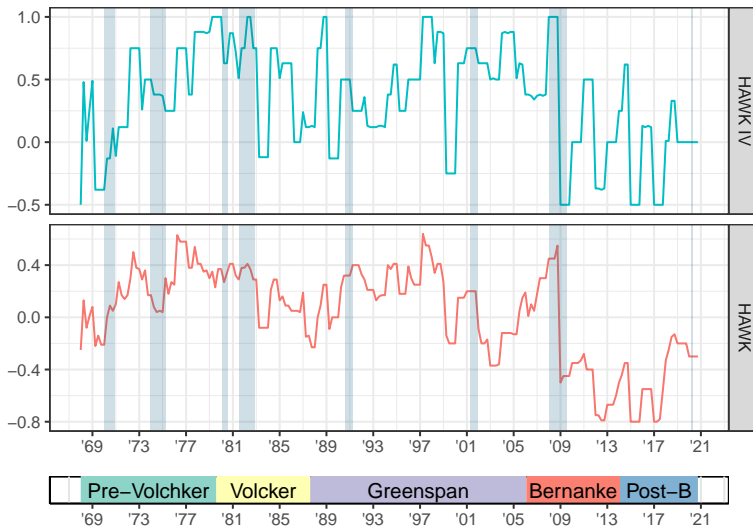
(b) Differential Response to Unempl. (γ_u^h)



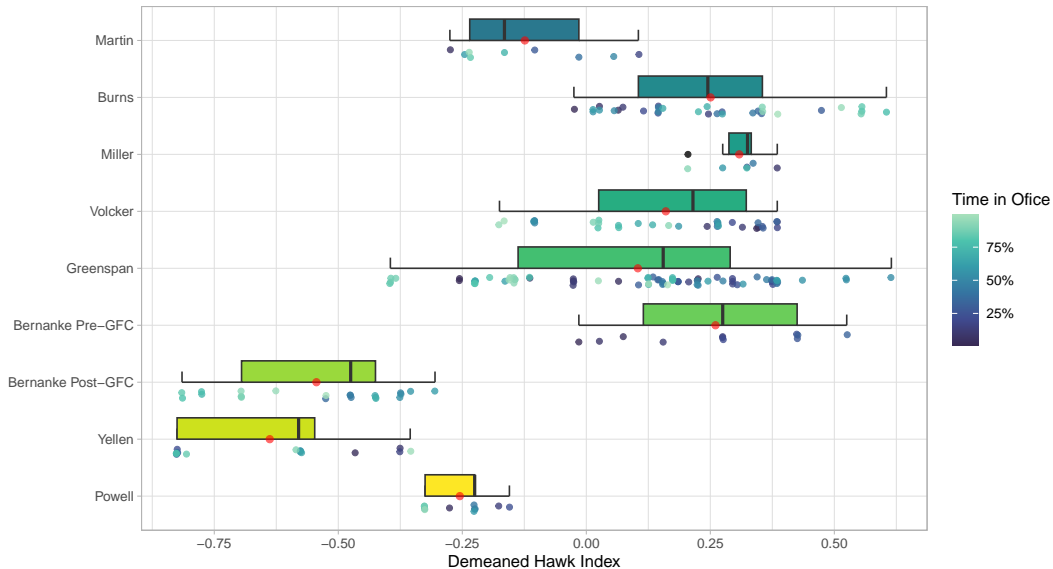
Notes: This figure reports the responses of the $(r - r^*)_t$ to an increase in the Tealbook GDP gap projection of 1 p.p. The subfigure 2a reports the response of $(r - r^*)_t$ to projected output gap increase for the *Hawk* index equal to the sample average; 2b is the addition to the previous response in case there are 2 (out of 12 in total) additional consistent hawks in the FOMC. The shaded areas correspond to 68%, 90% and 95% confidence intervals calculated with Andrews (1991) HAC estimator.

COMBINED IRF

HAWK AND HAWK IV INDEXES FROM HACK, ISTREFI, AND MEIER (2023)



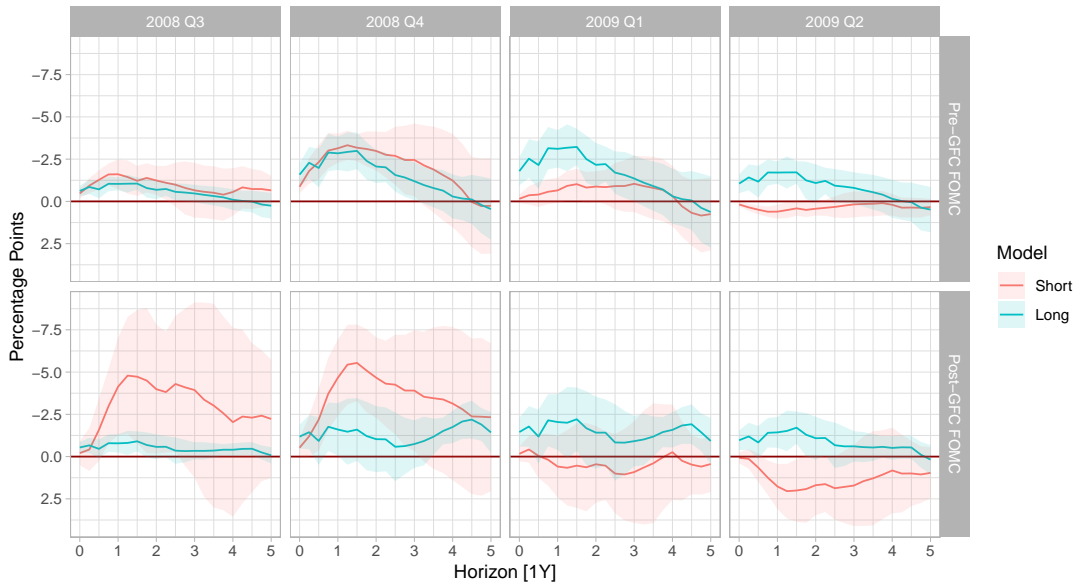
HAWK INDEX DISECTED BY FED CHAIR



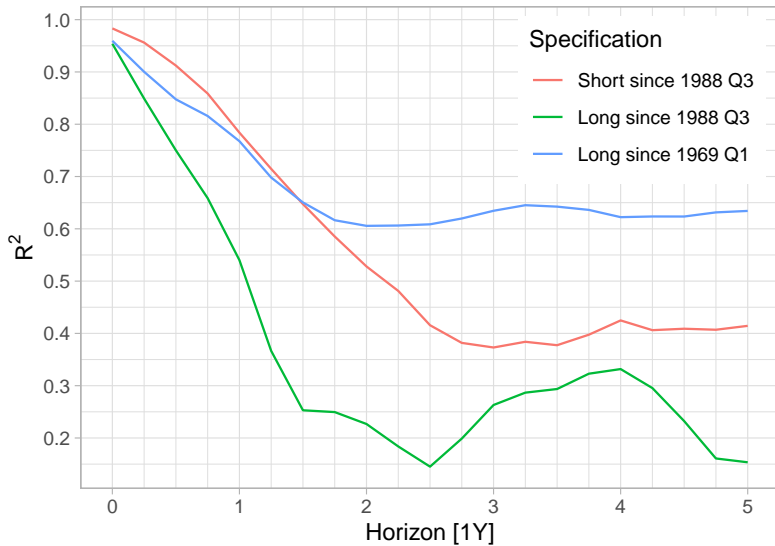
SHOCKS

		Δ CPI inflation	Δ GDP gap	Δ Deflator inflation	Δ Unemployment gap
1	2008 Q3	-2.40	0.05	-0.05	0.49
2	2008 Q4	-1.45	-3.03	-0.57	1.14
3	2009 Q1	1.18	-2.05	-0.40	1.36
4	2009 Q2	1.10	-0.21	0.03	0.87

IRF TO

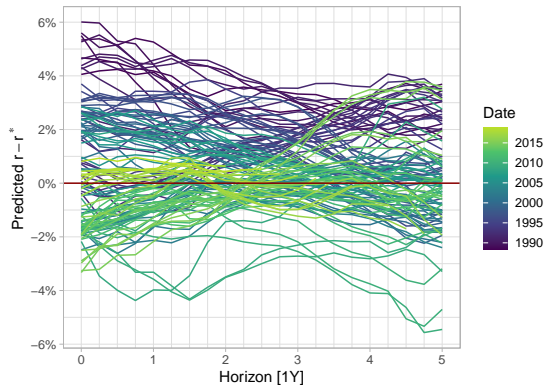
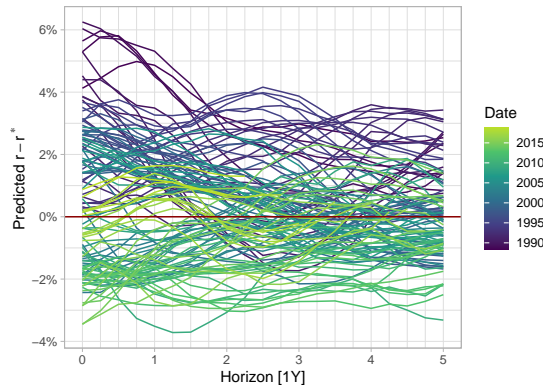


IN-SAMPLE PREDICTIVE ABILITY



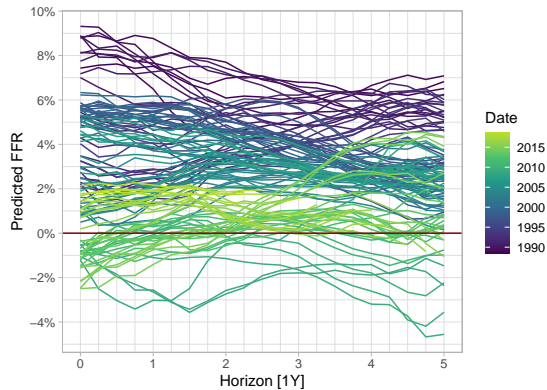
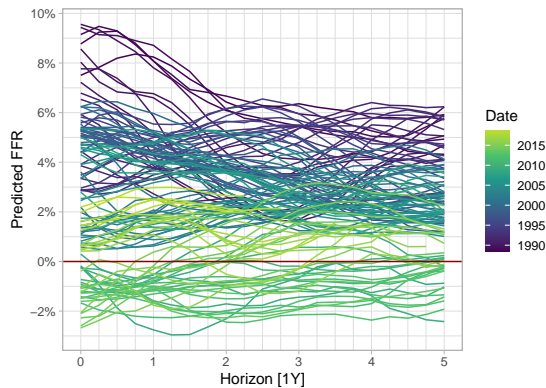
ESTIMATES OF LIQUIDITY PREMIA

PREDICTED $r - r^*$ PATHS

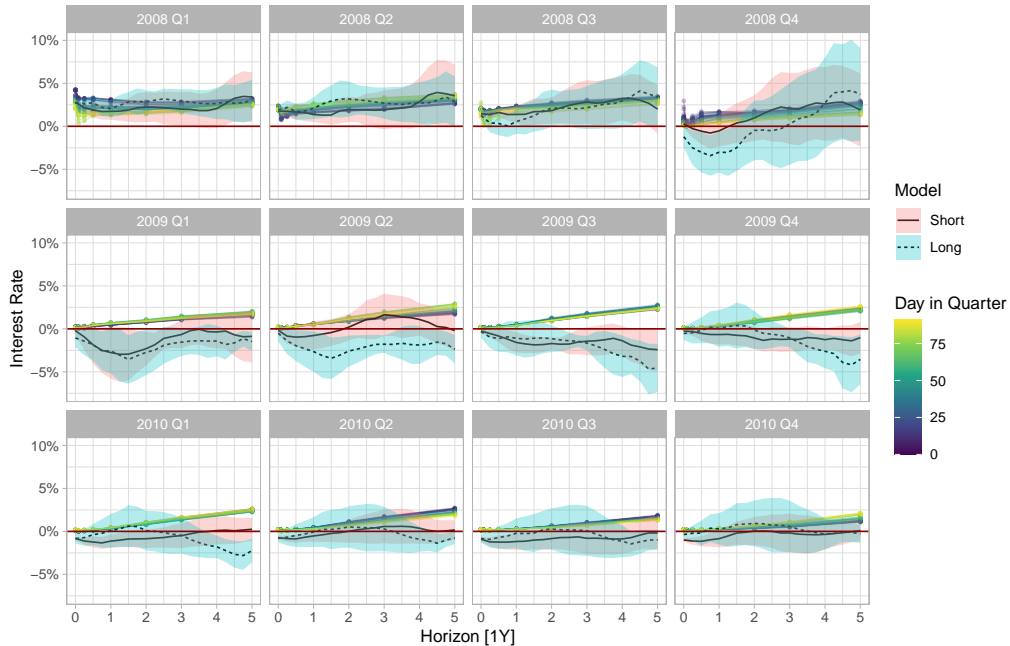


Notes: This figure shows the predictions of $r - r^*$ paths in each state calculated by short and long models.

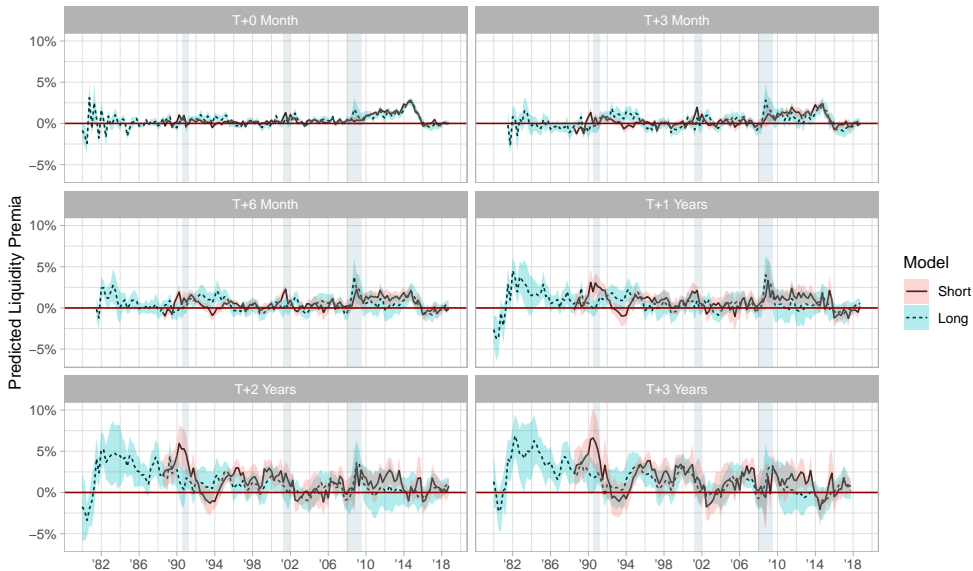
PREDICTED FFR PATHS



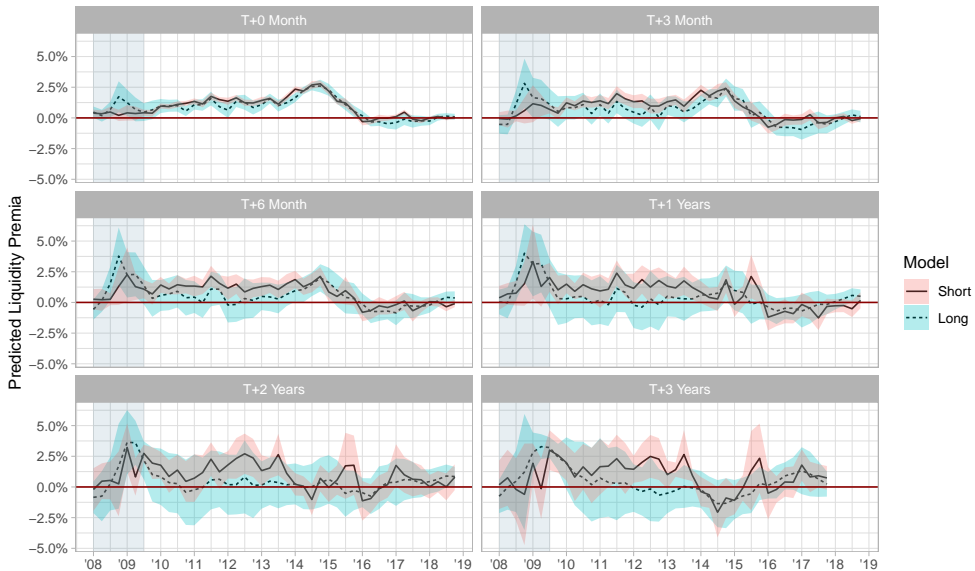
Notes: This figure shows the predictions of r paths in each state calculated by short and long models.



ESTIMATES OF LIQUIDITY PREMIA



ESTIMATES OF LIQUIDITY PREMIA ZOMMED TO 2008-2019



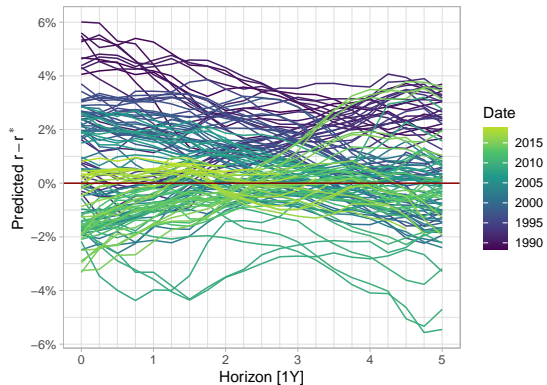
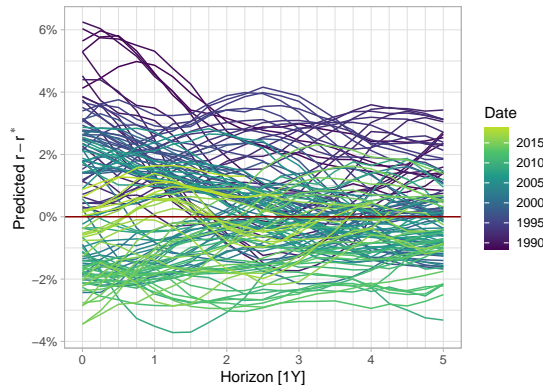
SIZE-PERSISTENCE ESTIMATIONS

OUTCOMES OF KAPLAN, MOLL, AND VIOLANTE (2018) MODEL

Kaplan, Moll, and Violante (2018) HANK model outcomes:

1. **Size-Persistence trade-off:** Cumulative elasticity of aggregate consumption declines with the increase with persistence of monetary policy path in a nonlinear manner.
2. **Inflation-Output Tradeoff:** the same Taylor rule shocks lead to the increased effects in Inflation-Output tradeoff.

PREDICTED $r - r^*$ PATHS



Notes: This figure shows the predictions of $r - r^*$ paths in each state calculated by short and long models.

SIZE-PERSISTENCE IN RANK

Rate path:

$$r_t = \rho + e^{-\eta t}(r_0 - \rho).$$

NK policy

$$C_0 = \bar{C} \exp \left(-\frac{1}{\gamma} \int_0^\infty (r_s - \rho) ds \right).$$

Size:

$$R_0 = \int_0^\infty (r_s - \rho) ds,$$

$$\frac{-d \log C_0}{dR_0} = \frac{1}{\gamma},$$

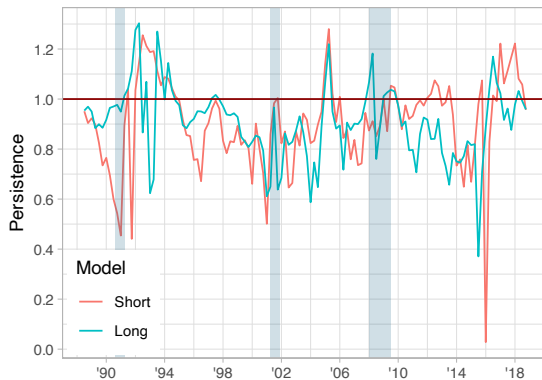
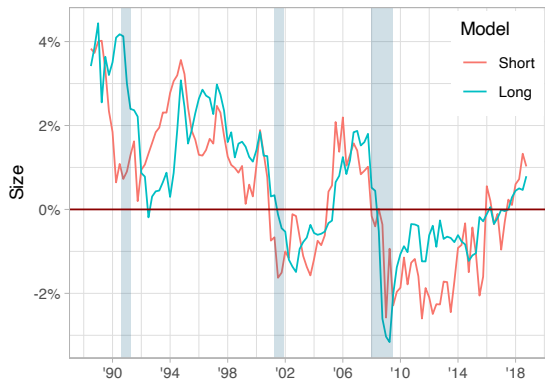
SIZE-PERSISTENCE

Estimates of Size and Persistence



Notes:

ESTIMATES OF SIZE OVER TIME



Notes: This figure presents the size and persistence, calculated as mean and the first autocorrelation of impulse-response function in each state, constructed as described in section 2 on page 27, over time.

CONCLUSIONS

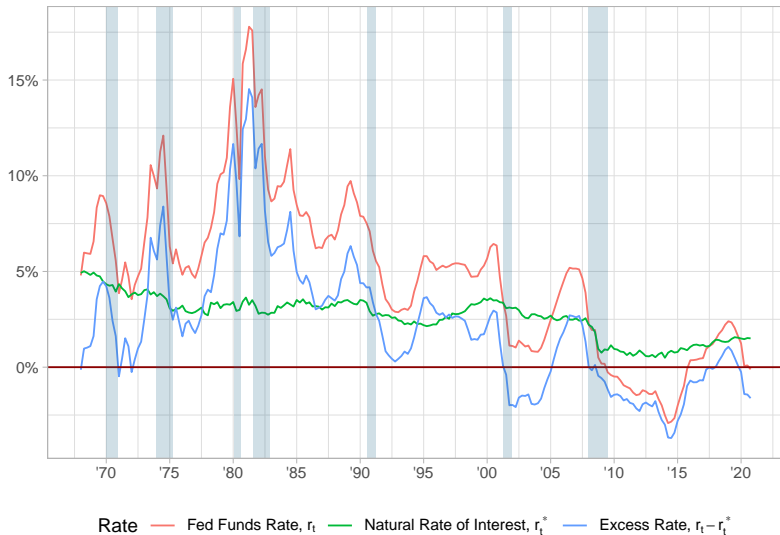
So, should we believe in HANK?

The evidence above suggests that, we should. At least we have found that consumption behaviour in size-persistent tradeoff corresponds to the TANK model.

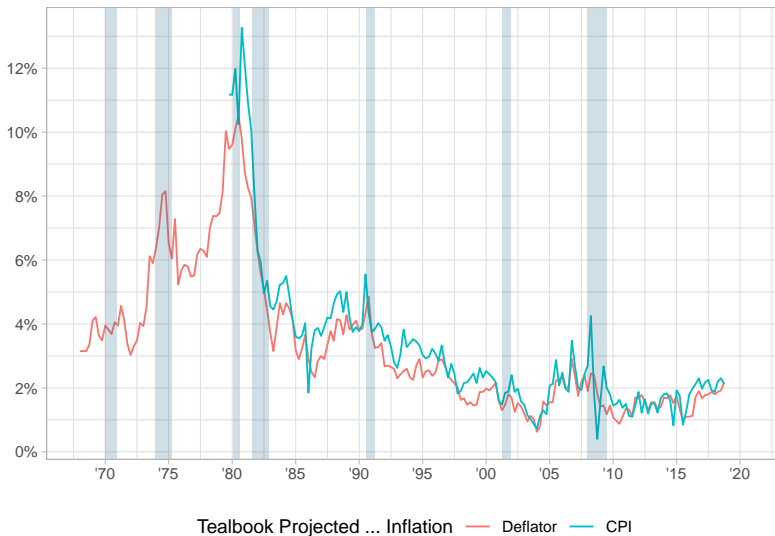
DATA

- Projections of FED inflation (deflator, and CPI), GDP gap, unemployment and NAIRU are from Tealbook (average of 1 and 2 quarter quarters ahead following Coibion and Gorodnichenko (2011) and averaging of FOMC meetings per quarter).
- HAWK index from Hack, Istrefi, and Meier (2023).
- Natural rate of interest by Holston, Laubach, and Williams (2017); Holston, Laubach, and Williams (2023).
- Short-term rate (r) is Fed Funds Rate and Wu and Xia (2016) shadow rate.

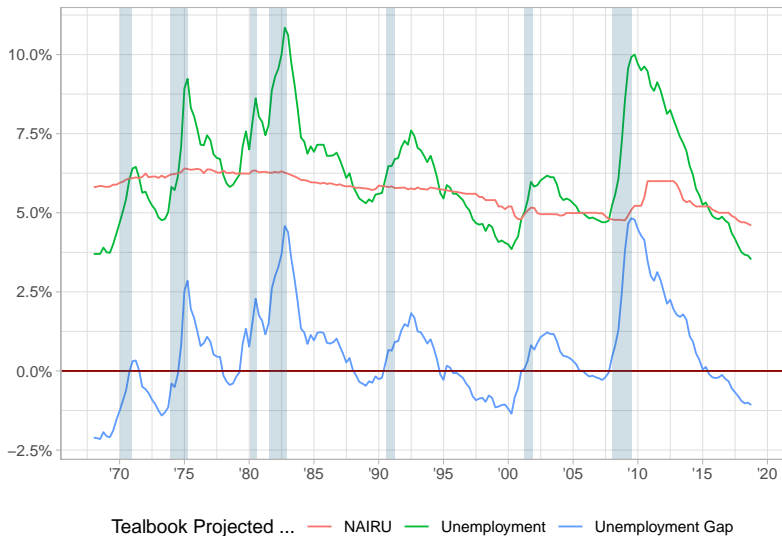
RATES



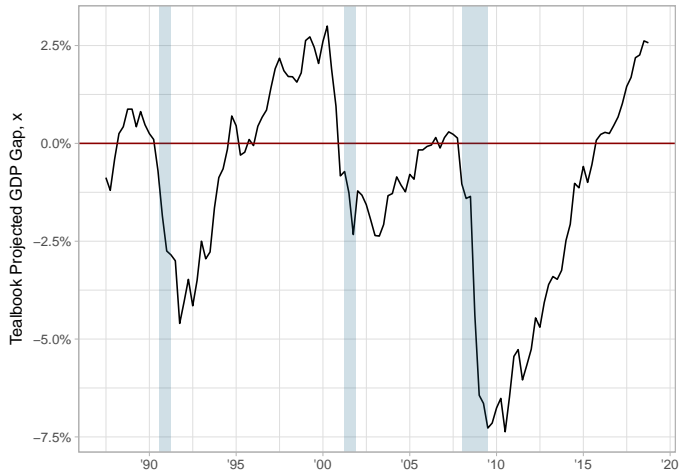
TEALBOOK INFLATION PROJECTIONS







TEALBOOK UNEMPLOYMENT PROJECTIONS







TEALBOOK OUTPUT GAP PROJECTIONS



REFERENCES [1]

-  Andrews, Donald W K (May 1991). “Heteroskedasticity and Autocorrelation Consistent Covariance Matrix Estimation”. In: *Econometrica* 59(3), pp. 817–858. URL: <http://www.jstor.org/stable/2938229>.
-  Barnichon, Regis and Geert Mesters (Nov. 2023). “A Sufficient Statistics Approach for Macro Policy”. In: *American Economic Review* 113(11), pp. 2809–45. DOI: 10.1257/aer.20220581. URL: <https://www.aeaweb.org/articles?id=10.1257/aer.20220581>.
-  Coibion, Olivier and Yuriy Gorodnichenko (2011). “Monetary Policy, Trend Inflation, and the Great Moderation: An Alternative Interpretation”. In: *The American Economic Review* 101(1), pp. 341–370. ISSN: 00028282. URL: <http://www.jstor.org/stable/41038791> (visited on 01/12/2024).
-  Hack, Lukas, Klodiana Istrefi, and Matthias Meier (Oct. 2023). *Identification of systematic monetary policy*. Working Paper Series 2851. European Central Bank. URL: <https://ideas.repec.org/p/ecb/ecbwps/20232851.html>.

REFERENCES [2]

-  Holston, Kathryn, Thomas Laubach, and John C. Williams (2017). “Measuring the natural rate of interest: International trends and determinants”. In: *Journal of International Economics* 108. 39th Annual NBER International Seminar on Macroeconomics, S59–S75. ISSN: 0022-1996. DOI: <https://doi.org/10.1016/j.jinteco.2017.01.004>. URL: <https://www.sciencedirect.com/science/article/pii/S0022199617300065>.
-  Holston, Kathryn, Thomas Laubach, and John C. Williams (2023). *Measuring the Natural Rate of Interest after COVID-19*. Staff Reports 1063. Federal Reserve Bank of New York.
-  Istrefi, Klodiana (2019). *In Fed Watchers' Eyes: Hawks, Doves and Monetary Policy*. Working papers 725. Banque de France. URL: <https://ideas.repec.org/p/bfr/banfra/725.html>.
-  Kaplan, Greg, Benjamin Moll, and Giovanni L. Violante (Mar. 2018). “Monetary Policy According to HANK”. In: *American Economic Review* 108(3), pp. 697–743. DOI: 10.1257/aer.20160042. URL: <https://www.aeaweb.org/articles?id=10.1257/aer.20160042>.

REFERENCES [3]



McKay, Alisdair and Christian K. Wolf (2023). “What Can Time-Series Regressions Tell Us About Policy Counterfactuals?” In: *Econometrica* 91(5), pp. 1695–1725. DOI:

<https://doi.org/10.3982/ECTA21045>. eprint:

<https://onlinelibrary.wiley.com/doi/pdf/10.3982/ECTA21045>. URL:

<https://onlinelibrary.wiley.com/doi/abs/10.3982/ECTA21045>.



Wu, Jing Cynthia and Fan Dora Xia (2016). “Measuring the Macroeconomic Impact of Monetary Policy at the Zero Lower Bound”. In: *Journal of Money, Credit and Banking* 48(2-3), pp. 253–291. DOI:

<https://doi.org/10.1111/jmcb.12300>. eprint:

<https://onlinelibrary.wiley.com/doi/pdf/10.1111/jmcb.12300>. URL:

<https://onlinelibrary.wiley.com/doi/abs/10.1111/jmcb.12300>.