



The natural rate of interest through the hall of mirrors

Phurichai Rungcharoenkitkul and Fabian Winkler

SUERF/OeNB workshop, 7 December 2023

Disclaimers: Views expressed do not necessarily reflect those of the Bank for International Settlements, Bank of Thailand, or the Board of Governors of the Federal Reserve System

The natural interest rate debate: an evolution

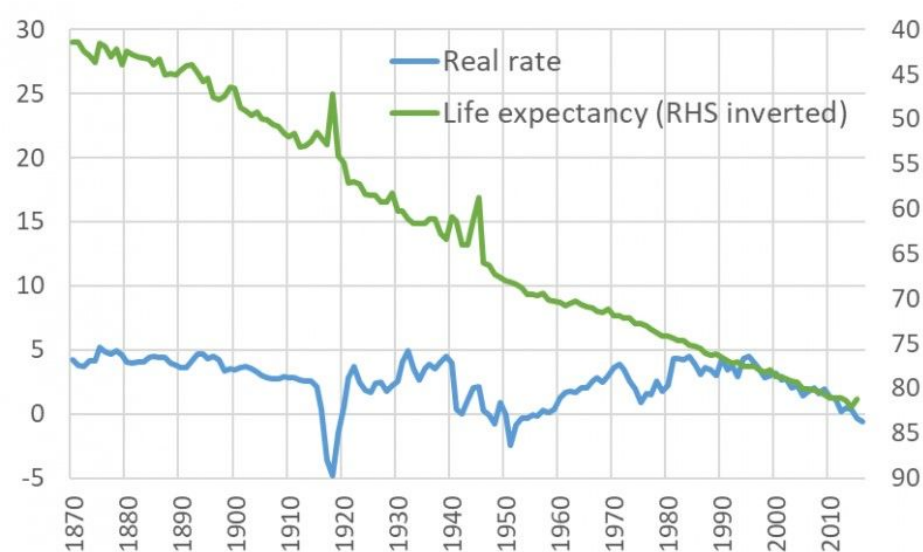
Post-GFC pre-COVID consensus

- Trend decline in real rate owes to falling *natural* interest rate (r -star)
- Linked to *structural* factors e.g. slowing productivity, demographic shifts (more savers & higher life expectancy), higher inequality, global saving glut etc
- With ELB, this poses problems for monetary policy

Post-COVID debate

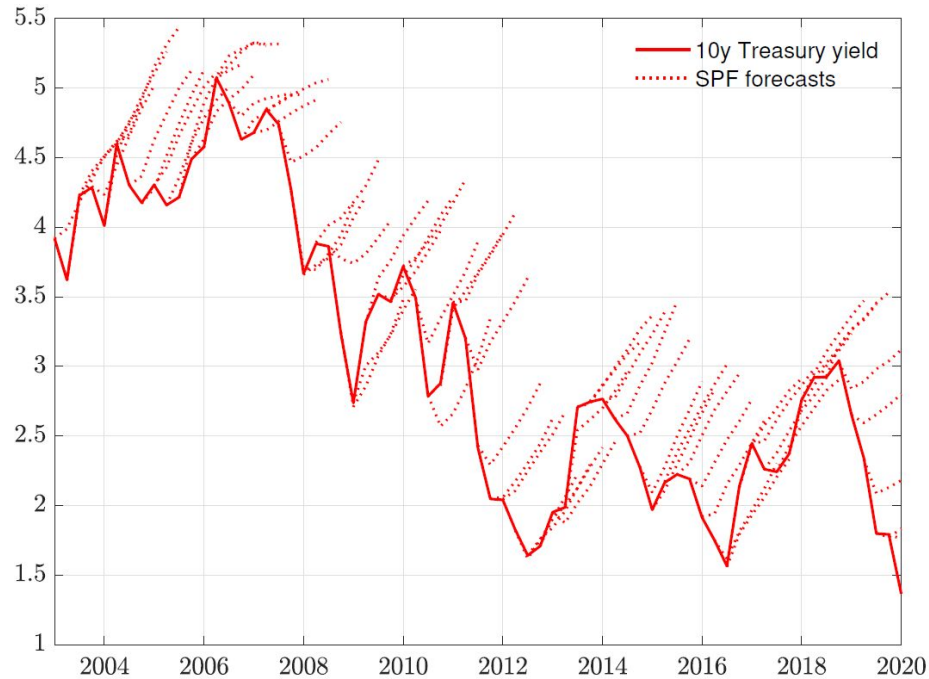
- Blanchard (2023): It would be surprising if the deep pre-COVID forces are going to revert in the opposite direction so soon.
- Summers (2023): Fed has raised rate substantially and yet the economy has not slowed. Lower sensitivity of demand to interest rates implies a higher r -star.

Puzzle 1: We know less than we think we do about r-star drivers

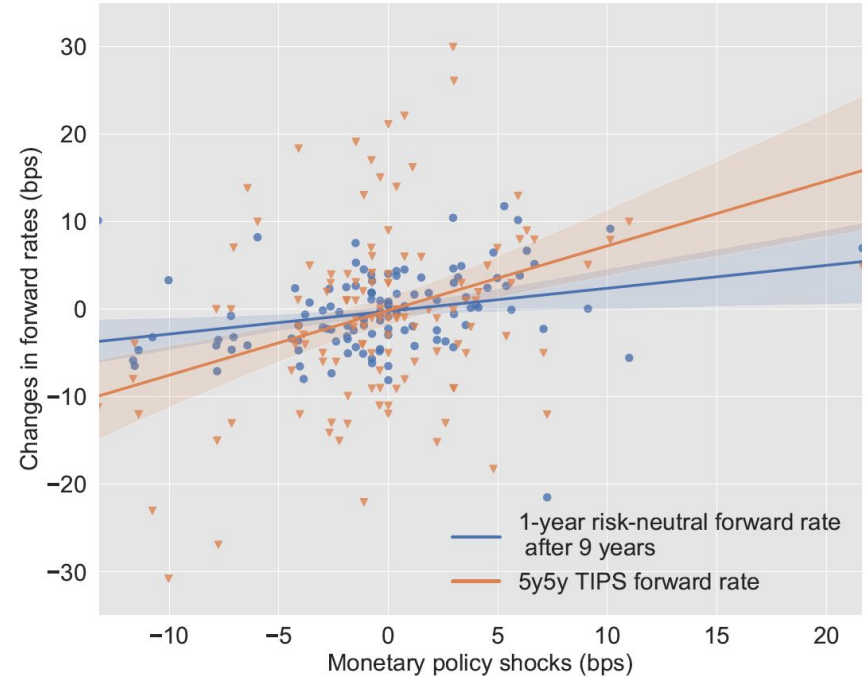
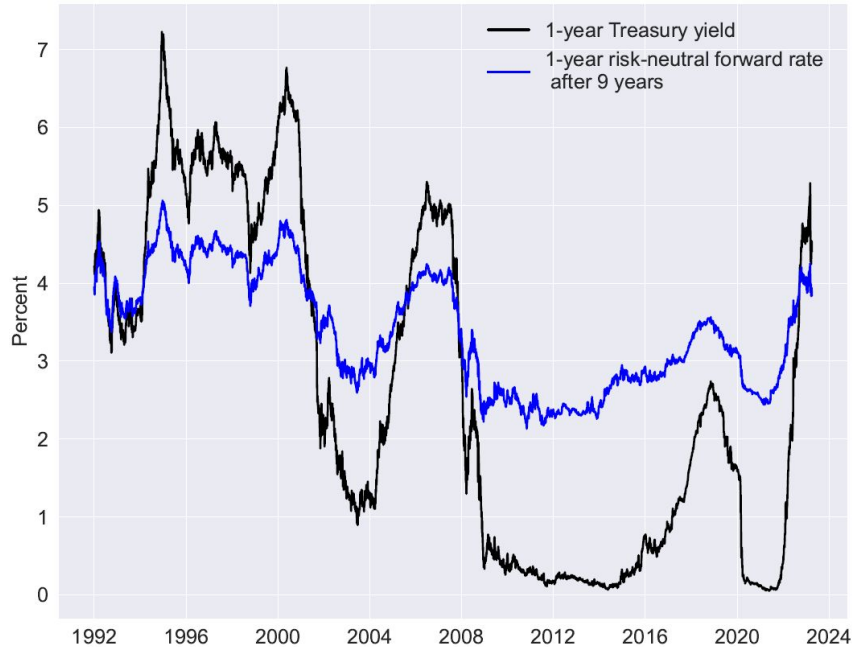


Sources: Borio, Disyatat, Juselius and Rungcharoenkitkul (2022)

Puzzle 2: Nobody anticipated the supposedly predictable r-star decline



Puzzle 3: Apparent influence of monetary policy on expected r-star ⇒ a violation of MP neutrality

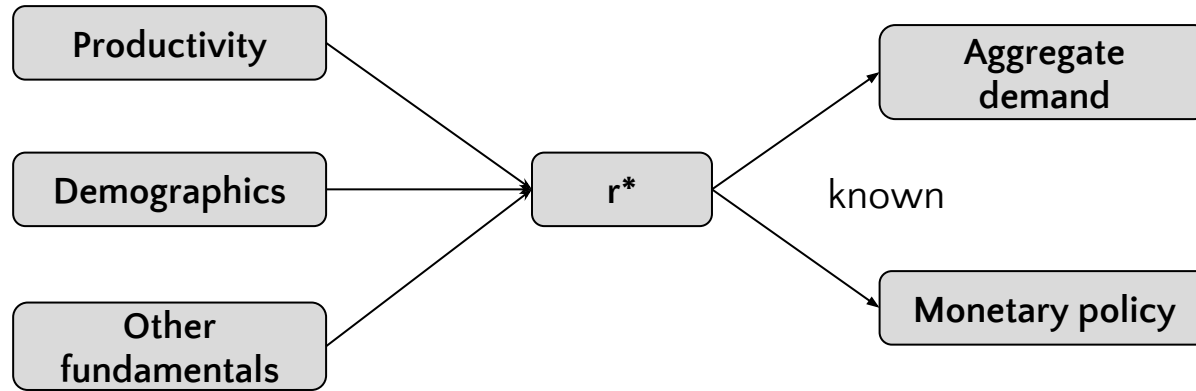


MP surprises explain most of the trend decline in yields



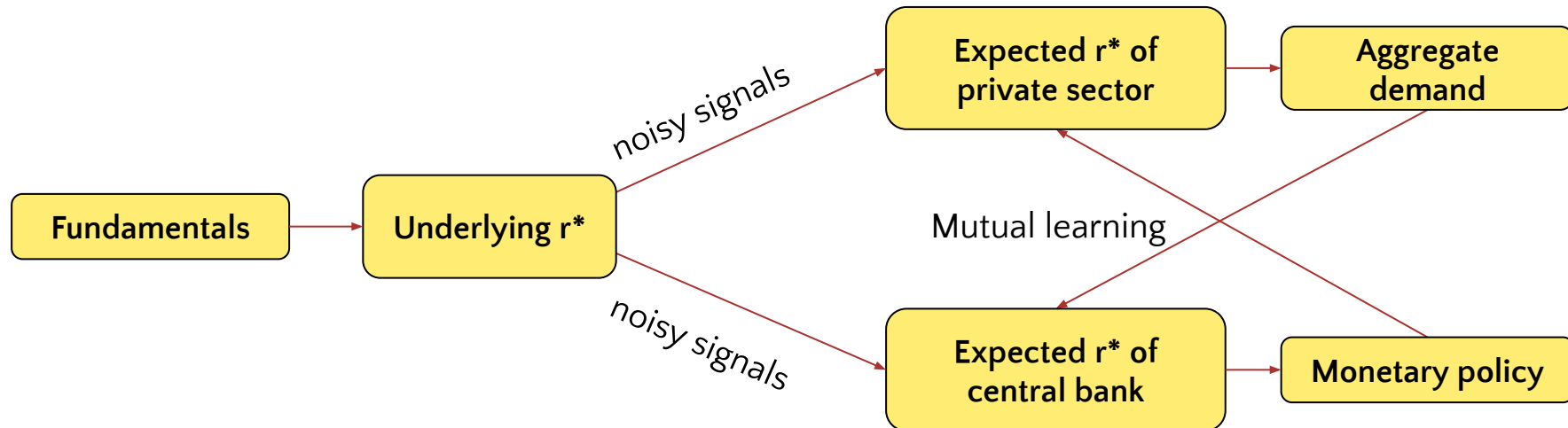
Sources: Replicating Hillenbrand (2022)

Standard theoretical framework



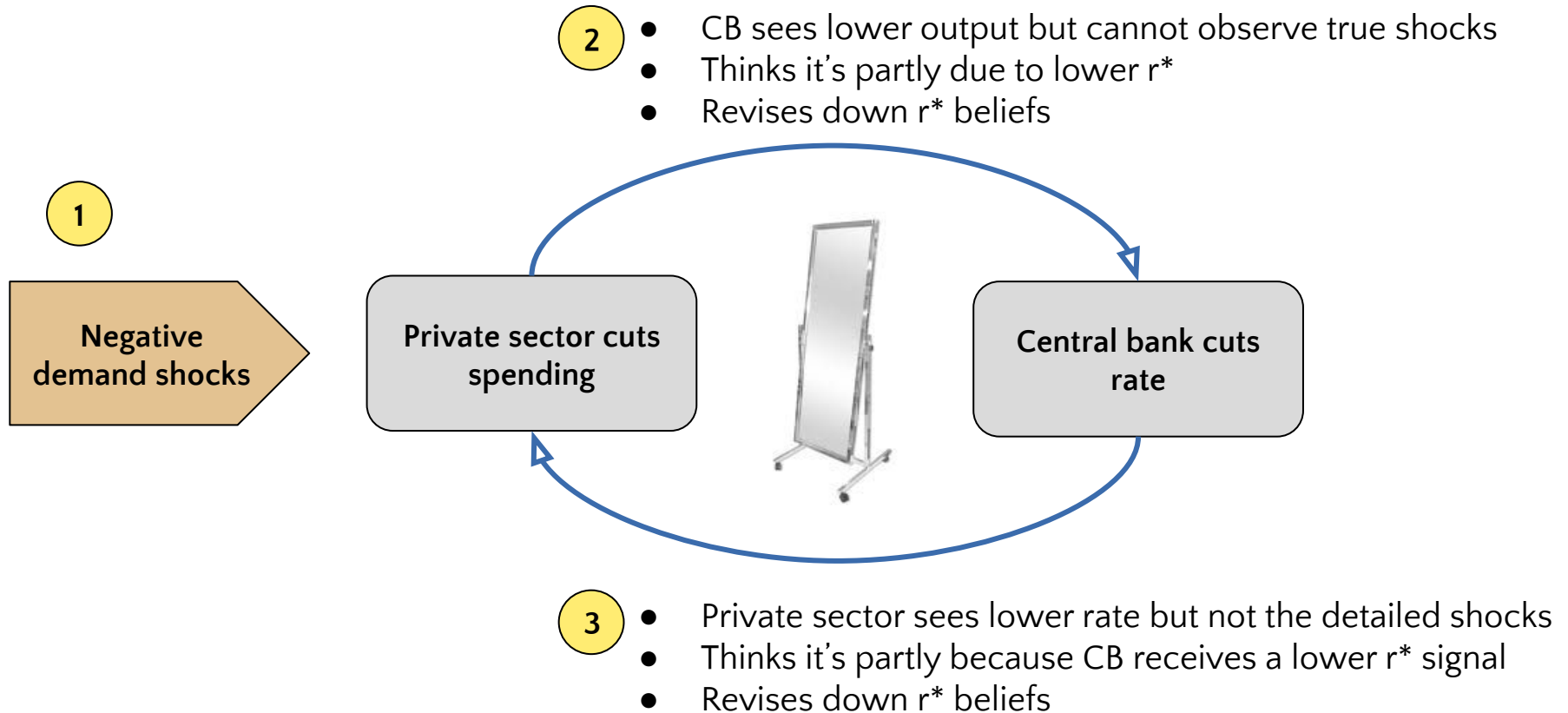
- Structural factors determine r^*
- Everyone knows the true process of real rate trend
- Money neutrality holds true

This paper



- r^* process is unknown, and agents must learn the r^* value
 - Beliefs matter, not just fundamentals $\Rightarrow r^*$ is endogenous to learning
- Agents rely on each other to learn about r^*
 - Cyclical shocks can persistently affect beliefs via the “hall-of-mirrors” effects

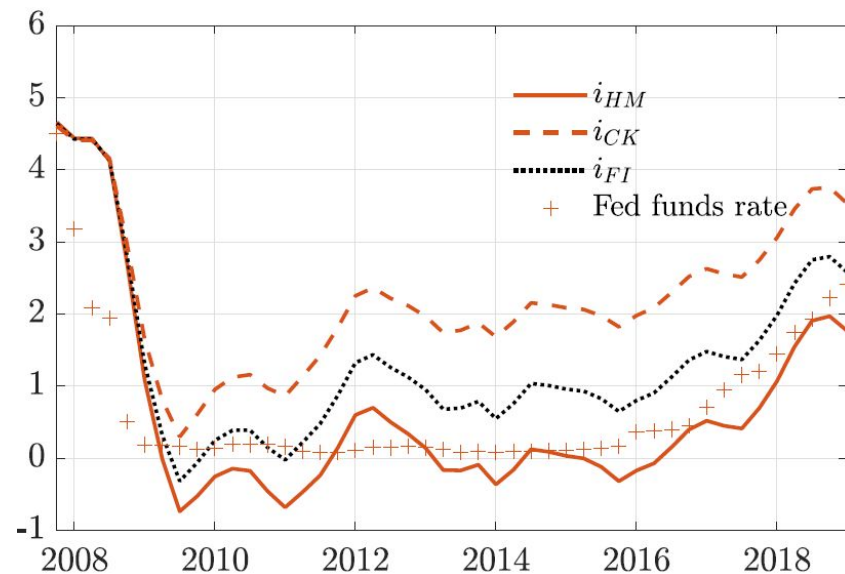
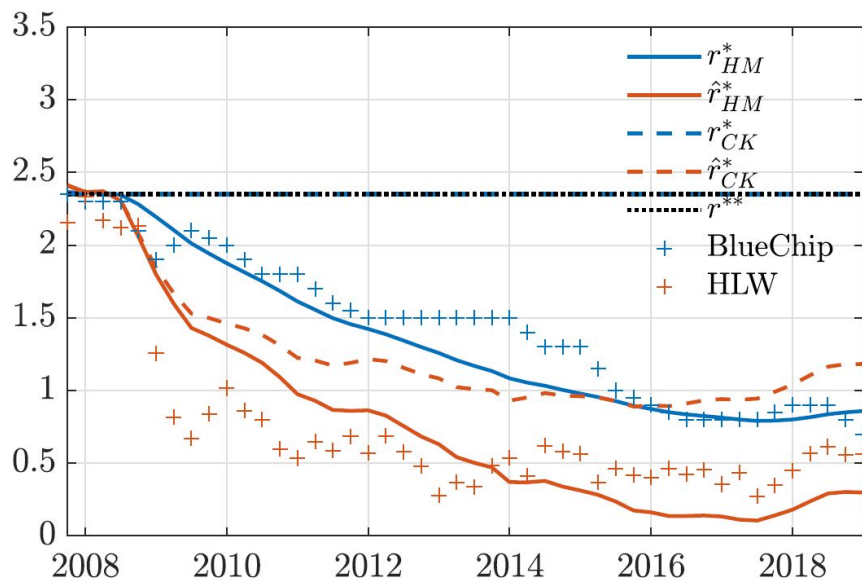
The hall-of-mirrors intuition



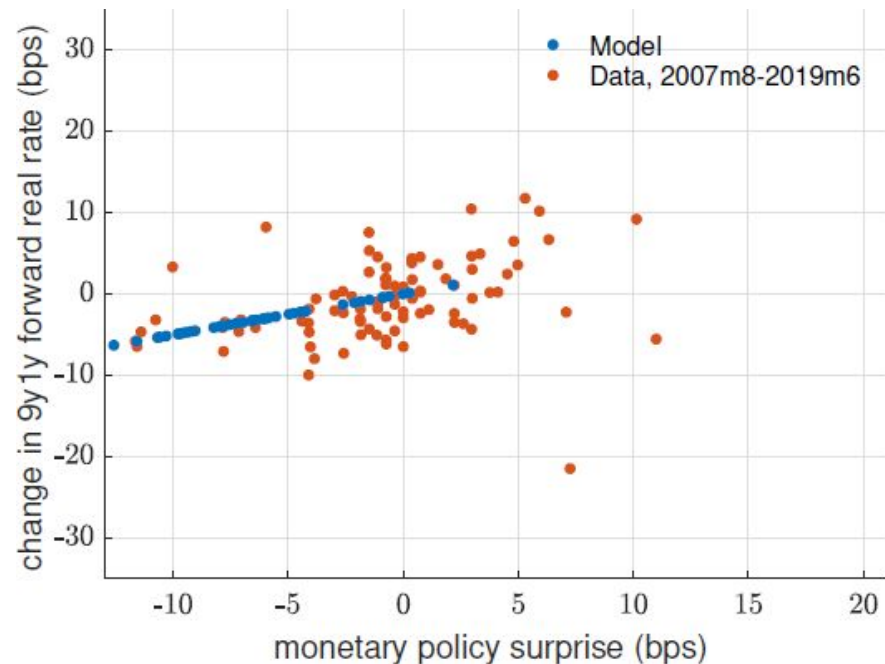
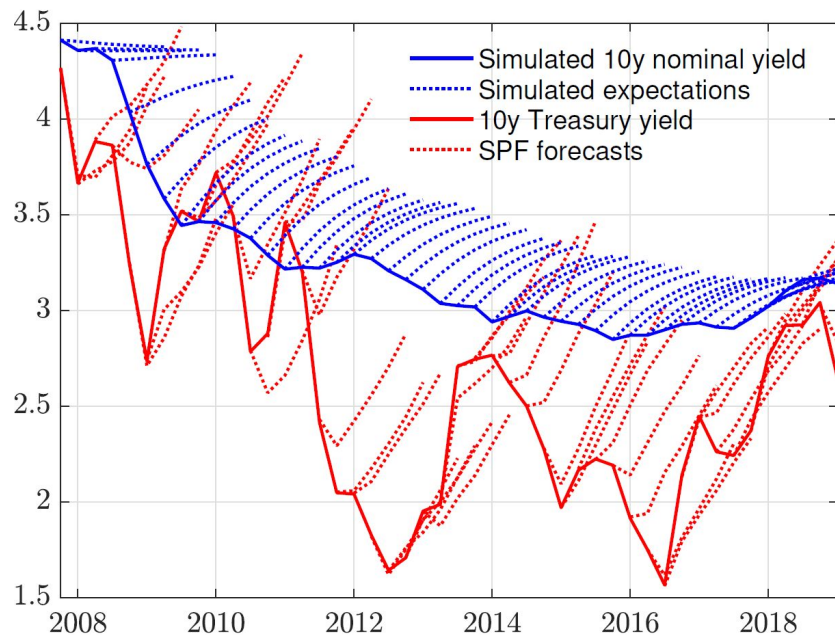
Formal steps

- Introduce a two-sided learning problem into the New Keynesian framework
- Solve the model under two imperfect information settings
 - *Common knowledge*: Each side understands that the other is learning from itself
 - *Hall-of-mirrors* : Both are unaware of double learning
- Quantitative analysis
 - Simulate r-star beliefs, with shocks chosen to match key macro variables
 - Examine the potential relevance of hall-of-mirrors effects in post-GFC period
 - Explore the implications for post-COVID period and beyond

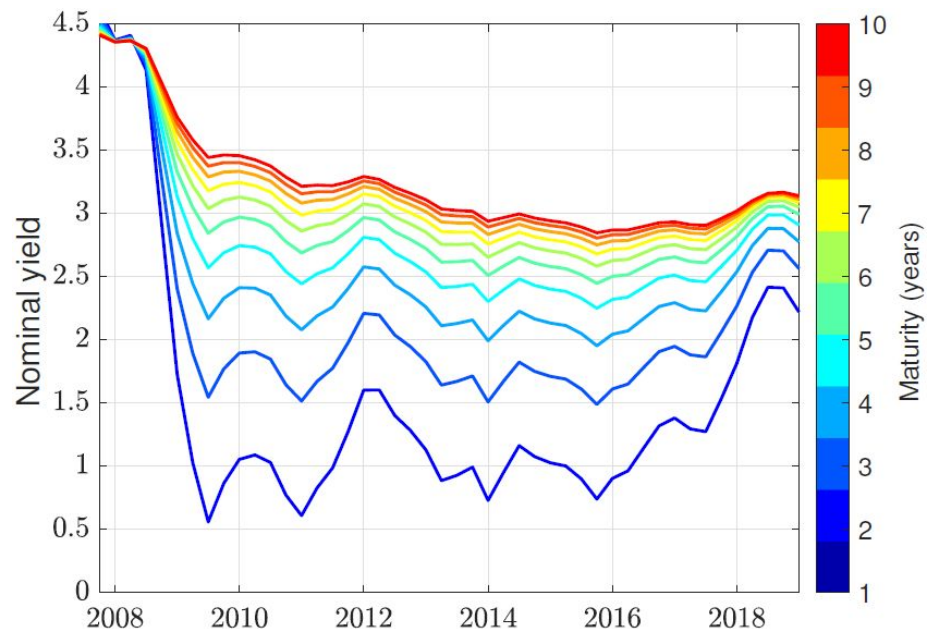
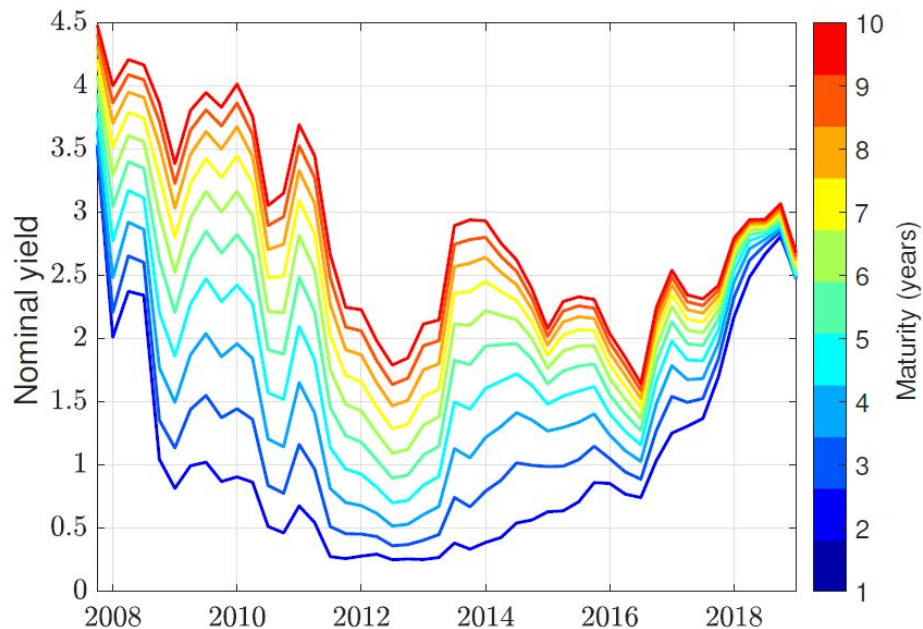
Post-GFC simulation



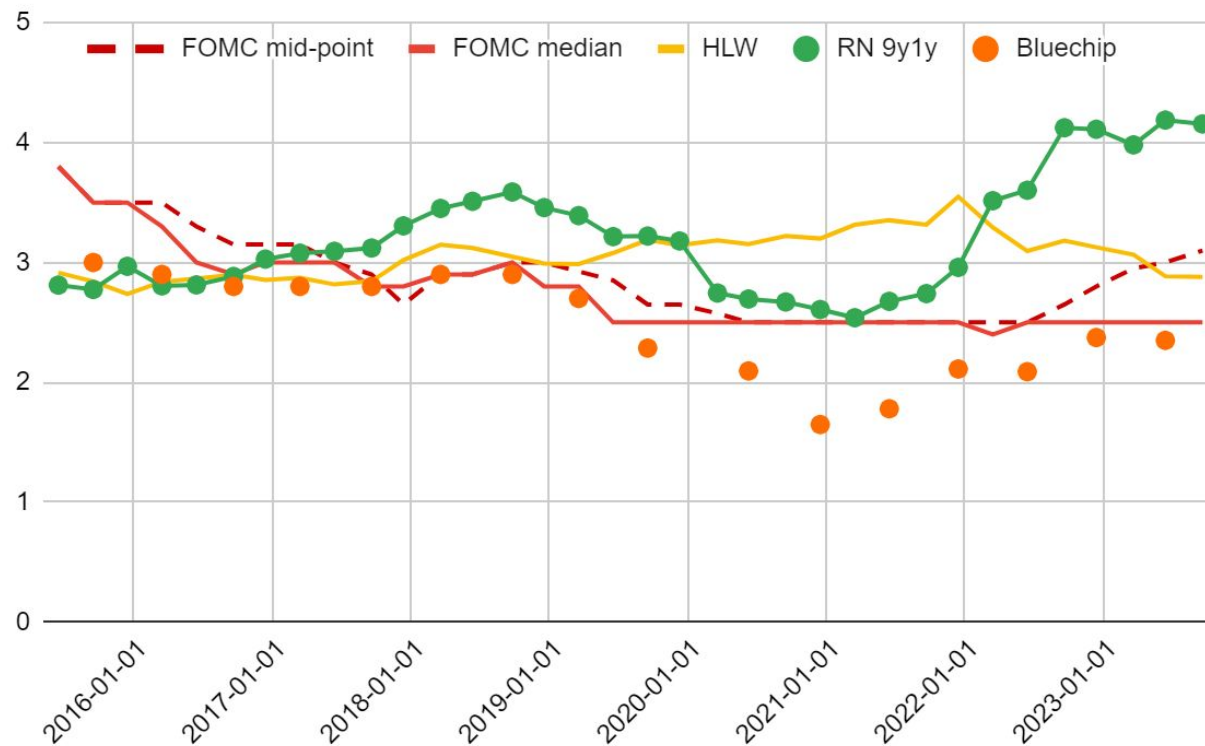
Explaining excess sensitivity of long rates to monetary policy



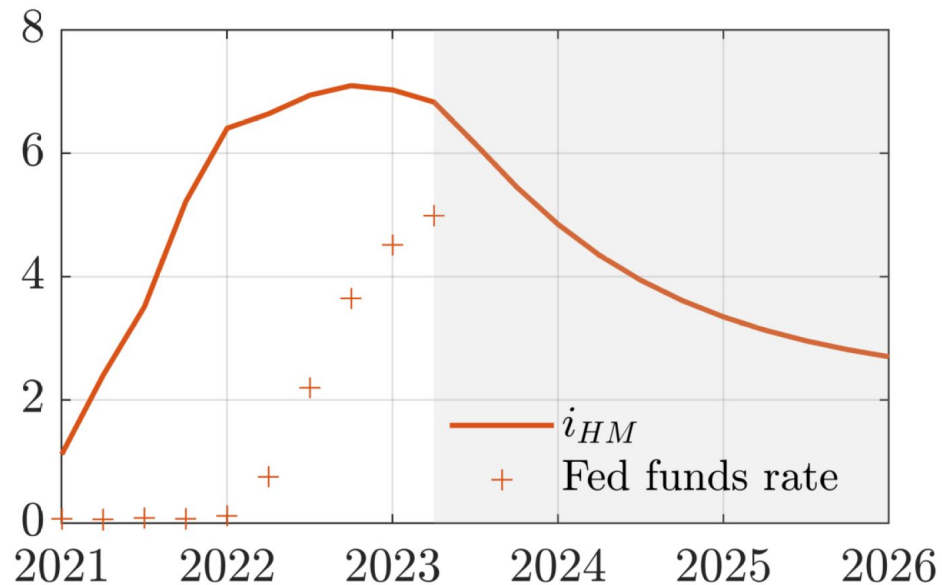
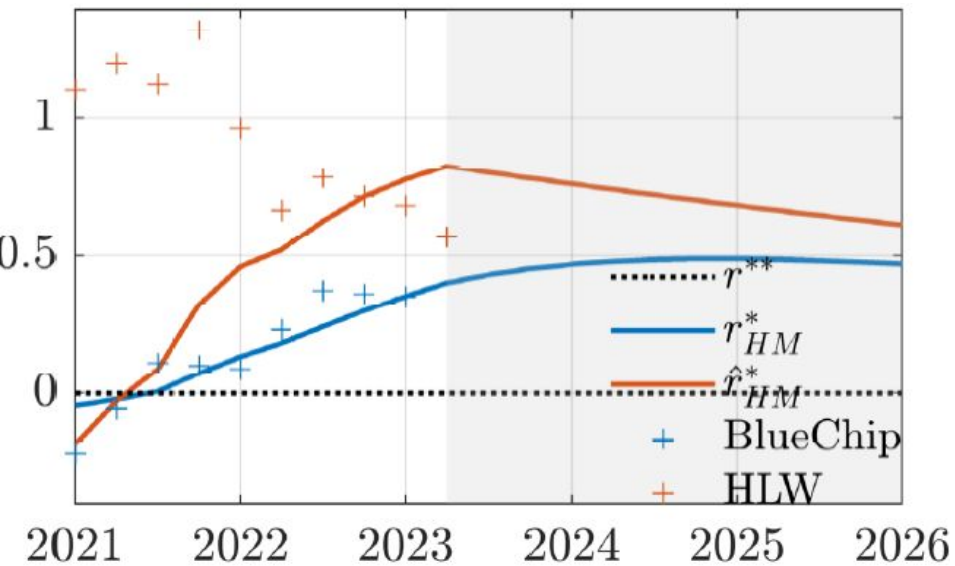
Explaining yield curve dynamics



Post-COVID: What's on the cards?



Model predicts higher for longer



Conclusion

- “*Hall-of-mirrors*” hypothesis: r^* is endogenous to cyclical shocks and monetary policy through a self-reinforcing two-sided learning process
- A parsimonious explanation of many post-GFC salient features
 - Low for long rates, apparent r^* decline, slow output recovery, low inflation
 - Excess sensitivity of forward rates to MP & apparent violation of money neutrality
- Policy implications
 - Aggressive MP easing designed to avert ELB may in fact make it more likely
 - Recent inflation surge may offer a rare opportunity to exit the low-for-long era
 - Communicating views about r^* (“I need to keep rates low because r^* is low”) may be counterproductive