Monetary Policy Financial Transmission and Treasury Liquidity Premia

Maxime Phillot
University of Lausanne

Samuel Reynard
Swiss National Bank

Main findings

We estimate the macro dynamic effects of monetary policy on real interest rates through changes in liquidity premia along the yield curve.

When the Fed raises interest rates, the spread between less-liquid assets and Treasuries of the same maturity and risk increases, which is significant 1 to 2 years after the policy shock.

The longer the maturity, the smaller—but still significant—increase in the spread.

Meaning & Implications

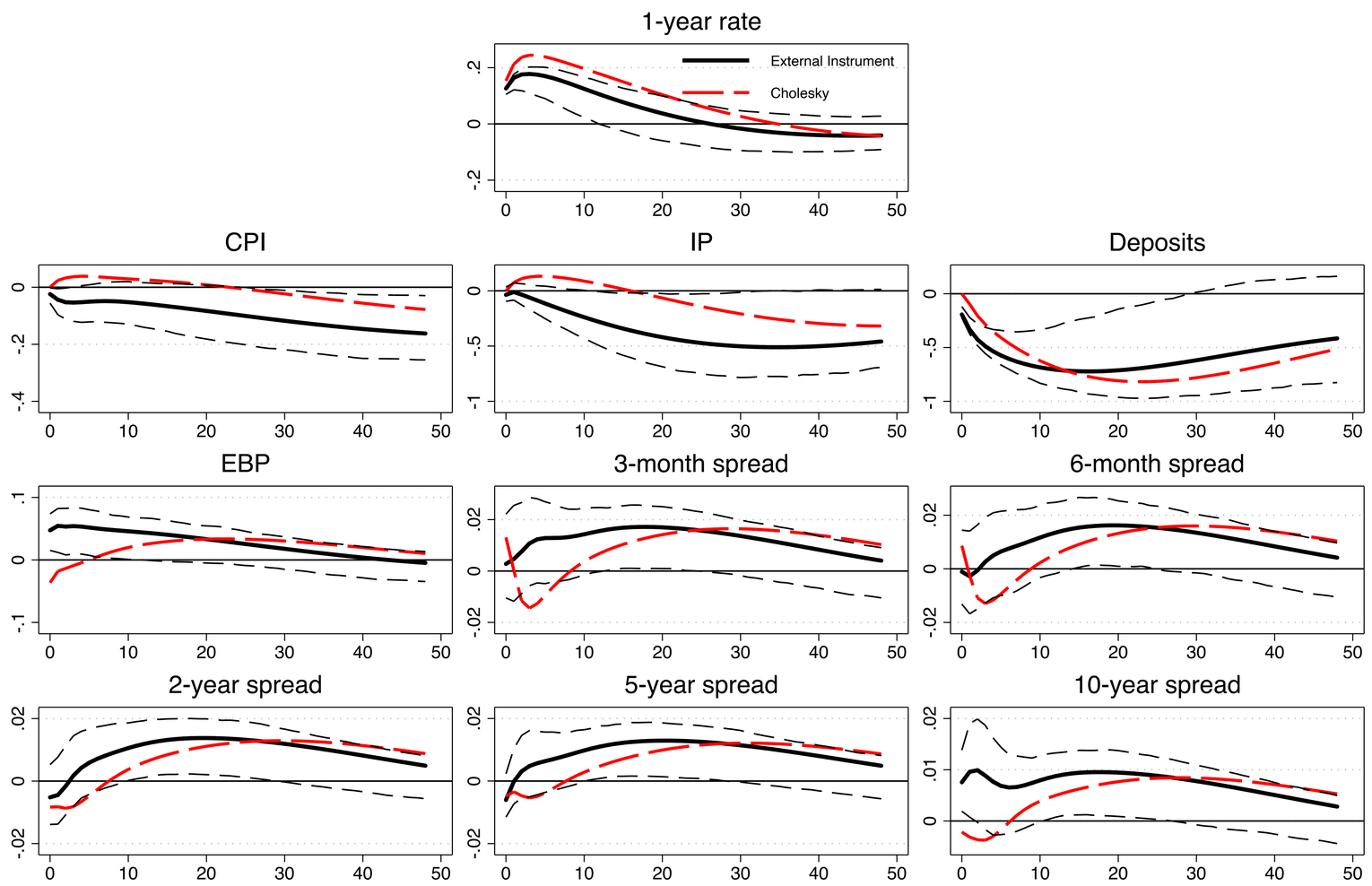
When the Fed funds rate increases, rates paid on banks' customer deposits do not adjust proportionally.

This leads to a decrease in aggregate banks' customer deposits, thus the liquidity value of Treasuries increases.

The longer the maturity, the smaller the liquidity premium increases, as longer-term Treasuries are less liquid and gets discounted more heavily when rates rise.

Applications:
- expectation hypothesis (monetary policy affects the term structure through liquidity premia).
- real equilibrium interest rates and exchange rates (substantially influenced by liquidity premia fluctuations according to recent research).

Empirical results



Impulse: 1-year rate. **Instrument:** Target Factor. **First Stage:** F = 17.61, R^2 = 5.04, N = 334.
CIs: Recursive wild bootstrap with 1000 replications, 0.95 level. **Set Up:** 2 lags, 1991.6 - 2019.5.
Cholesky Order: 1y rate, CPI, IP, Deposits, EBP, 3m spread, 6m spread, 2y spread, 5y spread, 10y spread.

Notes: Each subgraph plots the IRF of the variable mentioned above to a one standard deviation surprise monetary policy tightening (solid black line) together with the 95%-CIs surrounding it (dashed black lines) and the Cholesky-identified IRF (red dashed line).

Methodology

Our methodology is based on Gertler and Karadi (AEJ, 2015). It combines a high frequency identification strategy with an external instrument SVAR approach.

We identify the two principal components of monetary policy surprises on FOMC announcement days corresponding to changes in expectations about current (*target* factor) and future (*path* factor) monetary policy.

We aggregate the *target* factor and use it as an external instrument to identify a monthly SVAR.

We compute the IRFs of the economy and liquidity premia to a monetary policy shock and infer on their significance using a recursive-design wild bootstrap procedure.

Empirical Results Explained

The SVAR covers 1991.6 to 2019.5 and includes the 1-year rate, log-CPI, log-IP, log-deposits, excess bond premium (EBP), and liquidity premia at maturities from 3 months to 10 years. The 1-year rate is instrumented using the target factor. Liquidity premia are the spreads between yields of Refcorp and Treasury zero-coupon bonds.

A 1-sd shock to the target factor generates an initial response of the 1-year rate of about 15 bp.

This monetary tightening triggers a response of the economy consistent with theory:
- significant and delayed decrease of log-CPI.
- significant decrease of output after about a year.

It provokes a significant increase of the EBP and a significant decrease of the deposits, consistent with the "credit" and the "deposit" channels.

Our contribution lies in the way the increase in liquidity premia following the shock fades but remains significant as the maturity grows longer.

Robustness

Using a Cholesky identification scheme:
- Produces IRFs suffering from the "price puzzle"
- Shows similar pattern in the effects of monetary policy on the spreads across maturities.

Using other measures of the liquidity premia:
- Always leads to a similar pattern according to which longer-maturity liquidity premia react less to monetary policy shocks.
- Notably, the 3m GC Repo spread (Nagel, QJE 2016) rises significantly, while the AAA spread (Krishnamurthy and Vissing-Jorgensen, JPE 2012) decreases significantly.