Discussion of

Unconventional Monetary Policy and International Risk Premia

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Bank of Canada Economic Conference
Ottawa, 3-4 November, 2016

Summary

- Dynamic effects of monetary policy at ZLB on US and foreign (UK, Euro, Japan) interest rates and exchange rates through a structural VAR.
- Features an external instrument to measure monetary policy surprises.
- Proposes a Bayesian estimation method to estimate VAR.

What do we know about effects of unconventional monetary policy on interest rates and exchange rates

- Rogers, Scotti and Wright (2014) measure contemporaneous effects of monetary policy on domestic and international interest rates and exchange rates with an event-study methodology.

$$\Delta y_t = \beta MPS_t + \varepsilon_t$$

- Δy_t denotes a yield change or asset price returns in a daily or intradaily window bracketing an announcement, and MPS_t denotes the monetary policy surprise.
- MPS_t is measured as the first principal component of the change in yields for 2, 5, 10 and 30-year Treasury futures (for the US) right around announcement time.
- The authors document strong immediate effects of US monetary policy surprises on exchange rates and foreign interest rates.

What about the persistence of these effects

- Rogers, Scotti and Wright (2014) and Wright (2012) assess persistence with a VAR in daily prices.
- Reduced-form VAR with a $p \times 1$ vector of yields Y_t

$$A(L)\, Y_t = \mu + \varepsilon_t$$

- ε_t is a $p \times 1$ vector of reduced-form forecast errors
- Relation between forecast errors and structural shocks (independent of each other and over time)

$$\varepsilon_t = R_1 \eta_{1t} + \sum_{i=2}^{p} R_i \eta_{it}$$

What about the persistence of these effects (cont'd)

- Identification
  - ✓ External instrument: Regress reduced-form errors onto intradaily MPS_t measure correlated with monetary policy shock η_{1t} but uncorrelated with other structural shocks.
  - ✓ If effects thought to linger over the day, identification through heteroscedasticity: η_{1t} of variance σ_1^2 on announcement days, σ_0^2 on all other days, Σ_1 and Σ_0 variance-covariance matrices of reduced-form errors

$$\Sigma_1 - \Sigma_0 = R_1 R_1' (\sigma_1^2 - \sigma_0^2)$$

    R1 can be identified and estimated through a minimum-distance estimator.

- Results with small-scale VAR (Treasury and corporate yields only): Persistence of effects is not precisely estimated(90% bootstrap confidence intervals).

This paper

- A large-scale structural VAR model: 9 variables (for US)

y_{1t}=3-month yield	y_{6t}=10-year foreign zero-coupon yield
y_{2t}=5-year zero-coupon yield	y_{7t}=log US employment
y_{3t}=10-year zero-coupon yield	y_{8t}= log core CPI
y_{4t}=log foreign FX rate	y_{9t}= BAA-Treasury spread
y_{5t}=3-month foreign yield	

- Use high-frequency data
  - ✓ External Instrument Z_t: Change in yield on 5-year Treasury futures around FOMC announcements
  - ✓ $W_t' = [\Delta y_{1t}, \Delta y_{2t}, \Delta y_{3t}, \Delta y_{4t}, \Delta y_{5t}, \Delta y_{6t}, \varepsilon_{7t}, \varepsilon_{8t}, \varepsilon_{9t}]$

This paper (cont'd)

- Need an extra assumption due to high-frequency data

  Assumption A2: $E[Z_t(\varepsilon_t - W_t)] = 0$
- Any shocks to Y_t away from the time of the monetary policy announcement has zero correlation with the jump associated with monetary policy news.
- Under these assumptions $E(Z_t W_t) = E(Z_t \varepsilon_t) = \alpha R_1$ and R_1 is identified up to scale and sign.
- Mixes event-study and external instrument to tighten inference.
- The VAR is estimated with a Bayesian method.

- Write the reduced-form representation as : $Y = XB + \varepsilon$ with $\mathrm{E}[\varepsilon\varepsilon'] = \Sigma$; $\hat{B}$ OLS estimate of B.
- Set of n regressions : $W_{it} = \gamma_i Z_t + u_{it}$, with $u_{it} = \omega_i^2$
- Diffuse priors for B and Σ proportional to $|\Sigma|^{-(n+1)/2}$ and for $\{\gamma_i, \omega_i^2\}_{i=1}^n$ proportional to ω_i^{-2}.
- Posterior for the parameters with $D = \{Y_t, W_t, Z_t\}$:

$$p(B, \Sigma, \gamma, \omega | D) = p(B, \Sigma | D) p(\gamma, \omega | B, \Sigma, D)$$

$$\propto |\Sigma|^{-(T+n+1)/2} \exp -\frac{1}{2} tr(\Sigma^{-1}(Y - XB)'(Y - XB))$$

$$\prod_{i=1}^{n} \omega_i^{-T-2} \exp -\frac{1}{2\omega_i^2}(W_i - \gamma_i Z)'(W_i - \gamma_i Z)$$

- The posterior is simulated with MCMC (Metropolis-Hastings)
- Impulse response functions to monetary policy shocks are reported with 68-percent pointwise credible sets.

Comments

- The posterior is separated in two parts, the red has to do with the specification of the VAR model, the blue with the reliability of the proxy (external instrument) used for the unobserved structural shock.

- Caldara and Herbst (2016) provide important insights about proxy SVARs
  - ✓ A reliable proxy reduces noise and improves inference by providing more reliable estimates of the *contemporaneous* response of the endogenous variables to the structural shock.
  - ✓ Regardless of the reliability of the proxy, VAR misspecification (omitted variables) can severely bias the *dynamic response* of the endogenous variables to the shock of interest

- To better understand the results of the paper, we need to see i) different VAR specifications ii) different proxies

Comments

- Specifications
  - Small financial VARs with daily data (as in Rogers, Scotti and Wright, 2014) with and without exchange rate.
  - VAR without employment and prices.
- Instruments
  - First principal component of changes in yields for several Treasury futures as in Rogers, Scotti and Wright (2014).
  - Several instruments: first two principal components to try to capture two kinds of monetary policy surprises (LSAP, forward guidance) or futures (intradaily) - overidentification.

Comments

- Comparison of Conventional and unconventional monetary policies.
  - ✓ The paper focuses on announcements from October 2008 to December 2015 (unconventional) while the reduced-form VAR is estimated over the whole period January 1990 to December 2015. Same with Eurodollar futures for the 1990-2008 period (conventional). Two separate experiments.
  - ✓ Suggestion: introduce a monetary policy instrument (Fed funds future) for the first part of the sample to capture conventional monetary policy *together with* the other instrument for the ZLB period.
  - ✓ Rerun the risk-reversal regression over the whole sample; check if coefficients are equal over conventional versus unconventional monetary policy periods (to address IMF finding).

Comments

- Use current specification to make link with other papers about exchange rates, interest rates and risk premium
  - ✓ Engel (2016): real interest rates (since prices are in the variables)
  - Engel (2016): Add liquidity variable (TED spread) to measure relative impact of liquidity shocks and monetary policy shocks (better than current regression to explain decline in foreign exchange risk premium).
  - Fahri and Gabaix (2015) : Rare disasters, use economic activity variable to measure impact of large shocks.

Additional Remarks

- Is weak identification a problem with Bayesian methods (see Caldara and Herbst, 2016)?
- What kind of bands will you obtain with a heteroscedasticity scheme of identification?
- What about estimation by GMM as in Olea, Stock and Watson (2015); easier to introduce more instruments (overidentification), more shocks.