

Subjective Interest Rate Uncertainty and the Macroeconomy: A cross-country analysis

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In this paper

- We provide a subjective measure of interest rate uncertainty:
 - ▷ reflects uncertainty perceived by market participants;
 - ▷ forecasts of short (3M) and long-term (10Y) interest rates, CE's surveys;
 - ▷ for US, JP, UK, DE, FR, IT, ES, CA, SE, CH (1993-2015).
- Investigate its causal effect on the economy:
 - ▷ a structural VAR approach;
 - ▷ causality from uncertainty to the economy defended via the survey design.
 - ▷ identification restrictions in line with the data.

Contribution & Importance

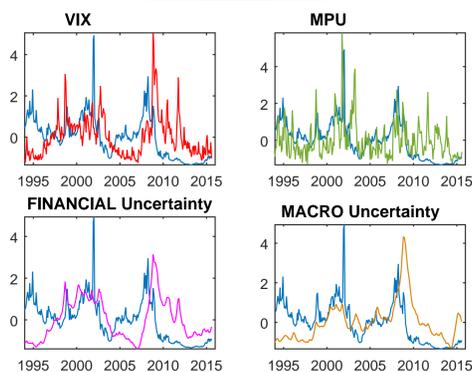
- Deal with two on-going challenges in the literature:
 - ▷ how to measure uncertainty;
 - ▷ how to identify causal effects of uncertainty on the economy.
- Important because interest rates relate to:
 - ▷ uncertainty about monetary policy & its transmission;
 - ▷ financial uncertainty (likely cause & propagator of recessions);
 - ▷ fundamentals (through the Taylor Rule);

Measuring interest rate uncertainty

- Survey-based measure, based on Lahiri and Sheng (2010).
- Two components: **idiosyncratic** and **common** uncertainty
 - ▷ Expressed as: $\hat{U}_{th} = D_{th} + \hat{\sigma}_{a|th}^2$
 - ▷ **idiosyncratic**: D_{th} , disagreement among professional forecasters
 - ▷ **common**: $\hat{\sigma}_{a|th}^2$, perceived variability of aggregate shocks
- $\hat{\sigma}_{a|th}^2$ estimated with a stochastic volatility model.

$$\ln \hat{\sigma}_{a|t}^2 = \gamma_0 + \gamma_1 \ln \hat{\sigma}_{a|t-h}^2 + \eta_t$$

Interest rate- vs. other uncertainty: U.S.



Notes: MPU denotes the Baker, Bloom and Davis (2013) index of monetary policy uncertainty based on news coverage. Financial and Macro uncertainty refer to Jurado, Ludvigson and Ng (2015)'s measures.

VAR framework

Estimate country-specific VAR(p) with endogenous variables:

$$\begin{bmatrix} \text{interest rate uncertainty} \\ \log(IP) \\ \text{CPI inflation} \\ \text{unemployment rate} \end{bmatrix}$$

plus a constant, a time trend and oil prices as exogenous var.

- 4 VARs per country: across interest rate maturity (3M and 10Y) and forecast horizon (3M and 12M);
- Bayesian estimation, flat prior, lag selection with BIC criterion;

SVAR Identification

Interest rate uncertainty responds contemporaneously only to its own innovations.

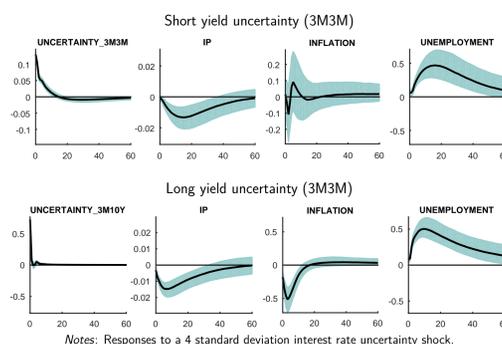
- CE survey timing is crucial - forecast made within 10 first days of the month;
- Forecasters' information set includes only past realizations of industrial production, inflation and unemployment rate;
- A recursive scheme where uncertainty contemporaneously reacts only to its own innovations is justified.

Interest rate uncertainty and macroeconomic fluctuations

Shocks to interest rate uncertainty have **large, negative and persistent** effects on real activity.

- Effects vary across countries and maturity of interest rate;
- Magnitudes are considerable:
 - ▷ drop in production varying from 0.5 to 3%, within a year;
 - ▷ unemployment increases by 0.2 to 1pp;
 - ▷ prices display an acyclic behavior;
- Effects are persistent; recovery taking 3 to 5 years.

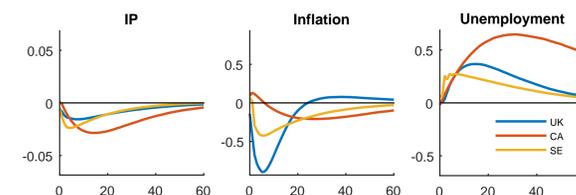
Interest rate uncertainty shocks: U.S.



Notes: Responses to a 4 standard deviation interest rate uncertainty shock.

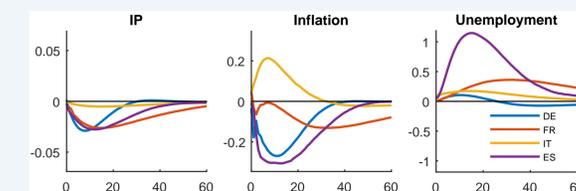
- Results in line with Jurado et al. 2015 (magnitudes & persistence).

Interest rate uncertainty shocks: IT countries



- Faster reaction but still slow to recover (except for prices).

Interest rate uncertainty shocks: Euro area



- Similar qualitative results across all countries (except for prices);
- Magnitudes differ substantially for prices and unemployment (DE 10bp vs. ES 100bp);
- Persistence & recovery differ (DE 2yrs vs. FR 5yrs for IP);

Contribution of interest rate uncertainty shocks

	US	JP	DE	FR	UK	IT	CA	ES	SE	CH
Short rate uncertainty										
IP	13.47	5.27	42.50	48.86	50.43	13.44	37.82	34.00	12.38	9.87
π	3.09	7.36	20.09	9.57	33.02	7.02	18.23	10.35	12.77	11.23
unemp.	23.12	5.92	4.07	39.56	31.56	16.47	38.91	31.12	11.41	13.06
Long rate uncertainty										
IP	14.77	1.46	11.97	10.01	6.61	1.68	20.10	3.66	6.27	8.36
π	11.08	1.78	7.57	3.70	7.02	1.61	10.46	4.75	7.71	6.56
unemp.	23.87	1.40	2.74	9.01	6.42	1.56	41.24	4.11	3.02	4.20

Notes: We report the max fraction of variance (from the posterior median) in each variable. IP for industrial production, π for CPI inflation, unemp. for unemployment

Conclusion

- We provide a subjective measure of interest rate uncertainty;
- Show that it has large, negative and persistent effects on the economy;
- A lot of heterogeneity across countries.
- Further investigation: What channels in play?