

Uncertainty Fluctuations: Measures, Effects and Macroeconomic Policy Challenges

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Overview

- ▶ Presentation based on the CEPII Policy Brief: "Uncertainty Fluctuations: Measures, Effects and Macroeconomic Policy Challenges" with L. Ferrara and S. Lhuissier ([link](#))

- ▶ With a focus on non-linear effects highlighted in the CEPII Working Paper "Do Uncertainty Shocks Always Matter for Business Cycles?" with S. Lhuissier ([link](#))

Policy Brief: Issues

- ▶ How to measure uncertainty?
- ▶ Through which channels does uncertainty impact the economy?
- ▶ What are the implications of uncertainty for policy makers?
Three lessons drawn from the literature

Lesson 1: Macroeconomic policies have a direct role to play in stabilizing policy-related uncertainty.

- ▶ Decisive advances in measuring uncertainty
 - ▶ Historical measure: VIX, volatility-based for financial markets
- ▶ Besides the VIX, huge development of uncertainty measures
 - ▶ Firm-level dispersion of stock return, sales, or TFP
 - ▶ Forecasting errors and forecasters disagreement

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 - ▶ **Economic Policy Uncertainty** ▶ Focus and its numerous text-based developments (time-varying and cross-country)

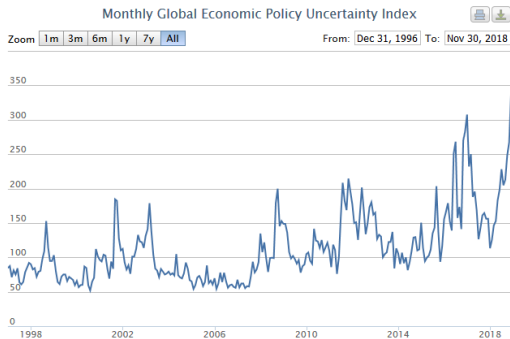
Focus on Economic Policy Uncertainty

EPU Indices

Global	USA
Australia	Brazil
Canada	Chile
China	Colombia
Europe	France
Germany	Greece
Hong Kong	India
Ireland	Italy
Japan	South Korea
Mexico	Netherlands
Russia	Singapore
Spain	Sweden
UK	

Economic Policy Uncertainty Index

We develop indices of economic policy uncertainty for countries around the world.



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 - ▶ Exogenous shocks to political uncertainty explain a **small part of business cycles** and the GR (see variance/hist. decomp.)

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- ▶ The role of government in mitigating uncertainty besides "own" political uncertainty
 - ▶ **Financial-related uncertainty**

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- ▶ Current challenges (**especially for the EC**)
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 - ▶ European system of financial supervision: mostly done
 - ▶ Banking Union: nearly completed (EDIS, SRF)
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 - ▶ With the treat a new wave of international deregulations (e.g. Trump; Brexit)

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 - ▶ Bloom et al. (2007, REStud): "This implies the responsiveness of firms to any given policy stimulus may be much weaker in periods of high uncertainty"
- ▶ Reinforced by recent results in the literature
 - ▶ Bloom (2018, ECTA) "time-varying uncertainty initially dampens the effect of an expansionary policy."
 - ▶ The effect is sizable: "the presence of uncertainty reduces the effects of the wage policy by over two-thirds on impact."

"Fiscal policy in an uncertain environment": lesson for today

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 - ▶ Fiscal policy to support demand and stimulate growth
 - ▶ Coordination of national and European policies
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(without begin an additional source of uncertainty)

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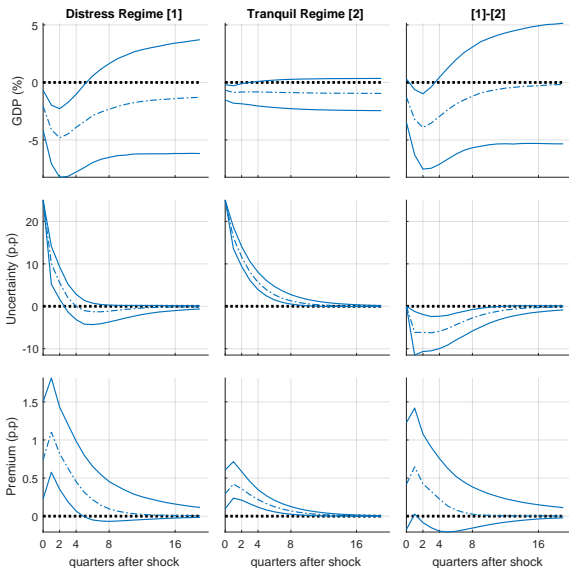
- ▶ "Do Uncertainty Shocks Always Matter for Business Cycles?"
 - ▶ No, sometimes increased uncertainty seems to have little impact on the real economy, sometimes not.
- ▶ Policy challenges
 - ▶ When should stabilization policy be implemented?
 - ▶ How managing agent expectations?

Empirical Methodology: MS-SVAR

- ▶ Fitting a Markov-switching SVAR to U.S. data while with identifying assumptions to isolate uncertainty shocks ▶ Methodology
- ▶ Empirical results support
 - ▶ Regime switching in the variances of structural disturbances
 - ▶ i.e., the size of the uncertainty shocks \Rightarrow **three regimes with high or low variances for uncertainty shocks**
 - ▶ Regime switching in the equation coefficients of the SVAR
 - ▶ i.e., variation in the dynamics of the effects of uncertainty shocks between two regimes – **tranquil and financial stress regimes**.
 - ▶ Notable effects *only* in periods of financial distress.

Empirical Results

Regime-dependent effects of uncertainty shocks: uncertainty does not *always* matter



A structural interpretation

A Markov-switching DSGE Model with financial frictions

SW-FF Model developed by Del Negro et al. (2015). Financial frictions *à la* Bernanke et al. (1999) and Christiano et al. (2014)

$$E_t \underbrace{\left[\tilde{R}_{t+1}^k - R_t \right]}_{\text{spread}} = \zeta_{sp,b}(s_t) \underbrace{\left(q_t^k + \bar{k}_t - n_t \right)}_{\text{leverage}} + \zeta_{sp,\sigma_\omega}(s_t) \underbrace{\sigma_{\omega,t}}_{\text{exogenous}}$$

Risk shock: $\sigma_{\omega,t}$, i.e., cross-sectional standard deviation of $\log(\omega)$.

$$\sigma_{\omega,t} = \rho_{\sigma_\omega} \sigma_{\omega,t-1} + \varepsilon_{\omega,t}, \quad E(\varepsilon_{\omega,t}) = \text{normal}(\varepsilon_{\omega,t} | 0, \sigma_{\sigma_\omega})$$

Risk shock \equiv uncertainty shock in our MS-VAR.

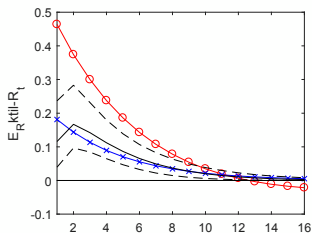
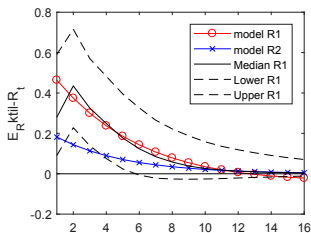
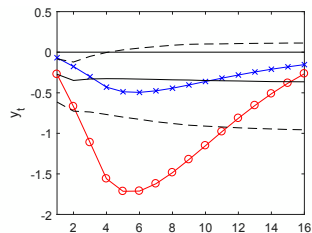
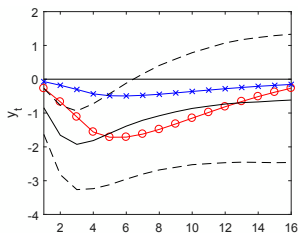
A structural interpretation

Estimation strategy

- ▶ Markov-switching process for key estimated parameters
 - ▶ fixed costs, $\Phi(s_t)$
 - ▶ investment adj. costs, $S''(s_t)$
 - ▶ capital utilization costs, $\psi(s_t)$
 - ▶ persistence of risk shocks, $\rho_{\sigma_\omega}(s_t)$
 - ▶ **financial contract elasticity**, $\zeta_{sp}(s_t)$
- ▶ Other parameters are calibrated

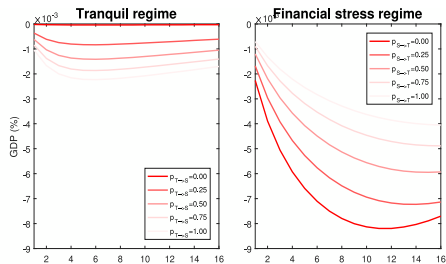
A structural interpretation

Impulse-response functions to a risk (i.e uncertainty) shock in the MS-DSGE and MS-BVAR



A structural interpretation

New element to financial accelerator mechanism: **Agents' anticipations.**



▷ $p_{T \rightarrow S} = 0$: agents are extremely optimistic in the tranquil regime, it will last indefinitely (**dark red line**).

▷ $p_{S \rightarrow T} = 0$: agents are extremely pessimistic in the financial stress regime, it will last indefinitely (**dark red line**).

Conclusion

1. Fluctuation in uncertainty is a great challenge for policy makers since it weakens policy effectiveness
2. Non-linear effects make the tasks even more complicated and reinforce the role of agents' beliefs in shaping business cycles

- ▶ Markov-switching Bayesian structural VAR model (Hamilton, 1989; Sims and Zha, 2006; Sims et al., 2008):

$$y_t' A(s_t) = \sum_{i=1}^{\rho} y_{t-i}' A_i(s_t) + C(s_t) + \varepsilon_t' \Xi^{-1}(s_t), \quad t = 1, \dots, T,$$

with $y_t \equiv [gdp_t, vix_t, baa_t - aaa_t]'$, $\rho = 2$, and s_t is an exogenous first-order Markov process:

$$p_{ij} = \Pr(s_t = i | s_{t-1} = j), \quad 1 \leq i, j \leq h,$$

where h is the number of regimes.

- ▶ Identification:
 - ▶ Uncertainty shocks have a contemporaneous impact on VIX (+), credit spread (+), and output (−) and explain at least 50% of the VIX variance at impact.
- ▶ Data: U.S. quarterly series for the period 1962:Q3-2018:Q2.