The Real Effects of Financial Uncertainty Shocks: A Daily Identification Approach

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Introduction

- Financial market uncertainty raises in recession. Why?
  - Ludvigson et al. (2018): uncertainty causes recessions
  - Berger et al. (2020): recessions cause uncertainty

This Paper

- We examine the puzzle using a novel identification strategy that exploits daily data to disentangle the interactions between stock prices, bond spreads and volatility.

A 3-stage Identification Strategy

1. Identify the structural shock of interest in a daily VAR
2. Average the estimated daily shocks to the monthly frequency
3. Use monthly averages as an instrument in a monthly VAR

- By using daily data, we can identify uncertainty shocks accounting for the fact that financial markets respond to many 'macro news' on a monthly or quarterly basis ⇒ High-frequency data help in disentangling exogenous shocks and endogenous responses.

Does the empirical strategy work?

- In theory, if temporal aggregation is obtained by skip-sampling or averaging, then an average of HF shocks correctly recovers the initial responses of the LF variables.
  - Intuition: in a linear model, $\sum_{t\in\tau}\varepsilon_t^y \approx \varepsilon_\tau^y$
- This strategy eliminates temporal aggregation bias if the DGP is a daily VAR.
- Monte Carlo experiments support this conclusion:
  - Simulate data from a known high-frequency DGP assuming that one or more variables are not observed every period.
  - We compute the Mean Absolute Distance (MAD) between the true and the estimated IRFs.
  - We compare our strategy **(HF+LF VAR)** to the standard approach **(LF-VAR)** in recovering the true IRFs under alternative frequencies/temporal aggregation schemes.

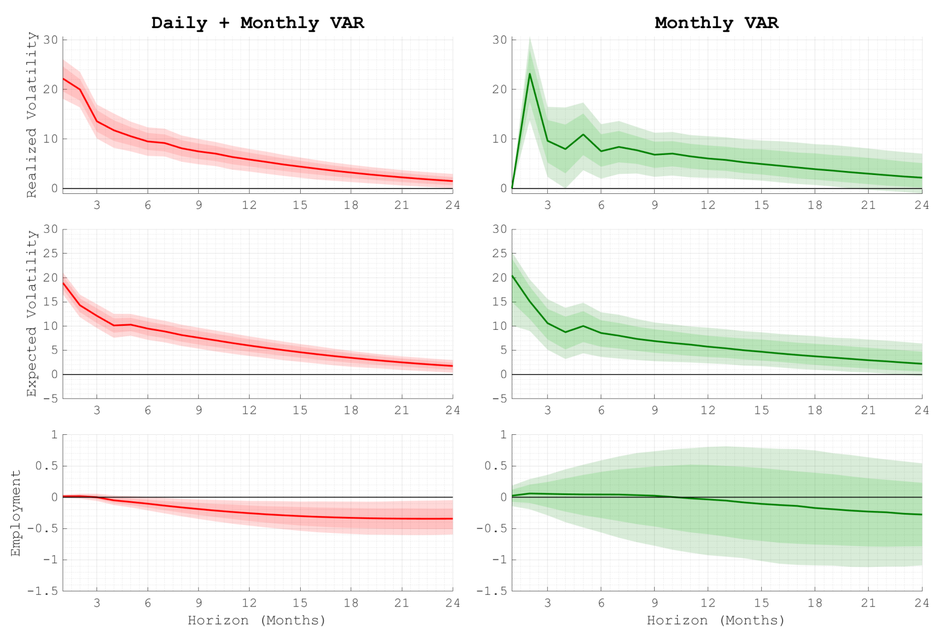
MAD ratio over HF-VAR

Frequency Mismatch	Monthly-Quarterly Case (3)				Daily-Monthly Case (30)			
Temporal Aggregation	Skip-sampling		Averaging		Skip-sampling		Averaging	
Sample Size	100	1000	100	1000	100	1000	100	1000
LF VAR	2.86	7.69	5.88	20.03	5.00	14.29	33.33	10.01
HF+LF VAR	1.17	1.15	4.76	15.80	2.85	3.00	22.67	2.10

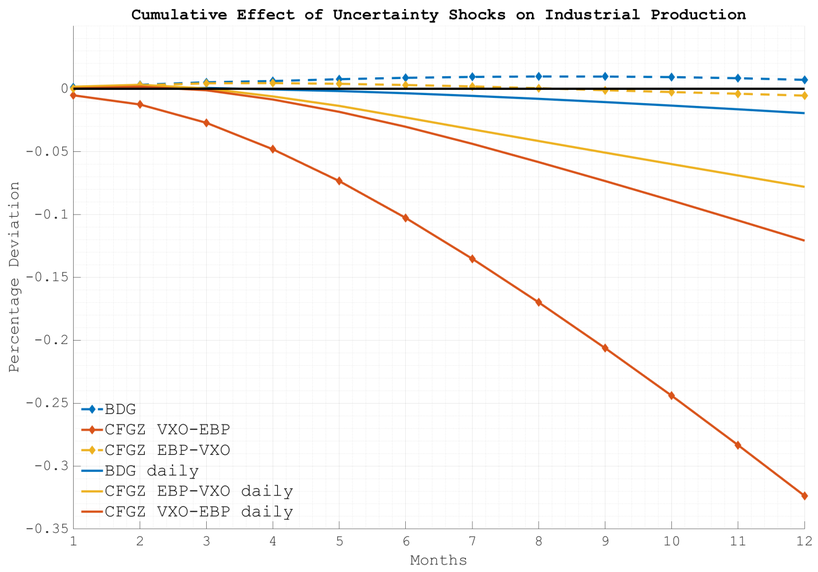
  - We also compare it to established mixed-frequency VARs (Schorfeide & Song, 2015; Ghysels, 2016), and find it a valid alternative.

Impact of Financial Uncertainty Shocks

- Berger et al. (2020) ⇒ realized volatility (RV) *versus* option-implied volatility ($V \approx VXO$). Uncertainty shocks identified as the linear combination of residuals that maximizes the 2Y-ahead FEV of V but do not affect RV within a month.
- The theory says there is no *contemporaneous* impact of V on RV. Does that mean that RV does not respond for *one month*?
- We can answer using our 3-step procedure:
  - Estimate daily VAR with RV, V and financial covariates.
  - Assume uncertainty shocks maximize the 2Y-ahead FEV of V but do not affect RV *within a day.*
  - Average the daily series of uncertainty shocks and use them as external instruments in a monthly VAR.



- We also use the identification proposed by Caldara et al. (2016) but at daily frequency: identifying uncertainty shocks as the linear combination of *daily* residuals that maximizes the 6 month-ahead VXO response subject to orthogonality w.r.t. financial shocks.
- The shocks turn out to have similar effects in the two setups:



Conclusions

- We use daily data to identify uncertainty shocks with a more accurate information set and looser restrictions on LF variables.
- Temporal aggregation matters: uncertainty shocks reduce economic activity, and their impact is similar in Berger et al. (2020) and Caldara et al. (2016).