Discussion of "Uncertainty and Economic Activity in a Global Perspective" by A. Cesa-Bianchi, M. H. Pesaran and A. Rebucci

Conference in Memory of Carlo Giannini

André Kallåk Anundsen

Norges Bank

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Main question

- Does uncertainty (financial market volatility) cause changes in economic activity, or vice versa? Or maybe both?

Background I

Large parts of the literature suggest that uncertainty causes economic activity to slow down, which theoretically seems plausible due to:

1. Delays in investment and hiring decisions in an uncertain economic environment
2. Increased savings and reduced demand for consumption
3. By increasing financial frictions and the risk premium $\Rightarrow$ Higher cost of finance

But, uncertainty may also stimulate economic activity by:

1. Stimulating R&D
2. Increased savings $\Rightarrow$ Higher investments

Background II

Opposite direction of causality also seems reasonable, since:

1. Less trading reduces information flow (Van Nieuwerburgh and Veldkamp (2006)

2. Recessions may trigger increased policy uncertainty due to experimentation in policy, see Baker et.al (2012)

3. An unstable economic climate decreases forecast accuracy, and hence increases uncertainty (Orlik and Vedkamp, 2012)

Your paper

Allow for potential bi-directional dependence between volatility and economic activity

Methodological approach

Allowing for a common factor driving both volatility and macroeconomic activity, the approach may be described in three steps:

1. Estimate ARDL specification for volatility module by OLS (contingent on large N assumption)
   a Test significance of macro variables (current, lead and lag) in affecting volatility, i.e. are macro variables driving volatility?
   b Collect the residuals
2. Estimate the GVAR and collect the RF residuals
3. Test if (lagged) VOL residuals have explanatory power for RF GVAR residuals, i.e. is volatility affecting macro variables once the common factor is taken into account? (either directly or indirectly by affecting financial variables in the GVAR)

Main contributions/findings

1. **Methodology:** Suggest a framework for investigating bi-directional dependence between volatility and economic activity by extending the GVAR model to allow for a volatility module, i.e. a GVAR-VOL model

2. **Data:** Constructing new global measures of financial market volatility

3. **Empirical/Applied:**
   a Volatility is forward looking and is affected by leads of GDP, so economic activity does influence uncertainty
   b Little evidence that volatility affects real economy other than common factor

   a + b ⇒ Volatility is a symptom rather than a cause of macroeconomic instability. This is in sharp contrast to e.g. Bloom (2013), who suggests that the jump in uncertainty during the financial crisis may have contributed to about a third of the drop in GDP

Comment I: The volatility module

In the GVAR-VOL model, it is assumed that volatility and macro variables are driven by a set of common factors, $\mathbf{n}_t$:

$$\mathbf{v}_t = \boldsymbol{\Phi}\mathbf{v}_{t-1} + \boldsymbol{\Lambda}\mathbf{n}_t + \boldsymbol{\xi}_t \tag{1}$$

$$\Delta\mathbf{y}_{i,t} = \boldsymbol{\eta}_i\mathbf{y}_{t-1} + \boldsymbol{\Gamma}_i\mathbf{n}_{t-1} + \boldsymbol{\zeta}_{i,t} \tag{2}$$

For illustration purposes, set $\boldsymbol{\eta}_i = \boldsymbol{\eta} \ \forall \ i$. Then, we can write:

$$\mathbf{v}_t = \boldsymbol{\Phi}\mathbf{v}_{t-1} + \boldsymbol{\Psi}_1\Delta\bar{\mathbf{y}}_t + \boldsymbol{\Psi}_2\Delta\bar{\mathbf{y}}_{t+1} + (\boldsymbol{\xi}_t - \boldsymbol{\Psi}_2\bar{\boldsymbol{\zeta}}_{t+1}) \tag{3}$$

$$\Delta\mathbf{y}_{i,t} = \boldsymbol{\eta}\mathbf{y}_{i,t-1} + \boldsymbol{\Theta}_{1,i}v_{t-1} + \boldsymbol{\Theta}_{2,i}v_{t-2} + (\boldsymbol{\zeta}_{i,t} - \boldsymbol{\Theta}_{1,i}\boldsymbol{\xi}_t) \tag{4}$$

Comment I: The volatility module

1. Validity of OLS estimation of VOL-module in (3) hinges on large N assumption, as $E(\bar{\zeta}'_{t+1}\bar{\mathbf{y}}_{t+1}) = \mathbf{0}$ holds asymptotically. Is $N = 26$ enough to satisfy this assumption? Maybe some MC simulations of GVAR-VOL model could help convince on this point?

Comment I: The volatility module

The I(0)'ness of the VOL module seems important, and for most
asset classes it seems to be supported, but not for bond prices.
Thus:

1. The global measure, which is a weighted average of the
   measures from the different asset classes, might have an I(1)
   component. Therefore, it seems relevant to report ADF test
   for global volatility measure as well

2. Why not also report tests for non-stationarity of ARDL
   residuals?

3. Why not use some info criteria, or a sequential t-test, to
   specify lag length of ADF regression instead of ADF(4) and
   ADF(8) when testing I(0)'ness of volatility measure?

Comment II: The conceptual understanding of uncertainty vs. volatility

Agree that – conditional on assumptions – results show that volatility not explained by common factor does not affect real economy, but is this the same as uncertainty? Volatility $\neq$ Uncertainty, but it is functionally dependent on uncertainty? But then, $\mathbf{n}_t$ could be measuring uncertainty?

Comment II: The common factor and uncertainty

If this is what the common factor is picking up:

Figure 3: Newspaper policy uncertainty index is 51% higher in recessions
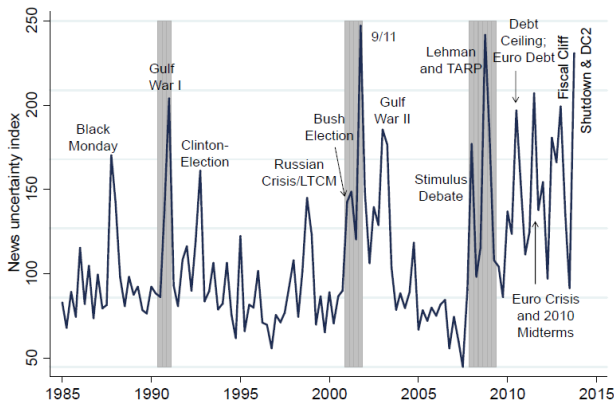
Notes: Source Baker, Bloom and Davis (2013) policy uncertainty news index. Frequency of newspaper articles in 10 US papers about economic policy uncertainty. Data from January 1985 to October 2013, normalized to 100 prior to 2010. Grey bars are NBER recessions. Data spans 1985Q1-2013Q4.

Then, the common factor may be measuring uncertainty, which
drives both financial market volatility and economic activity?
If so, should be careful about using volatility and uncertainty
interchangeably

Comment III: Econometric specification

- ▶ Why not identify CI relations to provide more economic intuition about LR effects?
- ▶ Economically, how should I think about $Rank = 1$ in some countries and $Rank = 4$ in others when the information set it the same in most cases?

Comment III: Econometric specification

- ▶ Is one and two lags enough to ensure satisfying residual diagnostics in GVAR and VOL module?
- ▶ Why not test significance of volatility measure in affecting macro variables jointly? Probably similar results, but would strengthen result

Comment III: Econometric specification

▶ I really like the last section, where the results of the literature are encompassed within the common factor GVAR-VOL model, but I think the US results could be pushed more, since this is where most of the literature has been concentrated and since results are strongly encompassed in this case!

▶ Could effect of the policy uncertainty measure on US macro variables also be tested? Would be nice to take all the "common" measures in the literature and show that result still holds

Conclusion

- ▶ Super interesting and well written paper on a highly topical issue $\Rightarrow$ Great contribution!
- ▶ I enjoyed reading the paper a lot
- ▶ Is $E(\bar{\zeta}'_{t+1}\bar{\mathbf{y}}_{t+1}) = \mathbf{0}$ reasonable for $N = 26$?
- ▶ Stationarity of volatility module?
- ▶ Clarify concept of uncertainty vs. volatility
- ▶ Push the US results more, and maybe also explore alternative measures of uncertainty