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Discussion of:

What moves real GNP
by H. Uhlig

The international business cycle in a changing world: volatility and the propagation of shocks
by P. Perez, D. Osborne and M. Artis

What explains changes in postwar output volatility: shocks or propagation mechanism?
by V. Labhard

H. Uhlig

Identify the main macroeconomic shocks driving GNP.

Estimation:
VAR on 7 ''core'' macro variables

Identification:
1. Picks $q = 2$ rotations of the residuals so to maximize the explained forecast variance error for GNP.
2. ''Tentative'' identification: orthogonal rotations of the two ''big shocks''

2 issues to be solved:

1. **Big vs. small shocks.** Extracting principal components of a certain matrix S, related to the forecast error variance of GNP.

2. **What are the big shocks?** Identification. Solution here: examine some rotations, with no economic meaning

What econometric models produce that kind of rank reduction?

Generate data from a full rank 5D VAR and compute Uhlig's measure to max variance of the 2nd variable.

variable	True	VAR	Uhlig
1	.10	.10	.11
2	.80	.77	.86
3	.07	.08	.12
4	.01	.02	**.42**
5	.00	.02	.05

Even if you have a VAR with full rank residuals, Uhlig's measure often attributes to the big shocks more variance than it is the case.

- Why?

- Are the results "pure" or are them a statistical artifact?

- What data structure is that measure picking up?

  As they are, in a small n world, PC mix up everything : PC are a very atheoretical idea - no model underlying

- What IRFs will you be picking up by extracting PC?

  If: $\overset{n\times 1}{Y_t} = \overset{n\times q}{A(L)}\,\overset{q\times 1}{u_t} + \overset{n\times 1}{\varepsilon_t}$

  IRFs you recover from VAR estimation are inconsistent (no matter the identification), Giannone, Reichlin and Sala (2003)

Alternative:

Start from a model:

$$\overset{n\times 1}{Y_t} = \overset{n\times q}{A(L)}\overset{q\times 1}{u_t} + \overset{n\times 1}{\varepsilon_t}$$

and consider explicitely the rank reduction.

Giannone, Reichlin and Sala (2002): 2-3 shocks explain 80-90% of the variance of key variables in a panel of 450 US series.

1. **Big vs. small shocks**. Automatic, by construction, you get the "big shocks" (not those explaining 1 variable but those common to the whole panel)

2. **What are the big shocks?**

A. few shocks $\Longleftrightarrow$ few identifying restrictions

B. large cross-section allows for the possibility of overidentification restrictions. From econometric model to economic theory (as in SVAR).

P. Perez, D. Osborne and M. Artis

Studies the interrelations between the GDP growth rates of the G7 countries.

Concentrates on two questions:

1. has propagation of shocks (national vs. international) changed across time?

2. has absolute/relative role of shocks (EU vs. US) changed across time?

Methodology:
6 country-specific VARs, with:

US GDP, as "World/US factor"
EU15 GDP as "European factor"
country i GDP

Triangular identification, with Vcov diagonal (not identity). Sub-sample (60-79 and 80-02) analysis

1. How variance of residuals have changed? Result: on average, it has decreased. More in EU15 than in the US

2. Variance decomposition:

US $\setminus$ World shock $\rightarrow$ US$_{GDP}$: lower
US $\setminus$ World shock $\rightarrow$ EU15$_{GDP}$: same

EU15 shock $\rightarrow$ US$_{GDP}$: larger
EU15 shock $\rightarrow$ EU15$_{GDP}$: constant

Comments:

- **World vs. US shocks**
  How do you disentangle between them?
  $\rightarrow$ Shocks vs. propagation
  Is EU more affected by US or by world shocks?
  Stronger propagations or more common shocks?
  Very different interpretation!

- **Omitted variables**
  Suppose there was a change in the structure. Omitted variable: higher variance of residuals. Is this higher volatility or Δ in the structure?

- **Residuals as shocks**
  discussion Rudebusch - Sims

- You have 6 shocks for US_{GDP} and 6 for EU_{GDP}: are them correlated? Does averaging hides interesting results?

- US $\rightarrow$ EU15: 15% but:
  US $\rightarrow$ EU countries (D, F, I)$<$ 10%

- Confidence bands? Are differences significant?

- Business cycles synchronization is increased integration? Integration (risk sharing) may imply less synchronization.
  Again, world shocks are crucial!

V. Labhard

Is the reduction in variance of GDP growth explained by changes in the propagation mechanism or in the shocks?

1. Documents breaks in variance and in the univariate AR structure for GDP growth of many aggregates (US, G7, EU3, ...): main break is in 82:3Q (Stock-Watson)

2. Weighted LS method to estimate a time-varying VAR for the G7 aggregate

3. Generate 132×2 counterfactual series by combining the VAR structure estimated on one sample with residuals from another subsample

4. Perform test of stability on counterfactual GDP growth series: **good shocks**

Comments:

- Can you discriminate between smooth transition and sudden breaks?

- Other aggregates (EU15, ...)?

- Instead of using the residuals to generate series, generate shocks from the estimated Vcov. Shouldn't you get the same results? I tried and results differ. Why? WLS

- What about "pure" subsample analysis?

- Generate GDP from VAR structure and then test stability on AR.
If the VAR structure has changed, the AR model will likely tell you that residuals have changed.

- Break in 1990. This method max the weight of time T. The counterfactual series will be "relatively" closer to the actual at T, right? If you estimate a break at K far away from T, EVEN IF you are giving low weight to K it means that the break is indeed there.