

# Discussion of "Globalization and Business Cycle Spillovers: A global VAR approach" by Michael Binder and Christian Offermanns

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# Summary

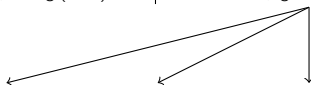
- Still preliminary paper with already some nice results
- Combination of two new modeling strategies: conditioning and GVAR
- Deeper financial and trade integration leads to larger spillovers
- Output spillovers large and positive during the first year and negative afterwards

# Focus of my comments

- Incorporation in the literature
- The model chosen
- Results in the light of other studies

# Incorporation in the literature I

GVAR modeling	Shock identification	No Shock identification
Structural Form		Dees, Pesaran, Smith, Smith (2010) Hollmayr (2011)
Reduced Form	Dees, Di Mauro, Pesaran, Smith (2005) Binder, Chen, Zhang (2009)	Pesaran, Scott, Weiner (2004) Galesi, Sgherri (2009)



Regime Switching GVARs	Threshold GVAR	Conditioning
Buchmann (2011)	???	Binder, Offermanns (2011)

- How is conditioning different from regime switching, threshold VARs (only more dynamic? Can conditioning be approximated by an infinite number of regimes?)
- How is conditioning different from time varying weights in the GVAR estimation (financial and trade weights)?

# Incorporation in the literature II

## Conditioning:

- Binder, Offermanns (2008)
- Binder, Blum (2010)

## Financial Integration, Globalization

- Kose, Otrok, Whiteman (2003)
- Kose, Prasad, Terrones (2003)
- Dees, Zorell (2011)
- Traczyk (2010)

# Comments on the model

In the simplest case of  $m = 2$ ,  $N = 2$ ,  $\tau = 0$ ,  $p = q = 1$ , no intercepts and trends and no common factor

Global Solution obtained via traditional GVAR estimation:

$$G(Z_t, W_t) = [G_0(Z_t, W_t), G_1(Z_t, W_t)] =$$

$$= \begin{pmatrix} 1 & 0 & \lambda_{H1,11} & \lambda_{H1,12} & \phi_{H,11} & \phi_{H,12} & \lambda_{H2,11} & \lambda_{H2,12} \\ 0 & 1 & \lambda_{H1,21} & \lambda_{H1,22} & \phi_{H,21} & \phi_{H,22} & \lambda_{H2,11} & \lambda_{H2,22} \\ 1 & 0 & \lambda_{F1,11} & \lambda_{F1,12} & \phi_{F,11} & \phi_{F,12} & \lambda_{F2,11} & \lambda_{F2,12} \\ 0 & 1 & \lambda_{F1,21} & \lambda_{F1,22} & \phi_{F,21} & \phi_{F,22} & \lambda_{F2,11} & \lambda_{F2,22} \end{pmatrix}$$

altogether 24 coefficients to estimate in this case.

If the Chebyshev polynomial  $\tau$  is increased to 1:

$$U_{H,t} = \begin{pmatrix} x_{H,t-1} & x_{H,t}^* & x_{H,t-1}^* \\ x_{H,t-1}Z_{1,it} & x_{H,t}^*Z_{1,it} & x_{H,t-1}^*Z_{1,it} \\ x_{H,t-1}Z_{2,it} & x_{H,t}^*Z_{2,it} & x_{H,t-1}^*Z_{2,it} \\ x_{H,t-1}Z_{1,it}Z_{2,it} & x_{H,t}^*Z_{1,it}Z_{2,it} & x_{H,t-1}^*Z_{1,it}Z_{2,it} \end{pmatrix}$$

# Comments on the model II

$$U_{F,t} = \begin{pmatrix} X_{F,t-1} & X_{F,t}^* & X_{F,t-1}^* \\ X_{F,t-1}Z_{1,it} & X_{F,t}^*Z_{1,it} & X_{F,t-1}^*Z_{1,it} \\ X_{F,t-1}Z_{2,it} & X_{F,t}^*Z_{2,it} & X_{F,t-1}^*Z_{2,it} \\ X_{F,t-1}Z_{1,it}Z_{2,it} & X_{F,t}^*Z_{1,it}Z_{2,it} & X_{F,t-1}^*Z_{1,it}Z_{2,it} \end{pmatrix}$$

$$X_t = \left( \text{vec} \left( I(2) \otimes U_{H,t} \right) \right)' \text{vec} \left( H^\Gamma \right) + \epsilon_t$$

with  $H^\Gamma$  being now:

$$H^\Gamma = \begin{pmatrix} h_{00}^{\gamma_{1,1}} & h_{10}^{\gamma_{1,1}} & h_{01}^{\gamma_{1,1}} & h_{11}^{\gamma_{1,1}} & \dots & h_{00}^{\gamma_{1,6}} & h_{10}^{\gamma_{1,6}} & h_{01}^{\gamma_{1,6}} & h_{11}^{\gamma_{1,6}} \\ h_{00}^{\gamma_{2,1}} & h_{10}^{\gamma_{2,1}} & h_{01}^{\gamma_{2,1}} & h_{11}^{\gamma_{2,1}} & \dots & h_{00}^{\gamma_{2,6}} & h_{10}^{\gamma_{2,6}} & h_{01}^{\gamma_{2,6}} & h_{11}^{\gamma_{2,6}} \\ h_{00}^{\gamma_{3,1}} & h_{10}^{\gamma_{3,1}} & h_{01}^{\gamma_{3,1}} & h_{11}^{\gamma_{3,1}} & \dots & h_{00}^{\gamma_{3,6}} & h_{10}^{\gamma_{3,6}} & h_{01}^{\gamma_{3,6}} & h_{11}^{\gamma_{3,6}} \\ h_{00}^{\gamma_{4,1}} & h_{10}^{\gamma_{4,1}} & h_{01}^{\gamma_{4,1}} & h_{11}^{\gamma_{4,1}} & \dots & h_{00}^{\gamma_{4,6}} & h_{10}^{\gamma_{4,6}} & h_{01}^{\gamma_{4,6}} & h_{11}^{\gamma_{4,6}} \end{pmatrix}$$

now with conditioning 96 coefficients to estimate, four times as much as before

# Comments on the model III

Conditioning could become even more nonlinear if  $\tau$  is increasing further ( $\tau \geq 2$ ); in this example the number of coefficients would depend on the degree of conditioning and upon which variables:

Conditioning...	$\tau = 0$	$\tau = 1$	$\tau = 2$
On all var.	24	96	216
On foreign var.	24	72	152
On foreign cont. var.	24	48	88



## Results of other studies

Traczyk (2010):

- division into developed, emerging and frontier markets
- similar results but major driving force are asset prices
- GVAR approach with a lot of robustness checks: trade weights, financial weights, mixed, time varying weights etc.

Dees, Zorell (2011):

- disentangling trade and financial linkages to analyze business cycle synchronization (BCS)
- trade linkages and similar sectoral specialization increase BCS
- effect of financial linkage uncertain, but overall positive
- neither GVAR nor conditioning, but approach from Imbs (2006)

## Other comments

- could be that spillovers become significant as the coefficients are estimated with conditioning
- common factor (oil price) would perhaps sharpen the results
- Is it innocuous to use trade weights to link countries to each other and condition on this basis constructed variables on trade over GDP later on (try perhaps also with financial weights)
- is smoothing of the cyclical component of trade over GDP really necessary? (I see the point on the financial side), crisis is not covered anyways.
- conditioning only on spillovers (and common factor if there was one) and not on lags of domestic variables could lead to positive impact of output on own output after one year?

## Some suggestions

### Model related:

- in the result section indication would be nice where the current ratios are
- how big is the effect of conditioning, relative to not conditioning (using the same model and data)

### Economics related:

- interesting to see results for the Euro Area over the past ten years, has there been a business cycle synchronization
- similarly interesting to decompose the sample for other continents (Globalization vs. Regionalization)

# Concluding thoughts

- Very nice idea, to combine conditioning of variables with the GVAR approach
- the application is perfect for it
- excited to see the finished version of the paper