

A Comment on Empirical Estimation of Patterns of Shocks Utilizing the VAR Methodology on Developing Countries

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What is a country's optimal choice of an exchange rate regime? One avenue which has gained prominence is the Optimum Currency Area criteria of patterns of shocks which suggests that a flexible exchange rate may be less costly for regions who face asymmetric shocks, since they are forced to have conflicting policy responses, and vice versa.¹ While there are a number of methodologies to calculate the patterns of shocks, the VAR methodology, which results from a technique introduced in Bayoumi and Eichengreen [1992, 1994]; B&E from now on, may be at present one of the most popular. In the estimation of their model the authors have introduced some "over-identifying conditions"² (called OIC from now on) which confirm the validity of their decomposition.

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While these conditions seem to be met for developed countries,³ it does not seem so for developing economies. I comment on a recent article by Horvath and Grabowski [1997]; HG from now on who look at the prospect of African integration although ignoring the OIC.

Is the OIC important? Although it does not seem to significantly alter the conclusion for the question of African integration, I would argue that its failure indicates that something is wrong with the VAR decomposition. One problem may deal with the quality of data where developed countries have, on average, better quality data than developing countries Summers and Heston [1993] . Another potentially serious problem is that the model may not capture reality. This is seen in B&E's [1995] explanation for the perverse price response in Bordo [1993] as the close connection of prices in a commodity standard. Likewise, it may be that the VAR technique does not differentiate between nominal and real demand shocks Nueman [1993] where for Nepal and India there is the presence of temporary real shocks from agriculture Bajracharya and Maskay [1998] . While the explanations of why developing countries fail the OIC are many, overlooking these results, ignores some valuable information in the dynamics of developing countries.

However HG⁴ ignore the OIC when doing a VAR analysis, such as B&E, and conclude that the scope for integration in Africa is limited. This contrasts with Bayoumi and Ostry [1995]; B&O from now on , who look at Africa during roughly the same period (i.e. 1964-1993 vs. 1960-1992), and comment that :

"Unfortunately...the results from the vector autoregression did not satisfy the expected "over-identifying restrictions" on price responses...to confirm the validity of [the] decomposition.." from B&O [1995], p. 14

B&O then went on to use a simpler estimation methodology⁵ to reach

roughly the same conclusion as HG based on the pattern of real shocks.

While both results are similar, the model implied by HG is inconsistent with the standard aggregate supply (AS) – aggregate demand (AD) model of B&E (i.e. that the AD curve is down ward sloping while the short run AS curve is upward sloping and the long run AS curve is vertical). That is, the failure of the OIC suggests, from the impulse response function of prices as with Bordo [1993] and Maskay [1998] , that a positively sloped AD curve, rather than a negatively sloped AD curve, exists. In other words there is a conflict between the estimated model and the model described by the data. Thus, due to this inconsistency, any conclusion based upon these results would not be valid.⁶

To conclude, the failure by HG to examine the OIC brings into question the validity of their results. More generally, the dichotomy of accepting and rejecting the OIC between developed and developing countries (suggested from the above, albeit limited, samples) would seem to imply that the VAR is too sophisticated a technique for the quality of data to be found in developing economies.

References

Aghevli, Bijan B., Mohsin S. Khan and Peter J. Montiel [1991], "Exchange Rate Policy in Developing Countries: Some Analytical Issues," IMF Occasional Papers No. 78, March.

6. While this information suggests that application of a VAR analysis is not valid, its failure convey information which, through further examination, may result in broader insight. Consider the case of Nepal and India which failed the OIC Maskay [1998] . The results from a simpler estimation strategy, B&O, suggest that neither country faced symmetric patterns of shocks. This can be traced to the developing, agricultural based structure of their economies which are susceptible to the idiosyncratic shocks of the

- Arnon, Arie and Avia Spivak [1996], "Monetary Integration between the Israeli, Jordanian and Palestinian Economies," *Weltwirtschaftliches Archiv* 132(2); pp. 259-277.
- Bajracharya, Bhuban Barja and Nephil Matangi Maskay [1998], "The Aggregate Supply Response for Nepalese Agriculture for the Period 1967/ 68-1994/95" forthcoming in *The Journal of Development and Administrative Studies*.
- Bayoumi, Tamim [1992], "The Effects of the ERM on Participating Economies" *International Monetary Fund Staff Paper*, 39, June; pp. 330-356.
- Bayoumi, Tamim and Barry Eichengreen [1992], "Shocking Aspects of European Monetary Unification," *NBER Working Paper* No. 3949, January.
- Bayoumi, Tamim and Barry Eichengreen [1994], "One Money or Many? Analyzing the Prospects for Monetary Unification in Various Parts of the World," *Princeton Studies in International Finance*, No. 76, September.
- Bayoumi, Tamim and Barry Eichengreen [1995], "The Stability of the Gold Standard and the Evolution of the International Monetary System" *IMF Working Papers*, September.
- Bayoumi, Tamim and Jonathan D. Ostry [1995], "Macroeconomic Shocks and Trade Flows within Sub-Saharan Africa: Implications for Optimum Currency Arrangements," *IMF Working Paper*, December.
- Bordo, Michael [1993] "The Gold Standard, Bretton Woods and other Monetary Regimes: A Historical Perspective" *Review: The Federal Reserve Bank of St. Louis* 75, No. 2.
- Horvath, Julius and Richard Grabowski [1997], "Prospects of African Integration in Light of the Theory of Optimum Currency Areas," *Journal of Economic Integration*, 12(1), March; pp. 1-25.
- Maskay, Nephil Matangi [1998a], "A Cautionary Note in Using Patterns of

tion of Currency Unions, Great Britain: Cambridge University Press.

Neumann, Manfred J. M. "Commentary," Review: The Federal Reserve Bank of St. Louis 75, No. 2; pp. 192-199.

Pilbeam, Keith [1992], International Finance, Hong Kong: Macmillan Press Ltd.