

**Comments to**  
**“A decomposition of global linkages in financial markets”**

**by Menzie Chinn and Kristin Forbes**

**Fabrizio Perri**

**NYU, Princeton and CEPR**

*Objective of the project*

Measure changes in cross country asset returns correlations in the recent years of financial integration and understand their determinants

*Method*

-Let  $X_t^i$  and  $X_t^j$  be the weekly asset returns in country  $i$  and country  $j$   
-Let  $\beta_{ijt}$  be the contemporaneous (partial) correlation between the two asset returns in period  $t$

The correlation is partial as the authors want to control for global and sectoral shocks that are likely to affect both returns.

- Regress  $\beta_{ijt}$  on a set of variables ( Direct trade between  $i$  and  $j$ , Trade competition between  $i$  and  $j$ , Bank exposure between  $i$  and  $j$ , Investment Exposure between  $i$  and  $j$ )

*Main comment*

Authors use interchangeably the notion of correlation and integration but the two concepts are different.

The returns on two assets can be strongly correlated even in absence of financial integration (think for example of US and European Stock Markets during the great depression) or viceversa returns can be uncorrelated in a period of relatively high financial integration (think of US and Japan in the 1990s). Correlation between asset returns is a statistical measure that is potentially affected by financial integration but that is also affected by a number of different variables. Their empirical exercise thus will shed light on the determinants of correlation of asset returns but not necessarily on the determinants of financial integration. For more discussion on the relation between integration and correlation see Obstfeld and Taylor (1999) *Global Capital Markets: Integration, Crisis and Growth*.

A minimal theory framework is helpful to understand the differences between correlation and integration

Let  $M_{t,t+1}^i$  be the pricing kernel for investors in country  $i$  (the value of a dollar in period  $t + 1$  relative to the value of a dollar in period  $t$ )

No arbitrage implies that

$$1 = E_t(M_{t,t+1}^i X_{t+1}^i)$$

where  $E_t$  is the expectation over states in  $t + 1$  taken using information available at time  $t$ . Assume now investors in country  $i$  can access assets of country  $j$  paying a proportional transaction cost  $\gamma$ , then we have

$$1 - \gamma \leq E_t(M_{t,t+1}^i X_{t+1}^j) \leq 1 + \gamma$$

Consider now two polar cases:

1) Perfect financial integration ( $\gamma = 0$ ) plus complete financial markets ( $1 = M_{t,t+1}^i X_{t+1}^i$  for every realization in  $t + 1$ ). In this case  $X_t^i = X_t^j$  and the correlation of the returns is 1

independently on the correlation of the shocks hitting the returns. If the authors think of the recent globalization period as a move leading to this situation than they should focus on financial variables (transaction costs, degree of financial markets sophistication, possibility of hedging etc. etc.) as the main explanation of the increase in correlation.

2) No financial integration ( $\gamma$  very high). In this case the correlation between  $X_t^i$  and  $X_t^j$  is only determined by the real shocks affecting the returns and international financial linkages play no role. In this case the correlation of assets returns is mainly determined by the correlation of the shocks affecting the assets return and the focus should be toward real variables (like trade, similarity of local policies etc etc.)

In general this type of analysis will be helpful to interpret the results and to guide the empirical work. Ideally the empirical exercise could tell us how much of the change in correlation between asset returns is coming for the change in financial structure and how much is coming form the change in the nature of shocks. For more discussion on how a simple theory framework can be used in conjunction with data analysis to understand changes in financial integration see Dumas, Harvey and Ruiz (2001) “Are correlations of stock returns justified by subsequent changed in national outputs”

#### *Other Comments*

- It is unclear how and why the authors are going to control for global and sectoral shocks when measuring the correlation between assets returns. In particular the impact of global shocks can in some cases be greatly affected by changes in financial integration. For example if one considers the US rate a global shock then the impact that the US rate has on stock returns of different countries will depend on the financial integration of those countries

and thus controlling for global shocks might significantly affect the measured correlation between asset returns in an undesired way.

- The measure of comovement between asset returns they propose to use only accounts of contemporaneous (impact) correlation. A more careful statistical analysis should measure correlation of asset returns also at different lead and lags.