

Measuring Financial Integration in the Baltic Countries with Time-Varying Techniques: A Bayesian versus Classical Methodology

(Extended Abstract)

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This research project encompasses an interdisciplinary approach to the Emerging Markets Research and thus consolidates the different areas of knowledge in International Finance, Macroeconomics and (Bayesian and Classical) Econometrics. It measures a degree of financial integration in the Baltic Countries within the context of the European Union and the World.

In the financial market literature, emerging markets integration refers to the free access of foreign agents to local capital markets and local investors to foreign capital markets. According to Bekaert et al. (1995), financial market integration is a gradual process and is defined by the transition from a completely segmented state of the market to a completely integrated market. However, the degree of financial integration depends on a number of country-owned factors, such as own country economic performance, the differences in the industrial structure between the global and the local markets, and on the degree of real and financial convergence with other economies. In particular, the degree of real integration is measured by the correlation of the business cycles and is known to have a significant effect on financial integration. For the purpose of this research, we make a distinction between three groups of control variables: World information factors (the US), European information factors (Germany) and local market information factors (Estonia, Latvia and Lithuania). A local market is financially integrated in the context of the World (European) market to the extent that the financial return and volatility generated in the local market are priced by using the World (European) factors. Thus the model used in this paper is a variant of the standard Arbitrage Pricing Theory (APT), developed by Ross (1976).

We consider two different approaches to study financial market integration in the Baltic Countries. One of the main objectives is to compare the performance of the two methodologies.

A Bayesian framework adopted in this paper is a natural approach to a time-varying interdependence among international financial markets. We employ here a generalized block-

recursive Monte Carlo method (Zha, 1999) applied to a structural VAR in order to deal with emerging economies' (Estonia, Latvia and Lithuania) financial integration process.

Thus, to measure the degree of financial integration at the level of first moments (mean financial return), we use a structural VAR with time-varying coefficients. We also estimate the degree of financial integration at the level of second moments (the variance of financial return) with a Stochastic Volatility Model.

Since their independence, Estonia, Latvia and Lithuania have developed economic (investment and trade) and financial links with Germany, Sweden, Denmark and Finland. Thus the increasingly important economic and financial links with these EU are expected to have a direct positive effect on the degree of financial market integration in the Baltic Countries. Nevertheless, the financial convergence is unlikely to be immune from the external fluctuations, and, therefore, the degree of the financial integration is set as a non-linear function of stochastic trend (random walk) rather than deterministic trend. The Bayesian approach treats a vector of integration parameters as random variables, making it attractive modeling data from economies in which the decision-makers and institutional investors are learning (Cogley and Sargent, 2001). Following Lubos Pastor (1999), a model can be used as a point of reference around which the decision-maker can center her beliefs. The prior beliefs are combined with the information contained in the data (in the form of a likelihood function), together with a set of initial conditions, to obtain a joint posterior distribution of the parameters of interest via Bayes rule. The posterior distribution represents the revised (or updated) beliefs. These beliefs are then used for decision-making. The relative importance of the sample evidence versus the model depends on the strengths of the prior beliefs in the model. Foreign investors follow learning process when evaluating the investment opportunities in the emerging markets in the course of financial integration. When approaching a local emerging market for the first time, foreign investors have no financial information on pricing factors and, therefore, make rather noisy valuations of them based on the prior beliefs. For this reason, they will offer a lower current price for a stock (or, equivalently, will require higher rate of return on the stock) and, consequently, will increase the ratio of the future price over the current price. As it used to be the case in the Baltic Countries, the strategic investors, due to the shortage of reliable information and noisy prior beliefs, were willing to pay lower price for a privatized object than the one set by local authorities. The investors or foreign decision-makers update the beliefs by discounting the financial information flowing into the local market. These financial news will make foreign investors to revise their beliefs and thus to reduce the noise in the factor valuation.

The classical methodology also enables using time-varying techniques. In particular, we use rolling estimation techniques to estimate the time-varying parameters of the model. To

measure the degree of financial integration at the level of first moments, we use a structural VAR with time-varying coefficients. We also measure the degree of financial integration at the level of second moment, for which purpose we adopt an asymmetric multivariate GARCH model.

The conclusions of the research will be important for the policy makers in the Baltic Countries as well as for the foreign and domestic investors. The project can be extended to address the following questions:

What is the role of the local monetary authorities in the financial integration in the Baltic Countries? What are the implications of the monetary transmission mechanism used by the emerging markets' central banks on the real and nominal convergence of the Baltic economy in the regional (Baltic), European and World context? What kind of impact the financial integration is likely to have on growth of the Baltic Countries' economies? How this impact can be reinforced through the available channels of monetary transmission undertaken by the monetary authorities? Thus, from a policy perspective, it would be useful to establish whether the monetary policy conducted by the central banks has an important effect on the financial convergence of the Baltic Countries, and whether the financial convergence, in turn, is relevant for the Baltic economic development. If this appears to be the case, then a local central bank might want to choose a more pro-active intervention policy in the transition period.

The above questions will set the guidelines of the future research and will permit to draw on the monetary policy conclusions for the Baltic Countries' monetary authorities.