Article

Chinese Science Bulletin

Statistical Physics and Mathematics for Complex Systems

December 2011 Vol.56 No.34: 3707–3716
doi: 10.1007/s11434-011-4755-x

Globalization and long-run co-movements in the stock market for the G7: An application of VECM under structural breaks

MENEZES Rui[1,2*] & DIONÍSIO Andreia[3,4]

[1] *ISCTE-IUL Business School, Av das Forças Armadas, 1649-026 Lisboa, Portugal;*
[2] *UNIDE-IUL Research Center, Av das Forças Armadas, 1649-026 Lisboa, Portugal;*
[3] *University of Évora, Largo dos Colegiais 2, 7000-803 Évora, Portugal;*
[4] *CEFAGE-UE Research Center, Largo dos Colegiais 2, 7000-803 Évora, Portugal*

Received May 17, 2011; accepted June 27, 2011

This paper analyzes the process of long-run co-movements and stock market globalization on the basis of cointegration tests and vector error correction (VEC) models. The cointegration tests used here allow for structural breaks to be explicitly modeled and breakpoints to be computed on a relative-time basis. The data used in our empirical analysis were drawn from Datastream and comprise the natural logarithms of relative stock market indexes since 1973 for the G7 countries. The main results point to the conclusion that significant causal cointegration effects occur in this context and that there is a long-run relationship that governs the worldwide process of market integration. Globalization, however, is a complex adjustment process and in many cases there is only evidence of weak market integration which means that non-proportional price transmission occurs in the market along with proportional changes. The worldwide markets, as expected, appear to be driven in general by the US stock market.

globalization, long-run co-movements, market integration, VECM, cointegration, structural breaks

Citation: Menezes R, Dionísio A. Globalization and long-run co-movements in the stock market for the G7: An application of VECM under structural breaks. Chinese Sci Bull, 2011, 56: 3707–3716, doi: 10.1007/s11434-011-4755-x

Recent debates on long-run co-movements and economic globalization have led to extensive research that try to determine its causes and explain the consequences of these phenomena in terms of market performance and their ability to adjust globally to economic boosts and crises. This has been relevant in the case of financial markets and in particular in stock market studies [1–9]. However, many of these studies lack a theoretical background of what is globalization and how it can be measured, and rely solely on conclusions based on correlation relationships among stock returns.

Although returns are considered the most important factor affecting investor decisions, prices may also play a role in the process of market adjustment and, in particular, in the process of market integration. In fact, while traditionally returns are considered as a complete and scale-free summary of investment opportunities and have more attractive statistical properties (e.g. stationarity and ergodicity) than prices, the latter incorporate important information about the long-run characteristics of the market that are, by construction, lost in the former. Indeed, continuous compounding returns (r_t) are typically computed as the log ratio between prices (P_t) at dates t and t–1, that is, $r_t = \Delta(\log P_t)$ and by taking the first difference of the observed variable P_t one removes the long-run information contained in the data.

Besides, the current econometric technology allows us to deal with the problem of nonstationarity of prices over time in a fairly trivial way using the concept of cointegration. And, even the problem of scaling can be easily overcome by relative prices rather than the originally observed stock prices or indexes without any loss of generality.

Under these circumstances, we argue that in order to keep the model as general and flexible as possible, researchers should keep as much original information as pos-

*Corresponding author (email: rui.menezes@iscte.pt)