



Economic interdependence and common stochastic trends: A comparative analysis between EMU and non-EMU stock markets

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Abstract

Whether economic interdependence among countries is a contributing factor to cointegration and common stochastic trends in international stock markets is indiscernible due to contradictory results from prior empirical work. This study aims to add clarity to this issue through a more distinct grouping of countries and methodological enhancements. A comparative analysis of cointegration is conducted between stock market price indices of major Economic and Monetary Union (EMU) and non-EMU countries. The conventional Johansen methodology is augmented with several diagnostic techniques (that have not been all inclusive in previous studies) to ensure the robustness of test results. Major findings pertinent to investors and policymakers are that economic interdependence appears to be the important contributing factor and that the U.S. stock market does not exert influences on long-run performances of other included stock markets. Furthermore, while the UK is not an EMU member, it may be viewed as a quasi EMU participant due to its stock market being cointegrated with and yet one of the common stochastic trends (besides those of Germany, Italy, and the Netherlands) within the EMU stock markets under investigation.

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1. Introduction

The degree of international stock market interdependence has received considerable attention in empirical research. Previous studies, including [Eun and Shim \(1989\)](#), [King](#)

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and Wadhvani (1990), Koutmos (1996), Park and Fatemi (1993), and Rahman and Young (1994), examine and generally find strong evidence of short-run interdependence among national stock markets via contemporaneous correlations and lead–lag relationships of returns and volatility transmissions. On the other hand, prior studies, especially the more recent ones, investigate long-run interdependence by employing a cointegration analysis of representative stock market price indices of various nations. Evidence of cointegration necessitates the presence of cointegrating vectors (CIVs) or equilibrium constraints precluding the cointegrated indices from diverging from one another in the long run. Such constraints transpire because these indices share common stochastic trends or the driving forces underlying their mutual growth over extended time horizons (Gonzalo & Granger, 1995).

Blackman, Holden, and Thomas (1994), Lee and Jion (1995), Masih and Masih (1997, 2002, 2001a), and Parhizgari, Dandapani, and Bhattacharya (1994) suggest that financial market globalization—including deregulation, harmonization of regulations, and improvements in communication technology that allow investors to participate in international stock markets more freely, quickly, and informatively than ever before—is a contributing factor to cointegration and common stochastic trends in international stock markets. As a larger number of investors compete to earn superior returns, stock prices in different countries should closely reflect the underlying economic fundamentals. Consequently, economic interdependence among the subject countries may emerge as an additional explanatory factor; common stochastic trends in stock markets of those countries potentially mirror their economic fundamentals that are related significantly with one another.

Corhay, Rad, and Urbain (1993) examine stock markets of European Union (EU) countries; Atteberry and Swanson (1997) study those of three North America Free Trade Agreement (NAFTA) countries; and Masih and Masih (2001b) investigate those of Australia and Asian newly industrialized countries (NICs). They find evidence of cointegration and relate it to economic interdependence via economic policy cooperation and substantial trades among the countries under investigation. The same conclusion is reiterated by other studies as well (e.g., Chen, Firth, & Rui, 2002, Cheung & Lai, 1999; Serletis & King, 1997).

However, other studies with contrary results are similarly in abundance. For example, Byers and Peel (1993) find that the UK, German, and Dutch stock markets are not cointegrated during the period after the UK abolition of exchange controls. Ewing, Payne, and Sowell (1999) find that NAFTA stock markets are not cointegrated over the period including the passage into the NAFTA in 1994. These results imply that economic interconnection within a group of countries does not contribute to cointegration of their stock markets once institutional impediments are eliminated. Knif and Pynnonen (1999) find a weak cointegrating relation within Nordic stock markets and none between them and other European stock markets despite strong subregional and regional economic ties. In addition, Bachman, Choi, Jeon, and Kopecky (1996) find a cointegrating relationship among EU stock market indices but none among non-EU counterparts during the 1980s. Over the entire sample period (1970s and 1980s), nonetheless, cointegration among EU stock indices is not evidenced although EU countries were major trading partners and had been eliminating intratrade barriers since the 1960s.

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