On the integrated behaviour of non-stationary volatility in stock markets

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Abstract

This paper analyses the behaviour of volatility for several international stock market indexes, namely the SP 500 (USA), the Nikkei (Japan), the PSI 20 (Portugal), the CAC 40 (France), the DAX 30 (Germany), the FTSE 100 (UK), the IBEX 35 (Spain) and the MIB 30 (Italy), in the context of non-stationarity. Our empirical results point to the evidence of the existence of integrated behaviour among several of those stock market indexes of different dimensions. It seems, therefore, that the behaviour of these markets tends to some uniformity, which can be interpreted as the existence of a similar behaviour facing to shocks that may affect the worldwide economy. Whether this is a cause or a consequence of market globalization is an issue that may be stressed in future work.
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Keywords: Cointegration; Non-stationarity; Exogeneity; Fractional integration; FIGARCH models

0. Introduction

The persistence of stock price volatility is a well-known stylized fact in the financial literature. Much of the empirical tests of volatility presented in the literature rely on the standard GARCH approach proposed by Bollerslev and Wooldrigde [1], and often produce evidence that the conditional volatility is highly persistent. The stock prices volatility also presents some attributes that are typically non-stationary, an issue that requires the consideration of a special class of conditional heteroskedasticity models based on the IGARCH specification proposed by Engle and Bollerslev [2]. Under this specification, there is no need to differentiate the series when they prove to be non-stationary in order to apply the conditional heteroskedasticity models, thus retaining the richness of information contained in the original series.

The main purpose of this paper is to compare the volatility between several international stock market indexes, namely the S&P 500 (USA), the Nikkei (Japan), the Hang-Seng (Hong-Kong), the PSI 20 (Portugal), the CAC 40 (France), the DAX 30 (Germany), the FTSE 100 (UK), the IBEX 35 (Spain), the ASE (Greece) and the MIB 30 (Italy), in the context of non-stationarity. We use the daily closing prices of these indexes to perform the tests and to present the empirical results.

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