Non-linear approach to Random Walk Test in selected African countries

Emmanuel Joel Aikins Abakah, Paul Alagidede, Lord Mensah, Kwaku Ohene-Asare

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Abstract

Purpose

The purpose of this paper is to re-examine the weak form efficiency of five African stock markets (South Africa, Nigeria, Egypt, Ghana and Mauritius) using various tests to assess the impact of non-linearity effect and thin trading which are prevalent in African markets on market efficiency.

Design/methodology/approach

The weekly returns of S&P/IFC return indices for five African countries over the period 2000-2013 were obtained from DataStream and analyzed. The study adopted the newly developed Non-Linear Fourier unit root test advanced by Enders and Lee (2004, 2009) which allows for an unknown number of structural breaks with unknown functional forms and non-linearity in data generating process of stock prices series to test the Random Walk Hypothesis (RWH) for the five markets, and an augment regression model.

Findings

In light of the empirical evidence the author(s) using Non-linear Fourier Unit Root Test only fail to reject the RWH for South Africa, Nigeria and Egypt leading to the conclusion that these markets follow the RWH and weak-form efficient whilst Ghana and Mauritius are weak-form inefficient. Besides, evaluating non-linear models without adjusting for thin trading effect shows that, South Africa and Ghana markets are weak-form efficient while Nigeria, Egypt and Mauritius are not. However, after accounting for thin trading effect, the author(s) find that South Africa and Egypt markets follow the RWH. The findings imply that market efficiency results depend on the methodology used.

thin trading and non-linearity effect influences markets efficiency tests in African stock markets. Thus, recent

structural adjustment and liberalization policies have not enhanced stock market operations in Africa. This paper therefore has implications for policy makers and international investors.

Keywords

Africa | Market efficiency | Non-linearity | Non-Linear-Fourier-Unit Root-Test | Thin trading

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