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The prospects of BRIC countries: Testing weak-form market efficiency

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ABSTRACT

The main purpose of the study is to determine whether the equity markets of Brazil, Russia, India and China (BRIC) may be considered weak-form efficient in recent years. The major findings using daily data and a bias-free statistical technique with a sample spanning from September 1995 to March 2010 indicate that the results from the last sub-periods, including the subprime crisis, support the belief that these markets may have been approaching a state of being fairly weak-form efficient, which reflects the future prospects of BRIC countries.

1. Introduction

The updated literature on market efficiency has shifted from the efficient market hypothesis (EMH), which states that the level of market efficiency remains unchanged in a complete sense during the estimation period to advocating the possibility of time-varying efficiency or inefficiency. The latter approach has recently been gaining attention (see, for example, Lo, 2004, 2005; Yen and Lee, 2008; Ito and Sugiyama, 2009; Lim and Brooks, 2011). However, Lo (2004, 2005) suggest that the new paradigm

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of adaptive markets hypothesis (AMH), according to which the EMH may persist together with behavioral finance in a logically consistent way. According to this new hypothesis, market efficiency is not an unconditionally fixed phenomenon but is a characteristic that varies continuously over time and across markets (Lim and Brooks, 2011).

The issues of whether the equity markets of the BRIC may be considered weak-form efficient remain still highly debatable with no general agreement, given mixed evidence. The intention of this paper is to present a more clear and homogeneous picture of these four significant markets using updated data including the recent ongoing period of turmoil in the financial world as well as a robust time-varying efficiency test methodology that facilitates statistical triangulation (Hung et al., 2009; Chianga et al., 2010; Charles and Darńe, 2009; Ito and Sugiyama, 2009; Al-Saleh and Al-Ajmi, 2012).

This paper contributes to the existing literature in two ways. First, there is no contemporaneous study on market efficiency and anomalies in the quickly growing economies and transition markets of Brazil, Russia, India and China, also known as the BRIC countries. Second, this study includes the current subprime financial crisis, which represents a developmental stage in the BRIC transition during chaos in the developed market. However, due to major changes in the BRIC economies in the past thirty years, the data have been divided into three sub-periods to observe whether these markets exhibit a trend toward increased weak-form market efficiency.

The major findings reveal that the BRIC stock markets appear to exhibit a trend toward increased weak-form efficiency and the disappearance of the day of the week effect, which may lead to the realization of the BRICs' dream in 2050 (Goldman Sachs Global Economics Group, 2007), although maintaining a well-functioning capital market is always a challenge.

The rest of the paper is organized in the following way: Section 2 presents the literature review; Section 3 presents the selected data and the adopted methodology used for the study; Section 4 presents and analyses the empirical findings in detailed; and Section 5 summarizes and concludes the study.

2. Literature review

Under weak-form market efficiency claims that future stock prices cannot be anticipated by using past stock price information, as past price information is already incorporated into the current stock price (Fama, 1970). Because weak-form market efficiency is a prerequisite for higher types of efficiency, rejecting it implies that the rejection of the semi-strong and strong forms as well (Campbell et al., 1997). However, Yen and Lee (2008) have recently provided an intensive review of empirical evidence on the EMH over the last five decades. Their survey clearly exhibits that the EMH no longer enjoys the level of support it received during the 1960s and in fact was criticized by behavioral finance in the 1990s. Lo (2004) proposes a new paradigm, adaptive markets hypothesis (AMH), in which the EMH may co-exist alongside behavioral finance in an intellectually consistent manner. According to this new hypothesis, market efficiency is not an unconditional phenomenon but a criterion that varies continuously over time and across markets.

Studies on the weak form of market efficiency in emerging markets have shown controversial results. Keane (1983) noted that developed markets have far more advanced systems of information disclosure and processing compared to developing markets. This characteristic may be one of many reasons why a substantial number of emerging markets are less efficient. An extensive paper by Worthington and Higgs (2005) examined the weak-form market efficiency of Asian equity markets. Daily returns were used for ten emerging markets (China, India, Indonesia, Korea, Malaysia, Pakistan, the Philippines, Sri Lanka, Taiwan and Thailand) and five developed markets (Australia, Hong Kong, Japan, New Zealand and Singapore). Various statistical tests suggested weak-form efficiency in all markets. However, when applying the more stringent variance ratio tests, the results were mixed, suggesting that only the developed markets in Hong Kong, New Zealand and Japan could be considered weak-form efficient. Lock (2007) applied the Lo and MacKinlay (1988) variance ratio test on the weekly returns from the Taiwanese stock market from 1990 to 2006 obtaining strong results that not only does the Taiwanese composite stock index move in a random walk fashion, returns for the individual stocks do as well. Gupta and Basu (2007) concluded that the two major equity markets in India do not follow a random walk, as evidence in autocorrelation was detected for the period 1991–2006.