Research in International Business and Finance 32 (2014) 50–59

Contents lists available at ScienceDirect

Research in International Business and Finance

journal homepage: www.elsevier.com/locate/ribaf

Evaluation of the adaptive market hypothesis as an evolutionary perspective on market efficiency: Evidence from the Tehran stock exchange

Majid Mirzaee Ghazani*, Mansour Khalili Araghi

University of Tehran, Iran

ARTICLE INFO

Article history:
Received 3 August 2013
Received in revised form 27 February 2014
Accepted 3 March 2014
Available online 19 March 2014

JEL classification:
G14
C12
G15

Keywords:
Adaptive market hypothesis
Evolution
Market efficiency
Nonlinear tests

ABSTRACT

This study evaluates the existence of the adaptive market hypothesis (AMH) as an evolutionary alternative to the efficient market hypothesis (EMH) by applying daily returns on the TEPIX index in the Tehran stock exchange (TSE) in Iran. The data span of daily returns is from 1999 to 2013. In this paper four different tests in the form of two distinguished classes (linear and nonlinear) have been used to study adaptive behavior of returns. The results that were obtained from linear (automatic variance ratio and automatic portmanteau) and nonlinear (generalized spectral and McLeod–Li) tests represent the oscillatory manner of returns about dependency and independency which corresponds with the adaptive market hypothesis.

1. Introduction

The efficient market hypothesis (Fama, 1965) can be considered as the basis of recent finance theory. Based on this hypothesis, the market is efficient when all available information is fully and

* Corresponding author. Tel.: +98 9125365260.
E-mail addresses: majidmirza@ut.ac.ir (M. Mirzaee Ghazani), Khalili@ut.ac.ir (M. Khalili Araghi).

http://dx.doi.org/10.1016/j.ribaf.2014.03.002
0275-5319/

instantaneously reflected in price. None of the market participants can make abnormal profit. Moreover, when the information set is constrained to the past prices and returns, the market is considered to be efficient in weak-form and the return is merely unpredictable from the previous data. However, as Lo (2004) remarks, an overall agreement among finance researchers and practitioners about the issue that the stock market is efficient does not exist. Most finance researchers believe that the market is weak-form efficient (see Doran et al., 2009). However some other researchers such as behavioral finance supporters who document irrational investor behaviors (such as overreaction and overconfidence) have different evaluation in this regard (see, for example, DeBondt and Thaler, 1985; Barber and Ordean, 2001). In the meantime, other researchers like Grossman and Stiglitz (1980) debate that a perfectly efficient market is impractical.

However, the weak-form explanation of market efficiency is still considered one of the most generally tested forms of the hypothesis in the empirical literature. Against to this mainstream approach to the issue of efficiency, various key studies have represented that stock returns do not follow random walks (see, for example, Fama and French, 1988; Lo and MacKinlay, 1988; Brock et al., 1992; Jegadeesh and Titman, 1993). We can see a dramatic increase in the number of studies which examine the credibility of the EMH in financial markets in different countries (see, for example, Opong et al., 1999; Lim et al., 2008; Borges, 2010; Mobarek and Fiorante, 2014).

A number of studies which focused on examining market efficiency in emerging markets mentioned as follows:

Lagoarde-Segot and Lucey (2008) investigate the informational efficiency in emerging markets in MENA region. Their study shows heterogeneous levels of efficiency in MENA stock markets. The explaining power of some factors such as market depth and corporate governance on the efficiency has been identified in stock markets.

Rejichi and Aloui (2012) examine the evolving efficiency of MENA stock markets by applying Hurst exponent during time. They utilize a rolling sample with a time window of 4 years. The results of their study show that all MENA stock returns represent long-range memory and certain markets are becoming more efficient. Some of the markets in countries like Turkey and Egypt are less efficient than the others in the region. Also they state in their study that some variables such as average trading cost, market capitalization and anti-self-dealing index play a role in describing these differences in the stage of inefficiency across MENA stock markets.

Azad et al. (2014) study the weak form of market inefficiency in emerging markets in South Asia (including of Bombay, Dhaka and Karachi stock exchanges). They conclude that South-Asian markets are inefficient in the weak-form. Specifically, this study investigates the price-volume connection as one of the several reasons of market inefficiency.

Also, in accordance with the specific market in this study [Tehran stock exchange (TSE)] Saeedi et al. (2012) by applying autocorrelation, augmented Dickey–Fuller, and runs tests over the period of 2005–2010; show that the findings of all tests do not backing that TSE daily returns pursue a random walk. Therefore, they conclude that it is possible to use the technical skills to get the abnormal gains.

The majority of these studies, however, focused on testing this hypothesis have a significant deficiency: They use statistical tests to examine whether a market is efficient over the whole of some pre-defined period or not. That means many studies treat market efficiency as an all-or-nothing case, while it is more appropriate to consider market efficiency to evolve over time. This is because of changing essential market factors, such as institutions, regulations and technological changes and the conduct of market participants.

Recently, Lo (2004, 2005) suggested a novel idea to answer the deficiency of conventional studies about market efficiency. He entitled it the Adaptive Markets Hypothesis (AMH). AMH gives a framework to adapt the EMH with the concept of bounded rationality. An essential implication of the AMH is related to the efficiency of the market that may vary from time to time because of changing market conditions (e.g., bubbles, crashes, and crises) and institutional factors.

Under the AMH paradigm, the EMH and market inefficiency can co-exist in an intellectually consistent manner.

Indeed to compliance with the varying extent of market efficiency over time, Lo (2004) suggests a new explanation of the EMH originated from evolutionary principles (e.g., competition, mutation, reproduction and natural selection). He proposed the Adaptive Markets Hypothesis (AMH) which