International Review of Financial Analysis 19 (2010) 47–54

Contents lists available at ScienceDirect

International Review of Financial Analysis

An empirical investigation of the informational efficiency of the GCC equity markets: Evidence from bootstrap simulation

Mazin A.M. Al Janabi *, Abdulnasser Hatemi-J, Manuchehr Irandoust

Department of Economics and Finance, United Arab Emirates University, P.O. Box 17555, Al-Ain, UAE

ARTICLE INFO

Article history:
Received 25 June 2009
Received in revised form 4 October 2009
Accepted 10 November 2009
Available online 22 November 2009

JEL classification:
E17
C32

Keywords:
The efficient market hypothesis
Oil
Gold
Bootstrap test
Equity market
GCC

ABSTRACT

The aim of this study is to explore whether the Gulf Cooperation Council (GCC) equity markets are informationally efficient with regard to oil and gold price shocks during the period 2006–2008 using daily dollar-based stock market indexes dataset. This paper extends research literature related to the assessment of market efficiency in emerging markets by providing a robust bootstrap simulation technique for the entire GCC financial markets. Unlike most empirical studies in this field, this study represents the first known attempt in empirically examining the impact of oil and gold prices on the financial performance of the six distinctive GCC stock markets. Tests for non-normality and ARCH effects show that the selected variables are not normally distributed and the volatility is time varying. This implies that the standard econometric methods are not reliable to carry out a trustworthy testing of market efficiency. To this end, we use a new method and testing technique which is robust to both non-normality and ARCH effects. The empirical findings reveal that the GCC equity markets are informationally efficient with regard to gold and oil price indexes. Our results entail that short-term arbitrage profit opportunities in the equity markets of these countries might not prevail. Moreover, our findings can reconcile previously contradictory results regarding the weak and semi-strong forms of efficiency of the GCC stock markets and its relation vis-à-vis petrol and gold prices. These findings have important policy implications and should be of interest to market participants, researchers, regulators and policymakers. The results of this paper also provide an incentive for further research in the areas of emerging market efficiency, strategic asset allocation, and portfolio risk management.

1. Introduction

The Gulf Cooperation Council (GCC) region[1] is one of the fast growing areas in the global economy and its stock markets represent very promising emerging markets. Nonetheless, the GCC financial markets differ from those of developed countries and from other emerging markets in the sense that they are in principal segmented from the world equity markets and are excessively sensitive to regional political events. Certainly, during the 1990s, the attempts of each individual country to diversify their economies, privatize their public sectors, employ advances in trading technology and improve the legal and financial institutional infrastructures lead to the real developments of these markets. As a result, the GCC markets have managed to tempt institutional investors and foreign individuals to convey some holding investments to their markets.

The financial markets in the Gulf region are mainly dominated by commercial banks and real-estate enterprises. Generally speaking, companies that are publicly listed in the GCC stock exchanges comprise those in banking and investment, insurance, industrial, service, and other market sectors. The number of publicly traded companies per market is rather small, and they are controlled by a small percentage of the indigenous population. Moreover, the six GCC equity markets are relatively small in terms of market capitalization, number of listed companies and are usually characterized by infrequent trading of securities and with lower trading volume once compared with other well-established emerging markets. Furthermore, until recently, entry to the Gulf equity markets was permissible to its nationals only and with a limited access to nationals from other GCC states. The recent economic developments and exceptional growth rates besides capital requirements to fund budget deficits has convinced the six GCC states to instigate capital market liberalization and broad-ranging structural reforms and regulations, allowing foreign investors, and particularly institutional investors, greater access to their equity financial markets. As such, emerging equity markets in this region have been the focus of much attention recently from international investors as a result of major changes in the economic and financial environment in the GCC region.

In spite of the increasing importance of the GCC financial markets, there is very few published research in this respect and particularly within the context of a comprehensive testing of the six GCC stock markets efficiencies. The literature on the efficiency of the GCC equity

* Corresponding author. Tel.: +971 3 7133231; fax: +971 3 7624384.
E-mail addresses: m.aljanabi@uaeu.ac.ae (M.A.M. Al Janabi), Ahatemi@uaeu.ac.ae (A. Hatemi-J), meirandoust@uaeu.ac.ae (M. Irandoust).

[1] The GCC region is made up of six oil-rich countries in the Arabian Peninsula: Saudi Arabia, United Arab Emirates (UAE), Kuwait, Bahrain, Oman, and Qatar.

1057-5219/$ – see front matter
doi:10.1016/j.irfa.2009.11.002

markets has been relatively meager, inconclusive and providing mixed results. As such, and in contrast to all existing published literatures pertaining to the testing of emerging markets' efficiency, this article intents to make the following contributions to the academic literature: Firstly, it represents one of the few research papers that tackle the efficient market hypothesis in the GCC stock markets and by using coherent dollar-based equity indexes, for all six GCC markets, besides oil and gold prices. In fact, the latter has an important effect in isolating the impact of foreign exchange movements on the relative performance of stock markets' indexes. Furthermore, the stock market indexes in addition to the two benchmark indexes (of oil and gold) selected for this study provide a realistic alternative portfolio, as well as new data, for studying existing techniques of GCC market efficiency estimation. To this end, a database of the six GCC states equity indexes is utilized whose behavior is presumably more diverse than if equity assets of any particular stock market had been employed. The basic argument is that specific country indexes may have, compared to individual stocks, a more predictable structure due to aggregation. Secondly, unlike most empirical studies in this field, this study represents the first known attempt in empirically examining the impact of oil and gold prices on the financial performance of the six distinctive GCC stock markets. To date, all known empirical studies examining the efficiency in GCC markets have been conducted mainly in the framework of a single-country testing of efficiency and without isolating the effects of foreign exchange risk. Finally, the implemented testing methods and techniques represent robust and accurate tools to assess empirically whether the efficient market hypothesis (EMH) is verified or not. The result of this study also provides an incentive for further research in the area of emerging market efficiency, strategic asset allocation, and portfolio risk management.

Nonetheless, despite its strategic importance and the unprecedented economic and social transformation in the GCC region it is one of the neglected research areas, especially in the context of finance and financial markets analysis. The aim of the current study is to empirically investigate whether the equity markets in the six GCC countries are informationally efficient with regard to oil and gold prices. This empirical investigation is conducted by applying a new bootstrap test for causality with leverage adjustments developed by Hacker and Hatemi-J (2006), which is robust to non-normality and time-varying volatility that usually characterize financial data. Applying this method is a necessary precondition for making valid inference. This is the case because standard methods are based on the assumption of normal distribution with constant volatility. However, the probability of extreme events in financial markets is usually much higher than what the normal distribution would suggest. This is especially the case in the emerging financial markets. Furthermore, the volatility in financial markets is often time varying. In such situations the standard methods do not perform accurately according to the simulation experiments conducted by Hacker and Hatemi-j (2006). To remedy this problem the authors have developed a leveraged bootstrap test method that we apply in this paper. This computer intensive test method is based on the empirical distribution of the data set that does not necessarily have to be normally distributed. In addition, this method takes into account the effect of time-varying volatility by implementing leverage adjustments. Thus, our empirical results are expected to be more precise compared to previous literature that applies standard methods.

Efficient market hypothesis and random walk modeling have been at the focal point of debate in financial literatures for several decades. As such, the implications of market efficiency for speculators, institutional investors, asset managers, global financial markets, and policymakers are without doubt overwhelming and justify the interest they have generated from both academics and practitioners alike. The long unrecognized contribution of Bachelier (1900) is considered as the origin of the theory behind efficient markets. However, the efficient market literature was established only in the mid-1960s via the seminal work of Fama (1965), Samuelson (1965) and Mandelbrot (1966). Since the well-known review provided by Fama (1970), the efficient market hypothesis (EMH) has been one of the most widely researched areas in finance. Furthermore, Fama (1998) contends that most return anomalies in major stock markets are chance results that tend to disappear in the long term with a reasonable change in methodology, thus sustaining the view that mature capital markets are generally efficient in terms of information. A survey of efficient market studies by Fama (1970) provides overwhelming evidence to support an efficient market hypothesis for U.S. stock markets. In recent years, however, numerous departures from market efficiency in the form of anomalies have attracted attention of academics and practitioners alike. Evidence against the random walk hypothesis (RWH) for stock returns in the developed capital markets are reported by Fama and French (1988) and Lo and MacKinlay (1988), among others. Nevertheless, Lo (1997) and Hatemi-J (2002) argue that there is still no clear consensus as to whether markets, and particularly financial markets, are efficient or not and especially for the case of emerging economies.

The rising interest in investment opportunities in emerging economies in addition to the increasing globalization of financial markets has heightened interest in emerging markets and has raised questions about the efficiency of their equity financial markets. There are a large number of literatures on the efficiency of emerging financial markets. Among the most relevant papers are studies on the Latin American financial markets, Asian and European continents, and the Middle East and North Africa (MENA) region. Urrutia (1995) assesses the efficiency of the financial markets of Argentina, Brazil, Chile, and Mexico. The author rejects the existence of a random walk hypothesis when using a variance ratio test. However, on the other hand, and by using a runs test, the author finds that all four markets to be weak-form efficient. In contrast, Ojah and Karemera (1999) find that Latin American equity returns follow a random walk and are generally weak-form efficient. Grieb and Reyes (1999) revisit the random walk properties of stocks traded in Brazil and Mexico using the variance ratio tests and conclude that index returns in Mexico exhibit mean reversion and a tendency toward random walk in Brazil. These conflicting inferences possibly could be attributed to the effect of cross-sectional and temporal variations in the degree of infrequent trading in these emerging markets. Also it could suggest the presence of positive serial correlation in returns. Indeed, the existence of a positive correlation does not necessarily imply that the markets are inefficient but that it could be indicative of economic growth (especially in emerging markets). Among the existing literatures, there are quite a few studies examining EMH of the Asian markets. More recently, using daily data of eight Asian stock markets, Lim and Kim (2008) empirically investigate the effects of the 1997 financial crisis on the efficiency of eight Asian stock markets by applying the rolling bicorrelation test statistics for the three sub-periods of pre-crisis, crisis, and post-crisis. Their statistical findings show that Hong Kong is the most efficient over the 14 years full sample period, followed by Korea and Taiwan, while Malaysia is at the tail end of the ranking list. However, in many cases, the 1997 Asian crisis is responsible for a large portion of inefficiency, notably in Hong Kong, the Philippines, Taiwan and Malaysia. However, most of these markets recovered in the post-crisis period in terms of improved market efficiency. On another front, Cajueiro, Gogas, and Tabak (2009) examine the impact of increasing financial market liberalization on the degree of market efficiency by using the Athens stock exchange as a case analysis. In their paper, the authors assess if financial market liberalization introduced at the beginning of the 1990s in Greece has changed the degree of market development (efficiency) by studying time-varying global Hurst exponents. Moreover, the paper presents empirical evidence of strong long-range dependence at the end of the 1980s and beginning of the 1990s for the Greek stock market, prior to financial market liberalization that occurred during that period. However, with the deepening of the liberalization process, generalized Hurst exponents converged to levels which characterize more