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Efficiency of South Asian Capital Markets An Empirical Analysis

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Abstract

In recent years, especially in the aftermath of the global financial meltdown, the performance of South Asia capital markets has attracted the attention of the researchers and investors across the globe. The resilient shown provides the impetus to examine the efficient market hypothesis in these markets. It is with this backdrop, this paper is an attempt to test the weak form efficiency of select South Asian capital markets (India, Sri Lanka, Pakistan, Bangladesh, and Mauritius) over the sample period spanning from January 2005 to October 2010. The application of unit root test provides the evidence that these markets are not weak form efficient which has both positive and negative implications. On the one hand, such inefficiency disturbs the allocation of national resources for development projects, and on the other hand, provides incentives for creation of innovative financial products thereby making the markets move towards efficiency in the long run.

Keywords: South Asia Capital markets, Efficient Market Hypothesis, Unit Root Test.

JEL Classification Numbers: C22, G14, G15

1. Introduction

In recent years, the South Asian region gained prominence on the back of strong and sustained growth. The region has shown great progress in domestic economic growth as also external strength due to the rapid improvements made in financial markets. The capital markets in South Asia are experiencing intense growth and diversity. Some of the fast-growing, emerging and frontier markets are located in this region which besides creating new markets and innovative financial products, have also introduced several rounds of reforms in the recent period, which gave a big boost to the growth of financial services industry. There is a major spurt in terms of institutions, intermediaries and investors, which reinforce with each other in making South Asia one of the most vibrant regions that is poised to attract huge interest from international investors. Deepening of the financial markets has been evident from the rapid growth of primary markets, in terms of resource mobilization, and surge in secondary markets, which is reflected through trading volumes.

Prior to the global financial recession in 2008, the South Asia region was an important market for new capital issuance by companies. Trading volumes in exchanges witnessed huge growth on the back o the region emerging as an important destination for Foreign

Institutional Investments (FIIs). In South Asia, over 70% of the growth in the last two decades came from the financial sector development and it is important to step up this momentum. The region as a whole has registered over 8% annual growth in gross domestic product for a couple of years up to 2007. With economic contagion setting across the globe following the global financial crisis, the South Asia economy has also not emerged unhurt, although it has weathered the crisis better than other regions. The crisis was reflected by the plunging currencies, moderating remittance inflows that account for a significance share of gross domestic product[1], easing monetary stance by way of falling interest rates, declining asset prices, dampened investor sentiment, and private capital outflows. A major fall out of the crisis was increased unemployment of expatriate workers in the Middle East and South East Asia, resulting in a decline of remittances into the region. However, the negative impact of the crisis was least pronounced for the region as compared to other developing groups. The growth rate in this region has moderated to 6% in 2009, this in times when the global economy contracted by 2%.

In response to the crisis, South Asian economies announced substantial fiscal stimulus measures in an attempt to tide over the crisis. The fiscal stimulus measures have largely been successful in reviving consumer demand. Success of this slippage on fiscal control is expected to manifest with growth expected to be 7.4% in 2011. Gradually, in 2011 a more positive outlook will emerge for the region. The rapid growth of economy and financial sector in India, the potential of growth in Pakistan, the peace dividend in Sri Lanka, the inclusive growth approach of Bangladesh, and the prospects of growth in Bhutan, Nepal and Maldives make great prospects for the South Asian region and holds promise for the international investing community.

It is inferred that more efficient and better functioning financial markets could provide greater impetus to domestic economic growth in the South Asia region. It is with this backdrop, it is quite imperative to examine the degree of efficiency of capital markets of the South Asia region. And, to this end, the rests of the paper are organised as follows: Section II elaborates the theoretical underpinning of the efficient market hypothesis; Section III reviews the literature; Section IV discusses the data and methodology of the study; Section V makes the empirical analysis; and Section VI concludes the study.

2. Efficient Market Hypothesis

Market efficiency refers to a state in which current asset prices reflect all the publicly available information about the security. Under such a condition, the current market price in any financial market could be the best unbiased estimate of the value of the investment. Thus, efficient market hypothesis implies that old information can't be used to foretell future price movements. In the finance literature, Fama (1970) has classified the market efficiency into three levels, viz., weak form market efficiency, semi-strong form market efficiency, and strong form market efficiency. Weak form market efficiency stipulates that no one can beat the market using information that everybody else knows. Going one step ahead, semi-strong form market efficiency states that a company's financial statements, announcements, economic factors, and other similar information are of no help in forecasting future price movements and securing high investment returns. Similarly, strong form market efficiency holds that historical, publicly as well as

[1] This was over 5% of GDP in Bangladesh Nepal and Sri Lanka.

privately held information or insider information too, is so quickly incorporated by market prices, these can't be used to make excess trading profits.

Capital market efficiency has important implications for investors and regulatory authorities. In efficient capital markets, the role of regulatory authorities is limited as stocks are accurately priced. The efficient dissemination of information ensures that capital is allocated to projects that yield the highest expected return with necessary adjustment for risk. With an efficient pricing mechanism an economy's savings and investment are allocated efficiently. Hence, an efficient stock market provides no opportunities to engage in profitable trading activities on a continuous basis. If, on the other hand, a market is not efficient, the regulatory authorities can take necessary steps to ensure that stocks are correctly priced leading to capital market efficiency.

Thus, a study of the efficiency of capital markets of South Asia region is more relevant, especially in the aftermath of the global financial meltdown.

3. Literature Review

The extant of literature is voluminous with respect to the studies concerning investigation of capital market efficiency in individual as well as in group of countries. Fama (1965); Laurence (1986); Parkinson (1987); Lee (1992); Butler and Malaikah (1992); Srinivasan (1993); Choudhury (1994); Vaidyanathan and Gali (1994); Huang (1995); Urrutia (1995); Poshakwale (1996); Chan et al. (1997); Ojah and Karemera (1999); Karemera et al. (1999); Pant and Bishnoi (2002); Appiah-Kusi and Menyah (2003); Worthington and Higgs (2004); Cooray and Wickremasinghe (2005); Worthington and Higgs (2006); Gupta and Basu (2007); Mishra et al. (2009); Garg and Priya (2009); Samuel and Oka (2010); Hamid et al. (2010) and Wen et al. (2010) have all studied the efficient market hypothesis in any of its degree, and the empirical evidence is mixed, and thus, the issue is still a moot point.

These authors have deployed different test procedures to examine the efficient market hypothesis and reported non-similar results. Despite, their studies are very important in the context of finance-led growth economies. The current study intends to put some light on the efficiency of emerging capital markets of South Asia region. The South Asian economies introduced a series of financial sector as well as economic reforms starting in the 1980s and 1990s – Sri Lanka in 1977. This has increased the financial linkages of these economies with that of developed nations. It is believed that the easier access to global financial markets for individuals, corporations, and countries at large will lead to a more efficient allocation of capital, which in turn will promote economic growth and prosperity. Therefore, this study attempts to examine if the removal of cross-border restrictions on foreign investment has improved the pricing efficiency of capital markets in the South Asia region.

4. Data and Methodology

The objective of this study is to reinvestigate the efficient market hypothesis in its weak form in the context of the South Asian capital markets. The sample period considered in the study spans from January 2005 to October 2010. The data set consists of general stock market indices for India, Sri Lanka, Pakistan, Bangladesh, and Mauritius. The data used in the study are monthly for the sample period. All the data are obtained from the

International Financial Statistics provided by IMF. Then, the popular econometric techniques are used to investigate the weak for efficient of select stock markets.

The study uses the most popular Augmented Dickey-Fuller (ADF) and Philip-Perron (PP) unit root tests to examine the efficient market hypothesis for South Asia capital markets. The ADF unit root test consists of running a regression of the first difference of the series against the series lagged once, lagged difference terms and optionally, a constant and a time trend. The test requires estimating the following regression:

$$\Delta R_t = \beta_1 + \beta_2 t + \rho R_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta R_{t-i} + \varepsilon_t \text{.....}(1)$$

Where, R_t is the monthly general stock price index based stock market return, i.e., $R_t = \log(P_t / P_{t-1})$, ΔR_t is the first difference of the R_t, β_1 is the intercept, β_2, ρ are the coefficients, t is the time or trend variable, m is the number of lagged terms chosen to ensure that ε_t is white noise, i.e. ε_t contains no autocorrelation, ε_t is the pure white noise error term, and $\sum_{i=1}^{m} \alpha_i \Delta R_{t-i}$ is the sum of the lagged values of the dependent variable ΔR_t.

Using the equation (1), the null hypothesis (H_0) of a unit root i.e. $\rho = 0$ is tested against the alternative hypothesis (H_1) that $\rho < 0$. The acceptance of null hypothesis implies the existence of a unit root, which means the time series under consideration, is non- stationary thereby indicating that the market shows characteristics of random walk and as such is efficient in the weak form. The rejection of null hypothesis implies the non-existence of a unit root which means the time series P_t is stationary and do not show characteristics of random walk.

Phillips and Perron suggested a non-parametric method of testing for a unit root. The PP method estimates the non- augmented DF test equation:

$$\Delta R_t = \alpha R_{t-1} + x_t^{'} \delta + \varepsilon_t \quad \& \ \alpha = \rho - 1 \text{.....}(2)$$

Where, R_t is the monthly general stock price index based stock market return, x_t are optional exogenous regressors which may consist of constant, or a constant and trend, $\rho \text{ and } \delta$ are parameters to be estimated, and, ε_t are assumed to be white noise.

The null and alternative hypotheses may be written as $H_0 : \alpha = 0$ and $H_1 : \alpha < 0$. The null hypothesis that the time series is non-stationary is rejected when test statistic is more negative than the critical value at a given level of significance. Non-stationarity shows weak form efficiency of the capital market, and stationarity shows rejection of weak form efficient market hypothesis.

5. Empirical Results

At the outset, the ADF test statistics are calculated for select South Asian stock markets and the results are presented in Table-1. It is cleared that, the null hypothesis of unit root (non-stationarity) is rejected, as the value of test statistic is more negative than the critical value in each country case. The results indicate that the stock prices in select South Asian stock markets do not follow random walk and hence, markets are not weak-form efficient.

In order to cross-check the above findings, we have applied the PP unit root test, and the results are reported in Table-2. It is inferred that the results of ADF unit root test are confirmed by PP unit root test. Thus, the select South Asia stock markets are not informationally efficient in weak form. This may implies that the stock prices in select South Asia markets are not accurately priced. So the allocation of capital to various development and private projects may not be efficient. Moreover, these stock markets sometimes may provide the opportunities for making excess profit over a time interval. Therefore, the regulatory authorities should take necessary steps to ensure that stocks are correctly priced leading to capital market efficiency.

Table 1: Results of Augmented Dickey-Fuller Unit Root Test

COUNTRIES	ADF(Level Form) Test statistic with No Trend & Intercept	ADF(Level Form) Test statistic with Trend & intercept
India	-5.531(0)	-5.523(0)
Sri Lanka	-6.633(0)	-6.743(0)
Pakistan	-6.567(0)	-6.608(0)
Bangladesh	-8.057(0)	-8.647(0)
Mauritius	-5.353(0)	-5.325(0)

I**.** ADF (Level Form) critical values with an intercept and no trend are -3.52, -2.90, and -2.58 at 1%, 5%, and 10% levels of significance.

II**.** ADF (Level Form) critical values with an intercept and trend are -4.09,-3.47, and-3.16 at 1%, 5%, and 10% levels of significance.

III**.** ADF (1st Difference) critical values with an intercept and no trend are -3.53,-2.90, and -2.59 at 1%, 5%, and 10% levels of significance.

IV**.** ADF (1st Difference) critical values with an intercept and no trend are -4.10, -3.47, and -3.16 at 1%, 5%, and 10% levels of significance.

V**.** The numbers within parenthesis represents the lag length of the dependent variable used to obtain white noise residuals.

Table 2: Results of Phillips-Perron Unit Root Test

COUNTRIES	PP(Level Form) Test statistic with No Trend & Intercept	PP(Level Form) Test statistic with Trend & intercept
India	-5.582(1)	-5.578(1)
Sri Lanka	-6.618(1)	-6.743(0)
Pakistan	-6.567(0)	-6.608(0)
Bangladesh	-8.099(3)	-8.645(2)
Mauritius	-5.551(4)	-5.525(4)

I**.** PP (Level Form) critical values with an intercept and no trend are -3.52, -2.90, and -2.58 at 1%, 5%, and 10% levels of significance.

II**.** PP (Level Form) critical values with an intercept and trend are -4.09,-3.47, and-3.16 at 1%, 5%, and 10% levels of significance.

III**.** PP (1st Difference) critical values with an intercept and no trend are -3.53,-2.90, and -2.59 at 1%, 5%, and 10% levels of significance.

IV**.** PP (1st Difference) critical values with an intercept and no trend are -4.10, -3.47, and -3.16 at 1%, 5%, and 10% levels of significance.

V**.** The numbers within parenthesis represents the bandwidth selected based on Newey-West using Bartlett Kernel.

6. Conclusion

In this paper an attempt has been made to examine the efficient market hypothesis in its weak form for select South Asia stock markets for the sample period spanning from January 2005 to October 2010. Applying the most popular econometric techniques of ADF and PP Unit Root test, the study provides the evidence that the select South Asia stock markets are not weak form efficient giving scope for profitable trading. Such weak form market inefficiency has a deteriorating effect on the gross savings and investment status of any country thereby disturbing the resource mobilization process for the larger interest of a nation. However, such informational inefficiency of capital markets has an interesting implication. The opportunity of making excess profit in an inefficient market often provides the impetus for successful financial innovation and makes the market move towards efficiency in the long run.

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