Revisiting Stock Market Efficiency -A Theoretical Perspectives

Dr. A. Shanker Prakash
Assistant Professor, School of Management Sciences,Varanasi
Professor (Dr.) Dhananjay Sahu
Professor, Faculty of Commerce, Banaras Hindu University, Varanasi- 221 005

Abstract

The study of behaviour of stock prices and information dissemination plays an important role in the development of stock market and to ensure effective allocation of capital to the most productive sectors of economy. It is particularly, more sensitive in the context of Indian Economy being a developing one and there is immense need to boost the economic process by accumulating resources from private sectors. It is well documented in the financial literature that private sector flourishes in the presence of efficient capital market. In this study a rigorous attempt was put forth to find whether the trading activities in the stock markets are satiable to counter the informational impact on share price by different researches and also to further instigate the new folds needed for conducting research in extended manner. There are numerous studies available to address the level of efficiency pertaining to the stock market, though this study is intended to cover the most influential available literature.

Key Words: Stock market efficiency, information dissemination, financial market instruments, Asian stock market studies

I. Introduction

The financial market instruments are merely the more new fangled one, to seek abidance by the muckle of people, hitherto the advancement of financial market instruments are more frequently enunciated in the late 90s. Financial markets are streamlined with

reflection of information dissemination throughout the market to construe its asset pricing. Security market which is the microstructure layer of equity markets and consists of identification of trading process. Good information system and transparency are all important issues that decide the popularity of any security market. The track of good information that trounces in the equity prices are made possible with the help of coveted efforts stimulated by various researchers by using latest techniques and technologies. Introspection of various researchers are summarized which are taken into account under two major headings viz., the Indian market studies and the international market studies.

The purpose of this study is to examine different issues that had been discussed by different researchers and how different commitments were made by them. The present study is a sincere effort to review the theoretical and empirical literatures on market efficiency. The review is of significance to both researchers and policymakers as researchers can identify the research gap and policy makers can adopt the research findings to shape their decisions. Thus, the objective of this study is to document comprehensive commentary on researches done on market efficiency.

A review of this kind equally poses considerable challenges with regard to issues like the nature, type and period of researches done and it can lead to varied responses. Paper begins by brief outline on the basis on which review has been done in the study. Authors have primarily reviewed the work done in developing and developed countries with special focus on Indian studies. The review has been broadly divided into Indian market literature and international market literature.

II. Stock Market Efficiency in International Markets

As is so often the case with important ideas, the concept of efficient capital markets stemmed from a chance discovery. In 1953, Maurice Kendall analyzed 22 price-series at weekly

intervals and found that they were essentially random. Also, he was the first to note the time dependence of the empirical variance (non-stationarity). The proponent of efficient market hypothesis, Fama produced his paper in 1963 thereafter; there were abundance of work streamed to judge the market efficiency in world wide security markets.

A. Asian Stock Market Studies Other than India

1. Pakistan Market Studies

Chakraborty M. (2006) investigated the weak form efficiency of the Pakistan stock market. The data were abstracted from KSE-100 for the period over January 1996 to November 2005. The variance ratio test, serial correlation test and runs test were applied for the study. Above tests rejected the random walk hypothesis whereas variance ratio test found to be not rejecting the second window period study.

Husain F. (2007) viewed the validity of random walk model in Pakistani equity market. The data set comprised of 36 individual stocks, 8 sector indices and a market index for the period January 1989 to December 1993. The hypothesis had been judged by Serial Correlation Test and Ljung-Box Q(k) statistic. Test produced the result that Pakistani stock market, adjusts slowly to new information.

2. Bangladesh Market Studies

Mobarek A. and Keasey K. (2000) sought evidence which could support at least weak-form efficiency of the market where the sample had been imbibed from Dhaka Stock Exchange for the period of 1988 to 1997. To reach at conclusion, non-parametric (Kolmogrov- Smirnov normality test and runs test) and parametric test (Auto-correlation test, Auto-regression and ARIMA model) had been exerted. Result of the test evidenced that, share returns do not follow random walk model and thus rejected the weak-form efficiency.

3. Nepal Market Studies

Joshi et al. (2005) sieved the efficiency and anomalies for Nepal Stock Exchange Index from February 1995 to December 2004. The result showed that behaviour of the market was weakly efficient with respect to anomalies except day-of-the-week anomaly.

4. China Market Studies

Law C. (1982) purported to test weak form of EMH (WEMH). The data were collected from the Far East Stock Exchange and the South China Morning Post for the period from January 1978 to December 1979. In order to study the share price behaviour, a period of three months was selected for the purpose by the following sampling method. The serial correlation, regression and runs test were prime tests conducted for the study. The result of the above tests refuted the WEMH.

Li et al. (2008) studied the profitability of the Moving Average Convergence-Divergence (MACD) trading rule under three different crossing rules: the MACD zero line, the 9-day and 14 day signal lines. The samples were gathered from five major stock markets namely US, Japan, UK, Germany and Hong Kong for the period from January 1993 to December 2007 which were divided in two window periods using the year 2000 as a cut-off point. The outcome beamed the trading rules that performed well in the stock markets of Germany and Hong Kong for the stated periods, moreover, the result clued that generally the major stock markets around the world became more efficient after the millennium.

5. Japan Market Studies

Nagayasu J. (2003) studied the efficiency of the Japanese equity market. To ascertain the level of efficiency, author had applied ARFIMA and FIGARCH model

for the period from January 1990 to August 2002 which was obtained from Nikkei 225. Based on their results it was safely concluded that Japanese equity market refuted the efficient market hypothesis.

6. Thai Market Studies

Islam et al (2005) studied market efficiency for Thai Stock Market, that confines run test and autocorrelation function tests (ACF) to provide more definitive conclusion. The sample consisted of monthly returns for the period during 1992-2001; result demonstrated that an autocorrelation on Thai stock market returns exists particularly during the post-crisis period. Moreover, the analysis of run test on daily return data rejected the null hypothesis that successive outcomes are independent. Thus, inefficiency prevailed during the study period in Thai stock market.

7. Turkey Market Studies

Aga and Kocaman (2008) tested the weak form of efficiency for the return index-20 listed on Istanbul Stock Exchange. The samples were taken for the period January 1986- November 2005. The empirical result showed that market is weakly efficient for sample period.

Aktas H. and Oncu S. (2006) investigated pricing behaviour of Turkish Stock Market in case of major political events. The data was obtained from ISE-50 and ISE-100 for period over February 2002 to March 2003. For analysis the authors conducted OLS Regression method result of which showed that the market adjustments are expected after first trading day of event. Thereafter, abnormal returns for each stock on first day were calculated which have not given clear-cut sign of under-reaction or overreaction of investors that violates EMH.

Yalama A. and Celik S. (2008) attempted to study the semi-strong form of efficiency in the Istanbul stock exchange market for the period from January 1990 to June 2008. The study is done through the use of Toda Yamamoto causality method which supported the semi-strong level in the money market but in regard to the capital market the test could not support the semi-strong level of efficiency.

8. UAE Market Studies

Hassan et al. (2003) examined the weak form of efficiency by taking into consideration the institutional features of the KSE. The sample collected from 1995 to 2000 and for testing GARCH and EGARCH methodology were applied. The result of the study provided substantiation for weak form market inefficiency in the Kuwait Stock Exchange.

Marashdeh H. and Shrestha M.B. (2008) investigated the weak-form market efficiency listed in the United Arab Emirates Securities Market. The samples were obtained for the period from August 2003 to April 2008. The study was done through the use of conventional unit root tests and Perron (1997) model. The test result showed that Emirates Securities Market data contains unit root and follow a random walk and thus follow the weak-form efficiency.

9. Jordanian Market Studies

Hadi M.M. (2006) examined whether or not accounting data carry any information content to security market. The author had obtained the sample for 15 industrial firms that listed in Jordan Stock Exchange for the period of 2000-2003. The analysis is done through various accounting ratios viz. independent dividends, net income to sale, return of equity, return on asset, debt ratio interest coverage ratio, current ratio

and price-earning ratio. The result showed that the security market with mixed signal on releasing profitability, liquidity and solvency information.

10. Multiple Stock Market Studies

Chaudhuri K. and Wu Y. (2003) examined the random walk hypothesis for stock prices of seventeen emerging markets- Argentina, Brazil, Chile, Colombia, Greece, India, Jordan, Korea, Malaysia, Mexico, Nigeria, Pakistan, Philippines, Taiwan, Thailand, Venezuela, and Zimbabwe for the period of January 1985 to February 1997. Standard ADF and PP tests as well as Zivot- Andrews test applied for the examination. The result showed that ignoring structural breaks can lead to incorrect inference that share price indices are characterized by random walk.

Cooray A. and Wickremasinghe G. (2007) examined the efficiency of India, Sri Lanka, Pakistan and Bangladesh for the period of January 1996 to January 2005. For testing weak form efficiency, authors applied the Augmented Dickey-Fuller Test, Phillips-Perron, Dickey-Fuller Generalised Least Squares and Elliott, Rothenberg and Stock tests, whereas to ascertain the semi-strong form they applied the Johansen and Juselius co-integration test, a multivariate Granger causality test or block causality test and impulse response analysis. Results reaped the fact that, there was strong support for weak-form efficiency in all the four markets except Bangladesh were mixed result coexisted and on the other hand, tests of semi-strong form of efficiency was refuted in South Asian emerging markets.

Jae-Suk Yang et al (2007) studied the temporal evolution of the market efficiency in stock markets using the complexity, entropy density, standard deviation, autocorrelation function and probability distribution of long returns for three markets. The data were extracted from S&P 500 index for the period of 1983 to 2006, Nikkei stock average index for the period of 1997 to 2005 and Korean

composition stock price index (KOSPI) for the period of 1992 to 2003. Tests showed that in the past, speed of information is slower and market is less efficient so that adjusting behaviour is more effective and active in the same time interval compared to present.

Robbani M. G. and Anantharaman S. (2002) introspected effect of political events on the prices of some selected emerging stock market indices. The test is done by obtaining major stock index and the dates of important political events of the following four countries: India, Indonesia Pakistan and Sri Lanka for the period of four years, from July 1997 to June 2001. Result supported the notion that, emerging stock markets are semi-strong form efficient in the sense that they reflect not only relevant economic information but also important political information through their pricing.

Worthington A. C. and Higgs H. (2005) probed the weak-form market efficiency of Asian equity markets. In this paper they studied the comparative look at daily returns for ten emerging markets (viz. China, India, Indonesia, Korea, Malaysia Pakistan, the Philippines, Sri Lanka, Taiwan and Thailand) and five developed markets (viz. Australia, Hong Kong, Japan, New Zealand and Singapore). The samples used for study encompass disparate sample periods but end on May 2003. The study incited using following methodologies: serial correlation coefficient and runs tests, Augmented Dickey-Fuller, Phillips-Perron and Kwiatkowski, Phillips, Schmidt and Shin unit root tests and multiple variance ratio tests. The results showed that none of the emerging markets are characterized by random walks, while only the developed markets in Hong-Kong, New Zealand and Japan are consistent with the most stringent random walk criteria.

11. B. U.S. Market *Studies*

Aitken M. and Siow A. (2008) ranked the 25 world equity markets from the North American, European, Middle-eastern and Asia-Pacific regions on the basis of their market efficiency and integrity. The study extends from October 1999 to March 2002. Time weighted relative spread was measured to rank the market on the basis of their efficiency. The key findings of study are that, Deustche Boerse and the New York Stock Exchange stand out among their international peers as markets of high efficiency and integrity. Notwithstanding the performance of these markets, European markets hold eight of the top ten places while the top three Asia-Pacific markets are New Zealand, Tokyo and Hong Kong exchanges ranked 11th, 12th and 14th respectively. While the Deutsche Boerse –floor trading in Frankfurt, holds the mantel as the market with the highest integrity, its ranking on efficiency is much lower at 14th. This is symptomatic of a more pervasive result, namely, that efficient markets are not necessarily markets with higher integrity and vice versa. Euronext Paris which is ranked 2nd on efficiency is only ranked 19th on integrity is evidence of the latter.

Fama (1970) documented a number of studies that stock markets in the developed countries are either weak or semi-strong form efficient. The efficient market hypothesis states that a market is informationally efficient if prices of financial securities reflect all publicly available information and these prices adjust rapidly to the arrival of new information. Therefore, there exists no scope for investors to make trading profit by relying on publicly available information. Fama categorized three forms of market efficiency: weak, semi-strong and strong. These forms differ in terms of the types of information, which are used in developing trading strategies. The three forms of market efficiency can be distinguished in the following way: a. Weak-form efficiency: the information set includes all historical price information; b. Semi-strong form efficiency: the information set includes all publicly available

information; c. Strong form efficiency: the information set includes all public and private information.

Fama (1995) descripted the challenge of random walk theory to the proponent of fundamental analysis is to show that his more complicated procedures are actually more profitable than a simple random selection policy. As in the case of the chartist, the challenge is an empirical one. The analyst cannot merely protest that he thinks the securities he selects do better than randomly selected securities; he must demonstrate that this is in fact the case.

Fama (1998) reexamined stock market efficiency in the context of stock market over-reaction and underreaction. The author argues that, while market efficiency survives the challenge from the literature on long-term return anomalies in the sense that anomalies are chance results, apparent overreaction to information is about as common as underreaction. Furthermore, post-event continuation of pre-event abnormal returns is about as frequent as post-event reversal.

Fama et al. (1969) examined the market model on the basis of stock split to measure abnormal returns. The random sample of one hundred splits had occurred between January 1946 and January 1957. The intercept and slope from the regression of a stock's return on the market return, estimated outside the event period, are used to estimate the stock's expected returns conditional on market returns during the event period. The results of the study lend considerable support to the conclusion that the stock market is "efficient" in the sense that stock prices adjust very rapidly to new information.

Jones N. and Bacon F. (2007) examined the effect of the announcement of third quarter positive earnings on stock price's risk adjusted rate of return. The sample includes 50 randomly selected firms which declared third quarter positive earnings traded either on the NYSE or NASDAQ for the randomly selected dates October 17,

2006, November 10, 2006, and November 13, 2006. The study used the risk adjusted event study methodology to derive the conclusion that the market exhibits the semi-strong form of efficiency.

Lo and MacKinlay (1988) strongly rejected the random walk hypothesis for weekly stock market returns using the variance-ratio test for the entire sample period of 1962 to 1985.

Seiler and Rom (1997) contemplated the degree of random walk in daily stock prices before the Center for Research in Security Prices (CRSP) were available for all stock prices listed on New York Stock Exchange (NYSE) from February 1885 through July 1962. In order to identify the patterns for predicting stock returns the authors had employed the Box-Jenkins (ARIMA) methodology the result of which indicated that changes in historical stock prices were completely random.

B. Brazilian Market Studies

Guttler C., Meurer R. and Silva S.D. (2006) employed cointegration analysis and variety of Granger causality tests to examine whether the Brazilian stock market is efficient in processing new information about public macroeconomic data. For testing semi-strong form efficiency, the data were obtained for period from January 1995 to December 2005. The tests advocated that the Brazilian stock market is semi-strong informationally inefficient.

C. African Stock Market Studies

Magnusson M. and Wydick B. (2002) tested weak form stock market efficiency in eight largest African stock markets. The sample varied between 26 months to 145 months previous to 1998. The test criterion had applied Campbell, Lo, and MacKinley's (1997) strongest tests of random walk. The study showed six out of

eight African markets passed the minimal hurdle of efficiency that is past share price movement cannot be used to predict the future movement in price.

Simons D. and Laryea S.A. (2006) investigated the weak form efficiency for four African stock markets- Ghana, Mauritius, Egypt and South Africa. The samples were gathered for different periods as per their availability from 1990 to 2003. The methodology used autocorrelation function, Box-Jenkins ARIMA methodology as well as runs test and K-S Goodness of Fit test. In their concluding remark they found except South Africa all other market evidenced weak form efficient for above said period.

1. Tunisian Market Studies

Trabelsi A. and Oueslati A. (2004) studied the efficiency of stock prices which were quoted on Tunisian Stock Exchange. The study was done over the period from 1st January, 1991 to 31st December, 1998 where the authors used the simple statistical technique such as Student test to infer the measurement of speed contained information in lagged share price. The result of their study showed that the adjustment coefficients of all return intervals are significantly more than unity at a confidence level of 99% that connotes that closing prices react to new information more than opening price.

2. Ghana Market Studies

Magnus F.J., Nkrumah K. and Fosu O.E. (2008) examined the weak-form efficient market hypothesis in the case of the Ghana Stock Exchange (GSE). The data were obtained from the Databank Stock Index. Random Walk (RW) and GARCH (1,1) models were used to reach the analysis for the period from June 1994

to April 2004. The issue designated the fact that the Ghana Stock Exchange is weakly inefficient.

3. Nigeria Market Studies

Ologunde A.O, Elumilade, D.O and Asaolu, T. O. (2006), examined the relationships between stock market capitalization rate and interest rate. Time series data for the period 1981-2000 obtained from Central Bank of Nigeria (CBN) and Nigeria Stock Exchange (NSE) were analyzed using regression. Results showed that the prevailing interest rate exerts positive influence on stock market capitalization rate. Government development stock rate exerts negative influence on stock market capitalization rate and prevailing interest rate exerts negative influence on government development stock rate.

D. Australian Stock Market Studies

Worthington A. C. and Higgs H. (2006) ruminated weak form efficiency in Australian stock market for two sample periods covering the daily returns for the span of January 1958 to April 2006 and monthly data ranged from February 1875 to December 2005. The study were done by using the following techniques: serial correlation coefficient and runs tests, Augmented Dickey-Fuller, Phillips-Perron and Kwiatkowski, Phillips, Schmidt and Shin unit root tests and multiple variance ratio tests. The result of their study showed the fact that the monthly returns exhibited the weak-form efficiency rather the daily returns could not show the past information in their forthcoming prices.

E. European Stock Market Studies

Torun M. and Kurt S. (2008) investigated weak and semi-strong form of efficiency of stock exchanges in European Monetary Union Countries with panel

data with the different variables like stock market price index, consumer price index, purchasing power of Euro and unemployment rates. The samples were obtained for the period of January 1999 to December 2006 from major stock exchanges of 11 countries respectively, Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxemburg, Netherlands, Portugal and Spain. To test the weak-form of efficiency panel unit root test had been applied which evidenced that EMU is weakly efficient and on other hand the semi-strong form of efficiency had been judged by panel cointegration and causality analysis which lead to the fact that some countries are not semi-strong form efficient.

1. Greek Market Studies

Dasilas A. (2009) investigated the market reaction to cash dividend announcements for the period from 2000 to 2004. The data were abstracted from Athens Stock Exchange. The analysis was done by using standard event study methodology result of which showed significant market reaction to dividend announcement day.

Dicle and Levendis (2009) evaluated market efficiency for the Athens stock Exchange (ASE). The sample collected for the study incorporated 328 stocks traded on ASE for the period between January 2000 and December 2007. The study rejected the ASE's efficiency due to certain influential stocks.

2. Bulgarian Market Studies

Bechev I. and Gechev P. (2006) focused their paper adhere to the fact that why there is inefficiency in the developing markets in the early periods of their existence. The objective of the paper was to study whether the markets were segmentally (limitedly) efficient. For this they had collected data from Bulgarian Stock Market (BSE) for the period November 2000 to April 2006. For testing, the

authors had applied the Ljung-Box autocorrelation test and Mackinlay-Lo test. The result of the study rendered that market to have been efficient in its early stages is not significant. In other words, the study supported the market was segmentally efficient for the said period.

F. Romanian Market Studies

Bogdan D., Flavia B. and Marilen P. (2007) empirically tested the EMH in case of the Romanian capital market for the period from November 2000 to October 2007. The Johansen cointegration test had been performed between BET- FI index and the other indexes of the market. The result showed that the market was weak form efficient up to a point as being informational efficient.

G. German Market Studies

Gillette L. (2005) in his doctoral dissertation studied the Germany stock market efficiency. The analysis had been exercised by means of CAN SLIM method (developed by William O' Neil) and OLS cross sectional regression method. The data were obtained from floor trading at the Frankfurt Stock Exchange for the period from1980 to 2005. The results supported the weak form of EMH.

H. Ukraine Market Studies

Maxym D. (2000) investigated the weak form of efficient market hypothesis in the Ukrainian Stock Market. The samples were weekly stock returns computed from daily market indices specifically, Pro U-50 index for the period from January 1997 to January 2000 and Wood-15 index for the period from June 1997 to January 2000. Variance-ratio test and GARCH method were applied to test the market. The result

ISSN: 2249-1066, Vol. 4, No. 2, Dec, 2014

of the test had rejected the weak form of market efficiency and the random walk model of price behaviour.

III. Stock Market Efficiency in the Indian Market

Here in this section, it represents the wide coverage of various research issues done in the Indian context that is to say either in the Bombay Stock Exchange and/or the National Stock Exchange. Majorly the research papers used serial correlation and runs test for testing the weak for efficient market but in the modern period the techniques are advanced with various econometrical methods especially the Unit Root Test. The semi-strong form has been focused with event- study methodology. Not- with- standing to these techniques new techniques are also still developing to find the realistic movements in the market prices, some of such aspects are included in this section to provide a great zeal to its readers.

Srivastava S.C. (1968) unveiled that the notion of share price behaviour was not significantly influenced by retained earnings. The result of the analysis suggested that there were no significant influence of retained earnings on share market prices for the period covering from 1960 to 1962.

Barua S.K. (1981) examined the serial independence of short-run changes in the prices of securities and the stock market index to establish the efficiency of the Indian capital markets in assimilating information. For this he used runs test and autocorrelation test to analyze the daily closing prices of 20 securities over a period of two years i.e. July 1977 to June 1979. The result supported the null hypothesis of serial independence of price changes of securities.

Sharma J.L. (1983) studied the applicability of random walk model for 20 individual stocks from BSE for the period of 1973-78. To arrive at conclusion he

used Integrated Moving Average (IMA) form of random walk model and found that only two stocks were not fitted in the model.

Gupta O.P. (1985) purported to test the hypothesis that successive share price changes are linearly independent, for doing so the author had collected the data from January 1971 to March 1976. The result provided by serial correlation test and runs test generally supported the independence, assumption of the random walk model.

Barua S.K. and Raghunathan V. (1986) examined the market efficiency by using the example of Reliance share price and applied the risk-parity rule. Their study was based on certain hypothetical example of two investors who started with identical assets on September 15, 1986, but followed different strategies in the market. The result of their study showed that market was inefficient and hence, market was unable to maintain risk-return parity.

Yalawar Y. B. (1986) studied whether or not market is efficient in the weak form. The data used for this study included 122 common stocks of Bombay Stock Exchange for the period, 1963-82. The result of the test as performed by Spearman Rank Correlation and Runs Test he arrived to the conclusion that both the tests supported the weak form of EMH.

Gupta O.P. (1990) tested the appropriateness of the random walk model in the Indian stock market for the period 1979-1987 using the data of prices for the five share indices from the Bombay Stock Exchange during this period. He conducted serial correlation test and runs test, the results supported the independent assumptions of the random walk model.

Chaudhuri S.K. (1991) used prices of 93 actively traded shares for testing the serial independence of share price changes. For this he applied the serial correlation test and the runs test over the period from January 1988 to April 1990 and found the

ISSN: 2249-1066, Vol. 4, No. 2, Dec, 2014

results do not seem to be supporting the hypothesis of weak form of market efficiency.

Obaidullah M. (1992) vetted the adjustment of stock prices to the announcement of bonus issues by examining the semi-strong efficiency of Indian stock market. For this study the author had the sample size of 75 bonus issues that covered the period from 1987-89. To reach at his conclusion he used naïve method of proportional adjustment and residual analysis method. The result supported the semi-strong form of EMH.

Ranganatham M. and Subramanian V. (1993) applied the Spectral analysis to test the weak form of efficient market hypothesis for the period of seven years i.e. from 1984 to 1990 on a daily basis. The result of the study had showed some periodic cycles in the price movements which run counter to assertion of weak form of EMH.

Vaidyanathan R. and Gali K.K. (1994) tested the weak-form efficiency in the Indian Capital Market by using three different tests viz., Runs Test, Serial Correlation Test and Filter Rule Test. The analysis had covered four different time periods for the runs test viz. 1980, 1985, 1989 and 1990 whereas to test the serial correlation they used data for the period April 1989 to November 1990. The result of all these tests supported the presence of weak form of EMH.

Belgaumi M. S. (1995) used the serial correlation analysis and runs test over the period from April 1991 to March 1992. The result of the study showed that share prices does not display any apparent pattern and is independent of historical price movements except one share (Modi Rubber).

Garai S. (1995) had theoretically examined the different approaches used to study the share price behaviour and at the end of the article the author concluded that share price behaviour is a social phenomenon moreover author renamed the market as ‘voting machine’.

Mahapatra R.P. (1995) studied the relative strength in the performance of share prices in India for the period covering January 1989 to December 1992. He employed rank correlation test to discover whether the performance of a stock in one period relates to its performance in the following period by taking the case of 26 stocks. The result of the test showed that the Indian stock market is less efficient in the short run but more efficient in the longer run.

Poshakwale S. (1996) empirically studied weak form efficiency and the day of the week effect in Bombay Stock Exchange over a period of 1987-1994. The results provided an evidence of day of the week effect and that the stock market is not weak form efficient. The day of the week effect observed on the BSE poses interesting buy and hold strategy issues.

Rao and Geetha (1996) solved one major egress whether India is tuning to what form of efficiency for a period from April 1991 to March 1994. Their study focused on weak-form, semi-strong form and possible anomalies in informational efficiency. As in result they showed that the Indian stock markets are efficient to first two forms of the tune. There was clear existence of weak form efficiency in the market whereas in regard to semi-strong form, it evidenced that there was delay in stock price adjustment about 3 to 4 week ahead.

Dash S.K. (1998) studied the efficiency of Indian stock market by looking at the long memory property of stock returns. The result of his analysis indicated the inefficiencies of the market for the sample period from January 1980 to June 1996.

Madhusoodanan T.P. (1998) applied the variance ratio tests under the null hypothesis of homoscedasticity and hetroscedasticity to the Indian stock market for the period from January 1987 to December 1995. The result of the analysis showed that random walk hypothesis cannot be accepted in the Indian stock market.

Mohanty P. (2001) found that during the sample period 1991-99, the return differential between small and large stocks is in excess of 70% on an annualized basis. Using Fama and French (1993, 1995 and 1996) Multifactor model the author found that size indeed is a proxy for risk. Moreover author could not conclude his analysis by saying that the conclusions are not conclusive as the sample belonged to large stock portfolio.

Thomas S. and Shah A. (2001) corroborated the stock market response to the union budget regarding the informational efficiency, the budget as an economy policy package and as well as implications for portfolios and trading. The data consisted of 4,673 observations of daily returns from Indian Stock Market index over the period from April 04, 1979 to June 11, 2001. The result excogitated that the stock market is fairly efficient in response to Union Budget.

Kamath M.V. (2002) studied the random walk hypothesis in the Indian context particularly the Infosys share for the span of 1993 to 2001. The ANN technique had been implemented for the above study. His result came to an end with the following conclusion that the random walk of stock price of Infosys showed a deviation after December 1998. The result also led to the functional relationship of the factors to P/E of the BSE Sensex was non-linear and complicated.

Pant B. and Bishnoi T.R. (2002) analyzed the behaviour of daily and weekly returns of five Indian Stock Market indices for randomness, during April 1996 to June 2001. They employed Autocorrelation test using Q- statistic and Dickey- Fuller test and Variance Ratio test using Homoscedastic and Hetroscedastic to reap the result that refused the randomness.

Sarkar N. and Mukhopadhyay D. (2002) used the modeling approach to verify the presence of weak form efficiency level in the Indian stock market. They used four prominent tests i.e. automatic variance ratio test, BDS test, Hansen's stability test

and Chow's test, to conclude the inefficiency represented by four standard daily indices viz. BSE SENSEX, BSE 100, NIFTY and DOLLEX persisted in the Indian stock market.

Ariff M. and Marisetty V.B. (2003) studied the share price reaction to up-switching and down-switching of scrips from one section to another. The data were obtained as on announcement date of January 12, 2001 of BSE listings, where switching took place i.e. BSE moved 500 scrips from B1 to B2 (down switches) and moved 179 scrips from B2 to B1 (up switches). Their study revealed that there were depreciation in the share values which were down switched and for instance of up-switched firms there were weak evidence that share price appreciates. The analysis provided a clue that there were lack of semi-strong form of efficiency in the market.

Marisetty V.B. (2003) sieved productive efficiency of stock exchanges using price adjustment coefficients by using certain equations pertaining to speed of adjustment for individual stocks, speed of adjustment through serial correlation estimates and then auto-covariance ratios to measure speed of adjustment of portfolios. For this, the author had obtained the data of Sensex and Nifty for the period ranges from January 1996 to August 2002. The result of his study showed the price adjustment process in Indian stock market is very slow and thus, inefficiency encountered in the stock indices prevailed in the market.

Pandey A. (2003) tested the weak form of efficiency in the Indian stock market for the period from January 1996 to June 2002. In order to arrive at conclusion he used the Autocorrelation Test (ACF) and Runs Test. Results of aforesaid tests violated the presence of weak-form of efficiency in the Indian market. Further, the series of stock indices in the Indian stock market are biased random time series.

Nath G. C. and Dalvi M. (2004) explored the market anomaly by taking daily returns for the period from January 1999 to December 2003. They divided the above

said period in two different blocks on the basis of rolling settlement. The data were collected from Indian equity market index S&P CNX NIFTY. The result of their study showed that there were clear market efficiency or market inefficiency prevails. However, the risk (as measured by standard deviation) had declined significantly after the introduction of rolling settlement.

Sarma S.N. (2004) explored the Indian stock market's efficiency in the 'weak form' in the context of calendar anomalies, especially in respect of the weekend effect. For this author used the daily returns for the period from January 01, 1996 to August 10, 2002 comprising a total of 1,667 observations. The author employed the non-parametric test viz. Kruskall-Wallies test using 'H' statistic to test the seasonality in the Indian stock market returns. Result of the study revealed the fact that Indian stock market exhibits perceptible regularities in the equity return and leave scope for questioning market efficiency.

Samanta G.P. and Bordoloi S. (2005) exploited a powerful artificial intelligence and data-mining tool, namely Artificial Neural Network (ANN) approach for generating forecast of highly volatile and complex pattern of stock price index return. By using the performance of ANN technique in forecasting three stock price indices viz., BSE-Sensex, BSE-100, S&P CNX-Nifty for the period from January 1999 to August 2000, they got much better result as compared to Random Walk (RW) model. To arrive at conclusion, the accuracy of ANN model was measured by number of criteria like AAE, MAPE, and Rbar- Square etc. The result proved to be a better efficient market based on their share price indices.

Verma A. (2005) expounded the weak form informational efficiency of the Bombay stock exchange for the period from April 01, 1996 to March 31, 2001 in his doctoral dissertation. He applied serial correlation and runs test to reach the conclusion. While studying the BSE SENSEX for the above said period he found that market is

not weak form efficient, the industry wise study also violated the existence of weak form efficiency except the cement industry. The sector wise study also rejected the weak form efficiency of the market. In another instance he studied those companies who had issued the ADRs and GDRs, the result showed weak form efficiency in two years and inefficiency grasped for the entire period.

Babu K. A. and Selvam (2006) examined the informational efficiency of capital market with regard to quarterly earnings released by the banking sector companies. The result of the study showed that the Indian capital market for the banking stocks, in general, are efficient, but not perfectly efficient, to the announcement of quarterly earnings (comes with positive earnings change information) and ineffectual for the negative earnings change information.

Khan M. A., Ashraf S. and Ahmed S. (2006) augmented the size of their analysis by taking daily returns for Sensex and Nifty indices for the period of 1999-2004 to test the weak form efficient market hypothesis. The various parametric tests viz. unit root test, the sample Autocorrelation function, Ljung-Box (Q) statistic and GARCH model as well as non-parametric test like Run test and Kolmogorov-Smirnov (K-S) test were conducted to detect the randomness and normality in a stock-price time series. The result of the test rejected the random walk hypothesis and showed high volatility in the market.

Prakash S. and Ramasubramanian A. (2006) tried to test the model that can explain and predict the share price movements for eight companies for a period of 1999 to 2005. In their paper, they hypothesized that big boom or big crash on a single day occurs occasionally. The result of their analysis showed that at least seven out of eight companies of different industries carried a weight of more than one third in the NSE index – S&P CNX Nifty over a period of seven years.

Thirumalvalavan P. and Sunitha K. (2006) analyzed the following three components during their study: (i) signaling effect of a share buy-back and dividend announcements, (ii) the market reaction and share price behaviour to announcements of stock repurchases and dividends and (iii) abnormal returns across various repurchase level. The sample used 22 firms in BSE 500 index for the span over 2002-04. The tests indicated that the market is tempting the movement to events or announcements such as stock repurchases and dividends within a day or two.

Ansari V.A. and Mahmood F. (2007) studied the market efficiency with respect to price-earning ratio. They analyzed the market for the period 2005. The paper reflected the fact that PE ratio anomaly is non-existent in India as the lowest portfolio earned the lowest returns. The findings also suggested that there was limited or absent predictive power of PE ratios in explaining cross-section returns. Furthermore, there was no relationship found between beta and return.

Chander R. and Mittal S. K. (2007) tempted to revisit EMH with the GDR stocks which were quoted both on the domestic markets as well as on the global markets for the period from April 1994 to December 2000. For their study, they had used the serial correlation test and runs test. The result of their study inferred that the random stock price behaviour is exuberated vividly in domestic markets.

Gupta R. and Basu K.P. (2007) tested the weak form efficiency in the framework of random walk hypothesis for the two major equity markets in India for the period 1991 to 2006. The evidence suggested them to conclude that there was no presence of random walk model and even rejected the weak form efficiency hypothesis.

Lalitha N. and Rao D.N. (2007) expounded that the Fama and French three-factor model fitted on sample set for the period covering April 1999 to November 2004, however, failed to give adequate explanation of share price behaviour. Further, they

had also tested the presence of inertia by using the 'Wald' test and 't' test for the period of late nineties to early twenties. The results of both the tests had clearly signified the absence of inertia in 10 out of 32 sample companies.

Malhotra et al. (2007) examined the stock market reaction and liquidity changes around the bonus issue announcement of the chemical companies in India. The period used for the study ranges from January 2000 to January 2006 the analysis is done through the use of standard event study methodology. The result of their study showed that bonus issue announcement yielded negative abnormal returns around the announcement date implying that there was persistence of semi-strong form of EMH.

Khan M. A. (2008) investigated the behaviour of the stock prices of 24 companies to test the random walk hypothesis variant of market efficiency theory. The ADF and PP unit root tests show that stock prices have a single unit root at firm level while the series in logarithmic difference is stationary. This suggests that shocks to share prices will have a permanent effect on that series. The autocorrelations are significant in both the periods i.e. Jan. 2000- July2002 and Aug. 2002- Dec. 2004 for some of the firms. However, the author can not claim categorically that the Indian equity market (firm-level) is weak-form efficient or weak form inefficient during the study period.

Vigg S., Kaur S., Nathani N. and Holani U. (2008) reviewed the EMH by taking the data from BSE's Sensex. The significant conclusion pointed out through the use of techniques i.e. runs test and auto correlation test which revealed that Bombay Stock Exchange is Weak Form Efficient.

Gupta P. K. and Siddiqui S. (2009) extraverted the notion of weak form of market efficiency from selected NSE indices of S&P CNX Nifty and CNX Nifty Junior by using the Kolmogrov–Smirnov normality test, run test, autocorrelation test and ARIMA model that traversed from 1st January 2000 to 31st October 2008. The

result of their study concluded that the Indian stock market does not exhibit weak form of market efficiency.

Mishra and Pradhan (2009) expounded financial reform policy measures which had undergone a radical transformation; furthermore, the author had tested the weak form of efficiency during the period of March 2001 to March 2009. The sample of daily stock returns was collected from Bombay Stock Exchange. The test had been done with the use of unit root test. The study provides the evidence of weak form inefficiency of the Indian capital market over the sample period.

Padhan P.C. (2009) revisited the random walk model in their study entitled "Random Walk Hypothesis Pertaining to Stock Prices in India: A Firm Level Analysis" for the period from April 1990 to February 2007. The author used data for 33 firms basically- A rated which were enlisted at BSE for the above mentioned period. By applying various units root test the author deduced that stock prices of various firms supported the random walk hypothesis during the study period.

Raja M., Sudhahar J.C. and Selvam M. (2009) tried to study the Semi-strong efficiency in the Indian market in relation to stock split announcement. Their study showed the fact that the securities prices reacted to the announcement of stock splits and they concluded that the market is efficient one but not perfectly efficient to the announcement of stock split.

Prakash A. Shanker (2011) in his doctoral dissertation work examined the efficient market hypothesis in Indian stock market. Particularly, the study was focused on testing the efficient market hypothesis in its weak form and semi-strong form. In an extended manner, the study was enlightened the difference of information inculcation in the share price of blue-chip shares and mid-cap shares. A blend of data sets pertaining to indices of two major stock exchanges viz. Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) have been used. In order to

further substantiate the conclusion, fifteen blue-chip shares representing S&P CNX Nifty and fifteen mid-cap shares representing NSE Midcap 50 have also been used for analysis. The indices and scrip data span from 01 April, 2002 to 31 March, 2010. In order to test the weak form of efficiency serial correlation tests, runs test and unit root tests have been applied. Further, to explore the semi-strong form of efficiency, Average Security Return Variability (ASRV) and Cumulative Average Abnormal Return (CAAR) have been applied. By embarking upon the popular serial correlation test and runs test, the BSE was found to be weak form efficient and NSE was weak form inefficient during the sample period. The firm level study had also been conducted for fifteen sample companies for two segmented periods which showed that 80 percent companies were consistent in weak form during both the periods. The presence of semi-strong form of efficiency for blue-chip and mid-cap scrips were verified with the use of ASRV and CAAR techniques. The blue chip scrips followed the semi-strong form but the semi-strong form inefficiency was found to be existed in the mid-cap scrips.

IV. Summary

In brief, studies of various researchers pertaining to different stock markets are discussed. To advocate the level of efficiency, much dedication have been put into frame by different researchers, all of them sought certain new issues and adopted different methodologies to address the level of efficiency. The common techniques used by them were serial correlation, runs test and event study methods. Although, the level of researches are perpetuating towards the harder rim where we are not so far from predicting the real time share price movement in shorter period.

ISSN: 2249-1066, Vol. 4, No. 2, Dec, 2014

The review has been done by bifurcating the research papers in two parts; firstly the research done for the Indian stock market and secondly, the collection prompt to reveal the research work done in international markets.

Owing to the aforementioned review, it can be concluded that there is no clear-cut consensus amongst the researchers to prove the existing level of market efficiency, where some researchers showed the market is behaving weak form efficient and on the other hand few more researchers proved it to be not weak form efficient. Same is true with testing the semi-strong level of efficiency in the world-wide market. By streamlining the different issues prevalent to test the efficiency of the stock market across the national and international level the researcher here tried to instigate on new dimensions of informational efficiency in the Indian stock market which lead to conclusion that there is an inclination in the efficiency and share price behavior is the result of public announcement.

References

[1] Aga and Kocaman, 2008, "Efficient Market Hypothesis Emerging Capital Markets: Empirical Evidence from Istanbul Stock Exchange", International Research Journal of Finance and Economics, Issue.13, 131-144.

[2] Ahmed N., 2000, "Equity Price Behaviour and Bonus Shares", Rajat Publications Delhi.

[3] Aktas H. and Oncu S., 2006, "The Stock Market Reaction to Extreme Events: The Evidence from Turkey" International Research Journal of Finance and Economics, Issue.6, 78-85.

[4] Alshimmiri, Al-Dehani and Feridun, 2009, "Impact of Informational Flow on Stock Returns and Short Term Volatility: Empirical Evidence from Kuwait Stock Exchange", Finance India, Vol. XXIII No. 3, 889-898.

[5] Ansari V.A. and Mahmood F., 2007, "Stock Market efficiency in India: An empirical scrutiny of the Price earning ratio anomaly" Banking Finance, June, 19-23.

[6] Ariff M. and Marisetty V.B., 2003, "Section switching stock market price effect in the Indian capital market and the policy implications thereof" NSE Research Paper No. 67, March 2003.

[7] Babu K.A. and Selvam M., 2006, "Testing Informational Efficiency of Indian Capital Market: A study on Banking Industry", The Management Accountant, 516-523.

[8] Barua S.K. and Raghunathan V., 1986, "Inefficiency of the Indian Capital Market", Vikalpa, Vol. 11 No. 3, 225-229.

[9] Barua S.K., 1981,"The Short-Run Price Behaviour of Securities: Some Evidence on Efficiency Indian Capital Market" Vikalpa, Vol.6 No.2 April, 93-100.

[10] Bechev I. and Gechev P., 2007, "Segmented Market Efficiency Hypothesis", Journal of the University of Chemical Technology and Metallurgy, Vol. 42, No. 1, 115-116.

[11] Belgaumi M. S., 1995, "Efficiency of the Indian Stock Market: An Empirical Study", Vikalpa, Vol. 20 No. 2, 43-47.

[12] Bogdan D., Flavia B. and Marilen P., 2007, "Romanian Capital Market and the Informational Efficiency", published in MPRA Paper No. 5807.

[13] Chakraborty M., 2006, "Market Efficiency for the Pakistan Stock Market: Evidence from the Karachi Stock Exchange" Vol. 7 No. 1, 67-81.

[14] Chander R. and Mittal S. K., 2007, "Validity of Weak Form Efficiency: A Study of GDR Stock Prices in Global and Domestic Markets", Finance India, Vol. XXI No. 3, 879-895.

[15] Chaturvedi H.O., 1999, "Investment Performance of Equity Shares- A Test of Indian Market Efficiency", Anmol Publications Pvt. Ltd., New Delhi.

[16] Chaudhuri K. and Wu Y., 2003, "Random Walk versus Breaking Trend in Stock Prices: Evidence from Emerging Markets", Journal of Banking & Finance, Vol. 27, 575-592.

[17] Chaudhuri S.K., 1991, "Short-run Share Price Behaviour: New Evidence on Weak Form of Market Efficiency", Vikalpa, Vol. 16 No.4, 17-21.

[18] Cooray A. and Wickremasinghe G., 2007, "Efficiency of Emerging Stock Markets: Empirical Evidence from the South Asian Region, the", Journal of Developing Areas, Vol. 41 No.1, 171-183.

[19] Dash S.K., 1998, "Efficiency of Indian Stock Market: Evidence from Long Memory Test", Indian Journal of Economics, Vol. LXXIX, No.1, 1-8.

[20] Dasilas A., 2009, "Stock Market Reaction to Dividend Announcements: Evidence from the Greek Stock Market", published in SSRN no. 981885.

[21] Dicle and Levendis, 2009, "Effect of Market Efficiency on Market Development for Athens Stock Exchange", published in SSRN no.1395011.

[22] Diebold F.X., 2009, Forecasting : Application and Methods, Cengage Learning, New Delhi.

[23] Dima B. and Milos L.R., 2009, "Testing the Efficiency Market Hypothesis for the Romanian Stock Market", Annales Universitatis Apulensis Series, Oeconomics, Vol. 11 No. 1, 402-415.

[24] Fama E. F., 1995, "Random Walks in Stock Market Prices", Financial Analysts Journal, Vol. 51 No. 1, 75-80.

[25] Fama E. F., 1998, "Market efficiency, long-term returns, and behavioural finance." Journal of Financial Economics, Vol. 49, 283-306.

[26] Fama, E, 1970, "Efficient Capital Market: A Review of Theory and Empirical Work", Journal of Finance, Vol. 25, No. 2, 383-417.

[27] Fama, E., Fisher, L., Jensen, M., Roll, R., 1969, "The adjustment of stock prices to new information", International Economic Review Vol.10, No.1, 1-21.

[28] Garai S., 1995, "Studies on Share Price Behaviour", Finance India, Vol. IX No. 2, 365-386.

[29] Gillette L., 2005, "An Empirical Test of German Stock Market Efficiency", Thesis submitted to Prof. H. Wolfgang for the degree of Master of Science, C.A.S.E., Institute for Statistics and Econometrics, September, Humboldt Universität zu Berlin.

[30] Gupta O. P., 1985, "Behaviour of Share Price in India- a Test of Market Efficiency", National Publishing House, New Delhi.

[31] Gupta O. P., 1990, "Stock Market Efficiency and Random Character of Share Price Behaviour in India", Asia Pacific Journal of Management, Vol. 7, No. 2, 165-174.

[32] Gupta O.P. and Gupta V., 1997, "A Re-examination of Weak-form Efficiency of Indian Stock Market", Vol. XI No. 3, 619-632.

[33] Gupta P. K. and Siddiqui S., 2009, "Weak Form of Market Efficiency: Evidences from Selected NSE Indices", published in SSRN no. 1355103.

[34] Gupta P., 2001, "A Study of Stock Market Efficiency in India", Finance India, Vol. XV No. 2, 665-673.

[35] Gupta R. and Basu K.P., 2007, "Weak Form Efficiency in Indian Stock Markets", International Business & Economic Research Journal, Vol.6 No. 3, 57-64.

[36] Guruswamy S., Second edition, "Capital Markets", Tata McGraw Hill Companies, New Delhi.

[37] Guttler C., Meurer R. and Silva S.D., 2007, "Informational Inefficiency of the Brazilian Stock Market", published in MPRA no. 1980.

[38] Hadi M.M., 2006, "Review of Capital Market Efficiency: Some Evidence from Jordanian Stock Market" International Research Journal of Finance and Economics, May, Issue 3, 13-27.

[39] Hassan et al., 2003, "Stock Market Efficiency in the Gulf Cooperation Council Countries (GCC): The Case of Kuwait Stock Exchange", Scientific Journal of Administrative Development, Vol. 1 No. 1, 1-21.

[40] Husain F., 1997, "The Random Walk Model in the Pakistani Equity market: An Examination", The Pakistan Development Review, Vol. 36 No. 3, 221-240.

[41] Islam et al, 2007, "Are Emerging Financial Markets Efficient? Some Evidence from the Models of the Thai Stock Market", Journal of Emerging Market Finance, Vol. 6 No. 3, 291-302.

[42] Jae-Suk Yang et al, 2008, "Increasing Market Efficiency in the Stock Market", The European Physical Journal B, Vol. 61 No. 2, 241-246.

[43] Jones N. and Bacon F., 2007, "Surprise Earnings Announcement: A Test of Market Efficiency" Proceedings of the Academy of Accounting and Financial Studies, Volume 12, Number 1, 43-48.

[44] Joshi et al., 2005, "The Nepalese Stock Market: Efficiency and Calendar Anomalies", Economic Review, Vol. 17 No. 17, also published in SSRN no. 743666.

[45] Kamath M.V., 2002, "Empirical Investigation of Multifactor Asset Pricing Model Using Artificial Neural Networks", NSE RESEARCH PAPER No. 35, May.

[46] Kaur K. and Singh B., 2010, "Impact of Share Buy-Back Announcements on Stock Prices: Evidence from India", Advances in Management, Vol. 3 No. 7, 41-48.

[47] Keane S.M., 1991, "Stock Market Efficiency Theory, Evidence and Implications" Heritage Publishers, New Delhi.

[48] Kendall, M. G., 1953, "The Analysis of Economic Time-Series—Part I: Prices" Journal of the Royal Statistical Society. Series A (General), Vol. 116 No.1, 11–25.

[49] Khan M. A., 2008, "Testing Weak Form Efficiency: Firm Level Analysis at the National Stock Exchange", Indian Stock Market, Excel Books, 81-96.

[50] Khan M. A., Ashraf S. and Ahmed S., 2006, "Testing Weak Form Efficiency for Indian Stock Market", Economic and Political Weekly, Vol. 41, 49-56.

[51] Kong S. And Taghavi M., 2006, "The Effect of Annual Earnings Announcements on the Chinese Stock Markets" International Advances in Economic research, Vol. 12 NO. 3, 318-326.

[52] Lalitha N. and Rao D.N., 2007, "A Behavioural Model for Stock Prices", Contemporary Issues and Ideas in social Sciences, Vol. 3 No. 2.

[53] Law C., 1982, "A Test of the Efficient Market Hypothesis With Respect To the Recent Behaviour of the Hong Kong Stock Market", The Developing Economies, Vol. 20 No. 1, 61-72.

[54] Lazar and Nouroul, 2009, “Testing of Weak-Form Efficiency in Indian Capital Market”, Advances in Management, Vol. 2 No. 10, 15-20.

[55] Li, Chen, Ho Tin Yu, and Terence Tai-Leung Chong, 2008, "Structural Change in the Stock Market Efficiency after the Millennium: The MACD Approach", Economics Bulletin, Vol. 7 No. 12, 1-6.

[56] Lo and MacKinlay, 1988, “Stock Market Prices Do Not Follow Random Walks: Evidence from a Simple Specification Test”, The Review of Financial Studies, Vol. 1 No. 1, 41-66.

[57] Lo and Mackinlay, 2002, “A Non-Random Walk Down Wall Street" Princeton University Press, Princeton and Oxford.

[58] Lock, Dat Bue, 2007, "The Taiwan stock market does follow a random walk." Economics Bulletin, Vol. 7 No. 3, 1-8.

[59] Madhusoodanan T.P. 1998, “Persistence in the Indian Stock Market Returns: An Application of Variance Ratio Test”, Vikalpa, Vol. 23 No. 4, 61-73.

[60] Madhusoodnan T.P., 1997, “Risk and Return: A New Look at the Indian Stock Market”, Finance India, Vol. XI No. 2, 285-304.

[61] Magnus F.J., Nkrumah K. and Fosu O.E., 2008, “Market Returns and Weak-Form Efficiency: the case of the Ghana Stock Exchange”, published in MPRA 7582.

[62] Magnusson M. and Wydick B., 2002, “How Efficient are Africa’s Emerging Stock Markets?”, Journal of Development Studies, Vol. 38 No. 4, 141-156.

[63] Mahapatra R.P., 1995, “Relative Strength in Performance of Share Price in India: A Weak Form Test of Capital Market Efficiency”, Decision, Vol. 22 No. 3, 177-189.

[64] Malhotra et al., 2007, "Stock Market Reaction and Liquidity Changes around Bonus Issue Announcement: Evidence from India", published in SSRN 962830.

[65] Marashdeh H. and Shrestha M.B., 2008, "Efficiency in Emerging Markets - Evidence from the Emirates Securities Market", European Journal of Economics, Finance and Administrative Sciences, Issue 12, 143-150.

[66] Maria, 2009, "Stock Dividend Impact on Stock Prices an Event Study on the Romanian Capital Market", available at http://dafi.ase.ro/index.php?option=com_content&view=article&id=54:revista&catid=25;the_project&Itemid=63.

[67] Marisetty V.B., 2003, "Measuring Productive Efficiency of Stock Exchanges Using Price Adjustment Coefficients", published in NSE RESEARCH PAPER No. 68.

[68] Maxym D., 2000, "The Efficient Market Hypothesis and the Ukrainian Stock Market", Thesis submitted for the degree of Master of Arts. National University of Kyiv-Mohyla.

[69] Mishra and Pradhan, 2009, "Capital Market Efficiency and Financial Innovation – A Perspective Analysis", the Research Network, Vol. 4 No. 1, 1-4.

[70] Mobarek A. and Keasey K., 2000, "Weak-Form Market Efficiency of an Emerging Market: Evidence from Dhaka Stock Market of Bangladesh", ENBS Conference.

[71] Mohanty P., 2001, "Efficiency of the Market for Small Stocks", NSE RESEARCH PAPER No. 13.

[72] Nagayasu J., 2003, "The Efficiency of the Japanese Equity Market", IMF Working Paper No. 03/142, 1-22.

[73] Narayan R.S., 1994, "The Adjustment of Stock Prices to Corporate Financial Policy Announcements", Finance India, Vol. VIII No. 4, 941-953.

[74] Nath G. C. and Dalvi M., (2004), "Day of the Week Effect and Market Efficiency –Evidence from Indian Equity Market Using High Frequency Data of National Stock Exchange", available at SSRN 1092765.

[75] Obaidullah M. and Mohanty A., 1994, "The Impact of Market and Industry Factors on Equity Returns", Finance India, Vol. VIII No. 4, 933-940.

[76] Obaidullah M., 1992, "How do Stock Prices React to Bonus Issues?" Vikalpa, Vol. 17 No. 1, 17-22.

[77] Ologunde A.O, Elumilade, D.O and Asaolu, T. O., 2006, "Stock Market Capitalization and Interest Rate in Nigeria: A Time Series Analysis" International Research Journal of Finance and Economics, No.4, 154-167.

[78] Padhan P.C., 2009, "Random Walk Hypothesis Pertaining to Stock Prices in India: A Firm Level Analysis" MIBES Transactions, Vol.3 No.1, 63-78.

[79] Pandey A., "Efficiency of Indian Stock Market" published in SSRN no. 474921.

[80] Pant, B. and Bishnoi, T. R., 2002, "Testing Random Walk Hypothesis for Indian Stock Market Indices", Working Paper series, IIM, Ahmadabad.

[81] Pinto and Quadras, 2010, "Empirical Testing of Weak Form Stock Market Efficiency: A Study with Reference to National Stock Exchange, India", Sustaining Shareholder Value, Excel Books, 113-131.

[82] Poshakwale S., 1996, "Evidence on Weak Form Efficiency on Day of the Weak Effect in the Indian Stock Market" Finance India, VOL. X, No. 3, 605-618.

[83] Prakash S. and Ramasubramanian A., 2006, "Modelling of Share Price Movements in NSE: An Empirical study of selected cases", Finance India, Vol. XX No. 4, 1339-1364.

[84] Prakash A. Shanker, 2011, "Market Efficiency of Indian Stock Market", a Doctoral Dissertation Thesis, Faculty of Commerce, Banaras Hindu University.

[85] Raja M., Sudhahar J.C. and Selvam M., 2009, "Testing the Semi-Strong form Efficiency of Indian Stock Market with Respect to Information Content of Stock Split Announcement – A study in IT Industry", International Research Journal of Finance and Economics, Issue 25.

[86] Ranganatham M. and Subramanian V., 1993, "Weak Form Efficient Markets Hypothesis: A Spectral Analytic Investigation", Vikalpa, Vol.18 No.2, 25-30.

[87] Rao and Geetha, 1996, "Indian Capital Market- Informational Signalling and Efficiency", A.P.H. Publishing Corporation, New Delhi.

[88] Rao, 1997, "Response of Stock Prices to Macroeconomic Events", Finance India, Vol. XI No. 4, 881-918.

[89] Robbani M. G. and Anantharaman S., 2002, "An Econometric Analysis of Stock Market Reaction to Political Events in Emerging Markets" Second Annual ABIT Conference, Pittsburgh, Pennsylvania.

[90] Samanta G.P. and Bordoloi S., 2005 "Predicting Stock Market- An Application of Artificial Neural Network Technique through Genetic Algorithm" Finance India Vol. XIX No.1, 173-188.

[91] Sarkar N. and Mukopadhyay D., 2002, "Testing Market Efficiency in the Framework of Model Specification: An Empirical Investigation with Indian Data", ERU Discussion Paper Series, ERU/2002-03.

[92] Sarma S.N., 2004,"Stock Market Seasonality in an Emerging Market", Vikalpa, Vol. 29 No. 3, 35-41.

[93] Seiler and Rom, 1997, "A Historical Analysis of Market Efficiency: Do Historical Returns Follow a Random Walk?" Journal of Financial and Strategic Decisions, Vol.10 No.2, 49-57.

[94] Selvam M. and Babu K.A., 2009, "Analysis of Quarterly Earnings Announcement and Informational Efficiency of Indian Capital Market", Finance India, Vol. XXIII No.2, 575-604.

[95] Sharma A., 2009, "Impact of Public Announcement of Open Offer on Shareholders Returns: An Empirical Test for Efficient Market Hypothesis", The Icfai Journal of Applied Finance, Vol. 15 No. 11, 37-51.

[96] Sharma J.L., 1983, "Efficient Capital Markets and Random Character of Stock Price Behaviour in a developing Economy", Indian Economic Journal, Vol. 31 No. 2, 53-70.

[97] Sharma J.L., 1983, "Efficient Capital Markets and Random Character of Stock Price Behaviour in a developing Economy", Indian Journal of Economics, Vol.LXIII No. IV, 395-419.

[98] Simons D. and Laryea S.A., 2006, "The Efficiency of Selected African Stock Markets", Finance India, Vol. XX No.2, 553-571.

[99] Siow A. and Aitken M., 2003, "Ranking World Equity Market on the Basis Market Efficiency and Integrity", THE HP HANDBOOK OF WORLD STOCK, DERIVATIVE & COMMODITY EXCHANGES Herbie Skeete ed. pp Vol. XLIX-No. LV, Mondo Visione Ltd.

[100] Srivastava S.C., 1968, "Share Prices, Dividends and Earnings", Economic and Political Weekly, Review of Management, M89-M95.

[101] Subramanian and Ranganatham, 1993, "Weak Form of Efficient Markets Hypothesis: A Spectral Analytic Investigation", Vikalpa, Vol. 18 No. 2, 25-30.

[102] Thirumalvalavan P. and Sunitha K., 2006, "Share Price around Buy Back and Dividend Announcement in India", published in SSRN no. 873986.

[103] Thomas S. and Shah A., 2002, "The Stock Market Response to the Union Budget" Economic and Political Weekly, Vol. XXXVII No. 5, 455-458.

[104] Torun M. and Kurt S., 2008, "Testing Weak and Semi-Strong Form Efficiency of Stock Exchanges in European Monetary Union Countries: Panel Data Causality and Co-Integration Analysis" International Journal of Economics and Administrative Studies, Vol. 1 No. 1, 67-82.

[105] Trabelsi A. and Oueslati A., 2004, "The Dynamics of Stock Price Adjustments to New Information: Empirical Evidence from the Tunisian Stock Exchange Market", Finance India, Vol. XVIII No. 2, 835-857.

[106] Vaidyanathan R. and Gali K.K., 1994, "Efficiency of the Indian Capital Market" Indian Journal of Finance and Research, Vol. V No.2, 27-40.

[107] Verma A., 2005, "A Study of the Weak Form Informational Efficiency of the Bombay Stock Market" Finance India, Vol. XIX No. 4, 1421-1424.

[108] Vigg S., Kaur S., Nathani N. and Holani U., 2008, "Efficient Market Hypothesis: A Case Study on Bombay Stock Exchange", Indian Journal of Finance, Volume 2 No. 6.

[109] Worthington A. C. and Higgs H., 2005, "Weak-Form Market Efficiency in Asian Emerging and Developed Equity Markets: Comparative Tests of Random Walk of Behaviour" School of Accounting & Finance, University of Wollongong, Working Paper 3.

[110] Worthington A. C. and Higgs H., 2006, "Efficiency in the Australian stock market, 1875-2006: A note on extreme long-run random walk behaviour", School of Accounting & Finance, University of Wollongong, Working Paper 5.

[111] Yalama A. Celik S., 2008, "Financial Market Efficiency in Turkey: Empirical Evidence from Toda Yamamoto Causality Test", European Journal of Economics, Finance and Administrative Sciences, Issue No. 13, 88-93.

[112] Yalawar Y. B., 1988, "Bombay Stock Exchange: Rates of Return and Efficiency", the Indian Economic Journal, Vol. 35 No. 4, 68-121.