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STUDY ON BEHAVIOR OF STOCK PRICES AND RETURNSHAVE SUPPORTED THE RANDOMNESS AND INDEPENDENCE

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INTRODUCTION

An efficient capital market is a prerequisite of economic development. Broadly, capital market can be classified into new issue market (primary market) and secondary market (stock market). The new issue market deals with new securities, which were not previously traded, and secondary market is mainly concerned with the trading of securities previously issued. Resource allocation in the capital market is facilitated by the effective support of financial intermediaries that include various stock exchanges, issue houses, underwriting agencies and merchant banks.

The first twenty years of independence were marked by caution in welcoming the foreign capital, for next fifteen years the restrictive and selective approach to foreign capital was followed. During 1980s l iberalization and receptivity to the foreign capital was experienced. The period after 1991 can be called the days of eager welcome, open arm policy and increasing thrust towards international integration and globalization. As a result, Indian corporate sector has experienced large volume of business and corporate entities have grown into giant size(s). In order to cater to the financial needs of such organizations, international capital market has sprung up to finance the international trade and industry. In international capital market, the availability of foreign currency is ensured under the two main systems, Euro currency market and Euro issues.

GDR is normally issued in negotiable form and may be listed on any international stock exchange for trading. In case of redemption of GDR $_S$ into underlying shares, the overseas depository bank will submit a requisition to this effect to the domestic custodian bank. GDR $_S$ pricing depends on prospective earnings, market price, price-earnings ratio, turnover and market capitalization, traditional analysis, and size of the issue.

The GDR_S issues entail numerous benefits to the issuing company and the investors. The risk of fluctuation of foreign exchange rate is obviated, eschewing piles of workload for administrative department because the issuing company interfaces with only depository bank broadens the market for its shares.

The GDR_S are usually quoted in dollars, interest and dividend payments are also received in dollars, GDR_S overcome obstacles that mutual funds, pension funds, may have in purchasing and holding securities. Global custodian changes are eliminated; GDR_S are as liquid as the underlying securities because the two are interchangeable. Some disadvantages like takeover threat, dilution of earnings per share, etc. are encountered with the issuance of the GDR_S.

Numerous studies have been conducted on the stock price behavior (Efficient Market Hypothesis (EMH)). Efficient market hypothesis claims that no one can outperform the market by diversify any investment strategy and market prices do not deviate from the intrinisic value. **Fama (1965)** studied on the market efficiency for a period of five years ending June 1962 with the help of 30 stocks. The study noted the dependence in the daily, four day, nine day and sixteen day price changes and advocated in favour of random walk hypothesis. **Moore (1964) studied** on weekly changes in the prices for the period (1951 -58). The study noted that the indices of stock prices relatives behave detectably different from individual price relatives. **Cootner (1962)** studied on random and systematic changes in stock prices. The study noted that stock prices move randomly when studied at one -week interval but some evidence of trends were observed for 14 week interval. **Granger and Morgenstern (1970)** noted the spectra of log price differences were flat for all the series. It was also observed some deviations from the random walk model in both the high and low frequency regions of the spectrum.

Alexander (1961) studied stock price movements in speculative market for a period from 1897 to 1959. It was noted that filter rules produced high rates of return in comparison to a buy and hold policy. **Fama and Blume (1966)** together extended the study on market efficiency. It noted that filter schemes provide large returns in comparison to buy and hold strategy but advocated that for practical purpose random walk model was an adequate description of price behaviour. **Sharma (1983)** studied on the market efficiency in less developed capital markets for a period from 1973 -78. The study noted that the price changes of stocks on the BSE confirm the general behaviour of stock prices changes observable in other leading stock markets of the world. **Malik (2000)** studied on weak form of market efficiency with the help of specified and non specified stocks. The study noted on the basis of serial correlation test and run test, the share prices followed a random behaviour and were efficient in weak form.

Belgaumi (1995) examined the weak form of market efficiency with the help ofa category stock for a period from April 1990 to March 1992. It noted on the basis of results of correlation coefficients and run tests, the Indian stock markets were considered efficient in weak form. **Mittal (1995)** examined the market efficiency forthe period January to September 1992. The results of serial correlation validated the weak form of market efficiency. **Chaudhary (1991)** examined short-run share prices. The study concluded that market does not seem to be efficient even in its weak form with accepting some l imitations related to sample size and length to the overall study period. **Broca (1992)** studied the day of the week effect. The study noted the contradictory results in comparison to the findings of the earlier studies in this context.

Chaturvedi (2000) examined the behaviour of stock prices around the announcements of half-yearly financial results. The study noted the markets were not efficient. **Chaturvedi (2000)** examined the market efficiency in semi strong form. The study noted the rapid adjustment of stock prices to the information, thus indicating information efficient market mechanism. **Agarwal (1991)** examined market efficiency to analyse the behaviour of dividends and stock prices. The study noted that past dividends were found explaining the current share prices and not vice -versa.

Dhillon and Johnson (1994) examined the market efficiency in semi strong form. The study observed that returns were not significantly different from the pre and post event announcement day indicating information efficiency of stock markets.

Mitra (2000) examined the efficient market hypothesis and found that institutional investors had more chance to earn higher return by resorting to dynamic strategies.

Mohanty (1998) examined the behaviour of analysts and fund managers. The study noted that investors behave rationally but that does not gurantee market efficiency, and of course, some of them do not behave rationally at all.

The study under consideration **Price Behavior of Global Depository Receipts** is essentially empirical and exploratory in nature. The main objective of the study is to examine the price behavior in three forms i.e. weak form, semi strong form and strong form for a period of April 1994 -December 2000. The sample size of 68 GDR issues represents a broad segment of industrial activity such as; textiles, power, diversified, automobiles, pharmaceuticals, hotel, and steel. Primarily, i t is based on secondary data pertaining to the weekly GDR stock prices. Thus, Friday closing prices of GDR stocks were obtained the Saturday edition of the daily The Economic Times. Stock prices thus compiled have been adjusted for bonus and stock splits/ consolidation. To test the hypothesis that successive price changes are linearly independent, serial correlation analysis is used for measuring possible dependence of

successive numbers in a given t ime series. Another statistical test developed for the same purpose, runs test, ignore the absolute values of the numbers in the series and considers their signs only. This test for randomness has also been used in present study.

To test the semi strong form of market efficiency, the event study methodology has been used. The study employs Fama, Fisher, Jensen a n d Roll's (1969) methodology for examining the impact of corporate announcements. For testing the strong form of market efficiency, the alternative portfolios have been constructed on the basis of issue size and market price of stocks on a specific date. To discover whether different portfolios can enable an investor to earn above normal returns, the performance of portfolios so developed has been measured in Sharpe model framework in terms of risk and return.

Since 1960s, the concept of an efficient market hypothesis has emerged a dominant theme in academic literature. Efficient market hypothesis is indeed a logical extension of fundamental and technical analysis approaches to equity investment decisions. Efficient Market Hypothesis (EMH) takes the same logic a bit further and claims that investors cannot outperform the market for the simple reason that there are numerous knowledgeable analysts and investors who would not allow the market price to deviate from the intrinsic value due to their continuous buying and selling of stocks. Eugene Fama (1965) has developed three flavors to market efficiency, weak form, semi -strong form and strong form. The weak form advocates that current stock prices already reflect fully all the information contained in the historical sequence of prices. Semi - strong efficient market hypothesis stipulates that current prices of stock not only reflect informational content of historical prices but also reflect all publicly available information about the companies such as earnings report, dividend announcements, stock splits, bonus issue, etc. The strong form of Efficient Market Hypothesis claims that not only publicly available information is irrelevant for decision -making but also all the information is useless for generating abnormal returns. The strong form of EMH represents the most extreme case of market efficiency.

There are two types of efficiency, operational efficiency and informational efficiency. Operational Efficiency measures how well things function in terms of speed of execution and accuracy. The efficient market hypothesis (EMH) relates to informational efficiency, which measures how quickly and accurately the market reacts to new information derived from the historical sequence of stock prices, publicly available information and the insider information.

In order to examine market efficiency in the weak form, historical sequence of stock prices were studied for independence and randomness. To test independence and randomness of stock prices, two kind of statistical tests have been developed.

One is the parametric test (serial correlation test) to examine the independence of stock prices and the other is non-parametric test (run test) for randomness. These tests were conducted on the stock price and return information available in domestic markets (BSE) and their counterpart prices in GDR markets (equivalent price available in Indian currency).

In domestic markets, out of 1071 correlation coefficients, 163 (about 15 percent) were found significant, out of which 66 (about 6 percent) were significant at 1 per cent level of significance. It was also found that 552 (about 51. 5 percent) correlation coefficients were negative and 485 (about 45 percent) were positive and remaining 34 (about 3 . 5 percent) were zero. The dominance of negative values signals a depressed stock market conditions during the study period. Also, it can be inferred that 637 (about 59 percent) have the correlation coefficient values less than the respective probable error. It indicates the overall insignificance of the correlation coefficients. However, certain coefficients were large enough to indicate serial dependence of stock prices at different time lags. The overall insignificance of auto correlation coefficients points to the efficiency of the domestic markets in weak form.

The predominance of significant serial correlation coefficients with one period time log points to operational inefficiency of the Indian stock markets. The prevalence of micro market imperfections as circuit filters prevent the market mechanism to speedily absorbs the incidence of new information. The new information is completely absorbed and reflected in the market prices subsequently as reflected by the significance of serial correlation coefficients with 2 -16 time lags of weekly duration. However, i t is interesting to point out that the domestic markets are relatively more efficient in the 5 th and 11 th time lags. Probably, it is a pointer to the impermanent period for the intermediate and long run horizon of the Indian stock markets in contrast to Fama's (1965) 4th and 9 th time lags, respectively. Visualized in this perspective, i t is again a re -endorsement of the slower adjustment of the Indian stock markets to the newer information.

The markets were efficient without any exception across all industrial groupings at 1 per cent level of significance. However, certain exception in the textile, diversified and telecommunication industrial groupings were noted at the 5 per cent level. It is curious to know that the incidence of serial correlation coefficient was comparatively low for stocks in textile and diversified industries in relation to respective probable error. While in the case of telecommunication industry a larger incidence was visualized in relation to the respective probable error of the correlation coefficients.

In GDR markets out of the total 1072 serial correlation coefficients, 414 (38. 65 per cent) were having negatives values, 535 (49. 95 per cent) have positive values while the remaining 123 (11. 48 per cent) had experienced zero values. Thus, a

positive bias in the serial correlation coefficients may be inferred. The magnitude of the serial correlation values when examined in relation to respective probable values reveals that a majority (62. 29 per cent) of serial correlation coefficients were of smaller magnitude (less than probable error). It also points towards the insignificance of the correlation coefficients thus obtained. It is also found that a handful of 157 coefficients (14. 65 per cent) were significant at 5 per cent and 66 (6. 16 percent) were considered significant at 1 per cent level.

Further that, out of the 157 significant serial correlation coefficients, 39 (24. 84 per cent) were significant at 5 per cent level with one -week lag in the GDR markets. It implies the serial dependence of stock prices even at 1 per cent level of significance. A similar serial dependence in stock prices was discerned at a lag of 4 weeks. Also, the instances of serial dependence were noted in the stock prices with a lag of 8 weeks also. Likewise, serial dependence in stock prices was noted with 12 and 14 weeks lag. Industry wise classification of serial correlation coefficients reveals that the diversified industry experienced the highest (44) number of significant (at 5 per cent level) coefficient. It is followed by the textile industry (21), fertilizer and cable industry each with 11 significant in the GDR markets.