CHAPTER 3

Review of Literature

3.1 Introduction

In previous chapter, it aims to develop some theoretical background regarding initial momentum, which followed by contrarian profits in case of overreaction cause by investors. However, concept of efficient market will have many findings and research since 1900s. In fact, the concept of efficient markets can be traced back to Bachelier (1900) and Cowles (1933). Nevertheless, at present, a century after its inception, the debate continues.

In present chapter, it tries to summarize past studies related to research objectives. It is divided into four parts. First part tries to summarize different work done related to behavior of stock returns and how this behavior of stock returns help to predict future returns.

Second part tries to summarize the different studies related to random walk hypothesis or more clearly efficient market hypothesis, which gives idea regarding different state of market efficiency. Random walk hypothesis says that stock price pattern is independent of past price trend or behavior, while EMH divides market efficiency in three form namely, weak form (in which past price pattern is not helpful to create abnormal returns), Semi-strong form (in which fundamental information publically available also not helps to create abnormal returns) and Strong-form (in which even inside information can’t create abnormal returns).

Third part summarize past studies done in context to overreaction hypothesis, which clearly showing market inefficiency with the help of creation of abnormal returns using momentum/contrarian strategies.
And last part is giving idea regarding recent work done in area of creation of abnormal returns through contrarian/momentum strategies in different market and across different segment (based on market cap or industry) of market.

I approach this review of the market efficiency with special focus on momentum/contrarian strategies literature with trepidation. The task is difficult than it was in 1993, when work on momentum/contrarian profit was rather new. The literature is now so large that a full review is impossible, and is not attempted here. Instead, I discuss the work that I find most interesting, and I offer my views on what we have learned from the research on market efficiency with special focus on momentum/contrarian strategies.

### 3.2 Behaviour of Stock Returns

It was always debatable that stock returns were predictable or not. However, many researchers always tried to found some model talks about behavior of stock returns. And based on model one can estimate stock returns or price in future. The asset pricing model of Sharpe (1964), Lintner (1965), and Black (1972) (SLB) have long shaped the way academics and practitioners think about average returns and risk. The central prediction of the model is that the market portfolio of invested wealth is mean-variance efficient in the sense of Markowitz (1959). The efficiency of the market portfolio implies that (a) expected returns on securities are a positive linear function of their market betas (the slope in the regression of a security's return on the market's return), and (b) market betas suffice to describe the cross-section of expected returns. SLB model gives expected return of different asset. Difference between actual and this expected return is considered as abnormal returns, which helps for understanding of efficient market hypothesis.

Again, if abnormal positive returns are possible to generate through (1) historical price pattern it showed absence of weak form of market efficiency (2) fundamental of company it showed absence of semi-strong form of market efficiency and (3) inside information of asset than it showed absence of strong form of market efficiency. However, there are several empirical contradictions of the Sharpe-Lintner-Black (SLB) model which only consider beta as stock return predictor variable.
One of that was Litzenberger and Ramaswamy (1979) showed a significant positive relationship between dividend yield and return of common stocks for the 1936-1977 periods. Basu (1977) founds that price earnings ratios and risk adjusted returns are related. He choose to interpret his findings as evidence of market inefficiency but as Ball (1978) points out, market efficiency tests are often joint tests of the efficient market hypothesis and a particular equilibrium relationship. Thus, some of the anomalies that have been attributed to a lack of market efficiency might well be the result of a misspecification of the pricing model.

However, the most prominent contradiction to SLB model was the size effect of Banz (1981). He contributed another piece to the emerging puzzle. It examined the relationship between the total market value of the common stock of a firm and its return. The results showed that, in the 1936-1975 periods, the common stock of small firms had, on average, higher risk-adjusted returns than the common stock of large firms. This result would henceforth be referred to as the ‗size effect’. He found that market equity, ME (a stock’s price times shares outstanding), adds to the explanation of the cross-section of average returns provided by market betas. Average returns on small (low ME) stocks were too high given their beta estimates, and average returns on large stocks were too low.

Banz (1981) and Reinganum (1981) reported a significant negative relation between abnormal returns and market value of common equity for samples of NYSE and NYSE-AMEX firms, respectively. Whereas they implicitly assumed that the negative relation between abnormal returns and size was stable over the periods examined; Brown, Kleidon and Marsh (1983) reported a reversal of the size anomaly for certain years and reject the hypothesis of stationary year-to-year abnormal returns attributable to size. Keim (1983) examined the month-to-month stability of the size anomaly over the period from 1963-1979. The evidence indicated that nearly fifty percent of the average magnitude of the risk-adjusted premium of small firms relative to large firms over this period is due to anomalous January abnormal returns. Further, more than twenty-six percent of the size premiums were attributable to large abnormal returns during the
first week of trading in the year and almost eleven percent was attributable to the first trading day. The data do not reveal significant seasonal behavior in any other month.

As Banz (1981) used a methodology similar to Fama and MacBeth (1973) and finds a negative association between averages returns to stocks and the market value of the stocks after controlling for risk. The t-statistic for whether the ‘size effect’ co-efficient equals zero was -2.54 for the 1936-75 period, and it was - 1.88 and - 1.91 for the 1936-55 and 1956-75 sub-periods, respectively. Thus, the statistical association between the ‘size’ of the firm and average stock returns was comparable to the association between average return and risk. Schwert (1983) found more detail explanation of ‘size effect’ with empirical evidence.

Using daily returns for NYSE and AMEX stocks Blume and Stambaugh (1983) found that (1) the average size effect over the entire year was about 0.05 percent per day only half as large as reported by Reinganum (1981) and Keim (1983) and (2) virtually all of this full-year average was attributable to January. In other words, the size effect averages about 0.60 percent per day in January and roughly zero in the remainder of the year.

Another contradiction of the SLB model was the positive relation between leverage and average return documented by Bhandari (1988). It was plausible that leverage is associated with risk and expected return, but in the SLB model, leverage risk should be captured by market beta. He found, that leverage helps explain the cross-section of average stock returns in tests that include size (ME) as well as beta.

One more variable was showed relationship to stock returns. Stattman (1980) and Rosenberg, Reid, and Lanstein (1985) found that average returns on U.S. stocks are positively related to the ratio of a firm's book value of common equity, BE, to its market value, ME. Chan, Hamao, and Lakonishok (1991) found that book-to-market equity, BE/ME, also has a strong role in explaining the cross-section of average returns on Japanese stocks.
One more contradiction to SLB model was raised by Basu (1983). He showed that earnings-price ratios (E/P) help explain the cross-section of average returns on U.S. stocks in tests that also include size and market beta. However initial argument related to E/P ratio and relation to stock returns were raised by Ball (1978). He argues that E/P is a catch-all proxy for unnamed factors in expected returns; E/P was likely to be higher (prices are lower relative to earnings) for stocks with higher risks and expected returns, whatever the unnamed sources of risk. Ball's proxy argument for E/P might also apply to size (ME), leverage, and book-to-market equity. All these variables could be regarded as different ways to scale stock prices, to extract the information in prices about risk and expected returns even supported by Keim (1983, 1988).

Moreover, since E/P, ME, leverage, and BE/ME are all scaled versions of price, it is reasonable to expect that some of them are redundant for describing average returns. Black, Jensen, and Scholes (1972) and Fama and MacBeth (1973) found that, as predicted by the SLB model, there was a positive simple relation between average stock returns and beta during the pre-1969 period. Like Reinganum (1981) and Lakonishok and Shapiro (1986), Fama and French (1992) also found that the relation between beta and average return disappears during the 1963-1990 periods, even when beta is used alone to explain average returns.

The result of Fama and French (1992) showed that the simple relation between beta and average return is also weak in the 50-year 1941-1990 period. In short, their tests do not support the most basic prediction of the SLB model, that average stock returns are positively related to market betas. Unlike the simple relation between beta and average return, the univariate relations between average return and size, leverage, E/P, and book-to-market equity are strong.

In multivariate tests, the negative relation between size and average return was robust to the inclusion of other variables. The positive relation between book-to-market equity and average return also persists in competition with other variables. Moreover, although the size effect has attracted more attention, book-to-market equity has a consistently stronger role in average returns.
They also showed that (a) beta does not seem to help explain the cross-section of average stock returns and (b) the combination of size and book-to-market equity seems to absorb the roles of leverage and E/P in average stock returns, at least during our 1963-1990 sample periods. If assets are priced rationally, study suggests that stock risks are multidimensional. One dimension of risk is proxies by size, ME. Another dimension of risk is proxies by BE/ME, the ratio of the book value of common equity to its market value.

It is possible that the risk captured by BE/ME was the relative distress factor of Chan and Chen (1991). They postulated that the earning prospects of firms were associated with a risk factor in returns. Firms that the market judges to have poor prospects, signaled here by low stock prices and high ratios of book-to-market equity, have higher expected stock returns (they are penalized with higher costs of capital) than firms with strong prospects. It is also possible, that BE/ME just captures the unraveling (regression toward the mean) of irrational market whims about the prospects of firms. Whatever the underlying economic causes, result of them was straightforward. Two easily measured variables, size (ME) and book-to-market equity (BE/ME), provide a simple and powerful characterization of the cross-section of average stock returns for the 1963-1990 period.

However, many more parameters like merger effect, seasonal effect, capital gain tax effect, news effects etc… have direct relationships with behaviour of stock returns. Due to which basic model of asset pricing (SLB model) put in to question mark. Different studies related to above discussed affect are shown in next part of behavioral stock returns.

Mandelker (1974), Ellert (1976), Langetieg (1979) and Dodd (1980) examined the effect of mergers on stockholder returns. While addressing different issues, all of these studies value the participating firms’ stock at points during a merger bid. However, there was no thorough investigation of stock price behavior for merging firms before a merger bid. Furthermore, Mandelker (1974) and Langtieg’s (1979) found that stock prices have a delayed negative reaction in the period after the merger bid remains a puzzle. Finally, the question of whether the acquiring firm’s stockholders gain on average from a merger bid is unresolved. To investigate these issues, Asquith (1983) examined the entire merger process from 480 trading days before a
merger bid until 240 trading days after a merger bid. Two merger events were used, the announcement date and the outcome date.

Also both unsuccessful and successful merger bids are studied to determine if changes in equity values result from the anticipation and completion of a merger or if they were primarily a function of the bidding process. Except for Dodd (1980) who investigated whether the incumbent managers of target firms act in their shareholders’ interest, no previous study has included unsuccessful merger bids. Asquith (1983) confirmed abnormal price performance on NYSE firms that engaged in merger bid, which again rejects efficient market hypothesis due to stock return behaviour.

As far as capital gain tax effect was considered most authors [Somers (1948, 1960), Gemmill (1956), David (1964), Wallich (1965)] have concluded that the current system of capital gains taxation has an undesirable effect on stock price movements because it offers an incentive for investors to realize capital losses and to defer capital gains. This view was summarized by Haugen and Wichern (1973), who note: “Economists have long been aware of the destabilizing property of the capital gains tax, commonly referred to as the "locked-in" effect...The tax acts to increase the supply of securities in a falling market and reduce the supply of securities in a rising market, increasing the magnitude of the fluctuation in both directions.” This traditional view supported by Richman (1960, 1963) said that effects of capital gains taxation on stock prices denies that securities are perfect substitutes and, rather, asserts that taxation-motivated transactions cause a movement along a downward sloping demand schedule.

Thus, this view directly contradicts the widely accepted proposition that the capital markets are efficient. In addition, the traditional view of the effect of capital gains taxation on the stock market assumes that the capital gains tax has a significant influence on investors’ market behavior because capital gains taxes give investors an incentive to realize capital losses and to defer the realization of capital gains as per Holt and Shelton (1961, 1962) and Sprinkel and West (1962).
Dyl (1977) also found that there was significant abnormal trading volume in December (as it is financial year ending for US countries; In Indian context same affect may be occur in March) in common stocks that have undergone a substantial price change during the preceding year. His study also reveal abnormally low volume for stocks that have appreciated during the year, presumably reflecting the year-end capital gains tax lock-in effect, and abnormally high volume for stocks that have declined in price during the year, presumably reflecting year-end tax loss selling. It also proved reflection of differences in year-end trading patterns from year to year.

These differences were related to general market movements in a manner which suggests that income tax considerations were, in fact, a major factor in explaining the abnormal year-end trading volumes observed. In sense Behaviour of stock returns are also has influence of capital gain taxes. Further, Lakonishok and Smidt (1986) showed effect on volume of winner (low volume due to non realization of capital gain) and losers (higher volume shows to report capital loss, which results in tax benefit) stock due to taxation and other motives for stock trading.

Stock returns also depend upon good or bad news and may overreact to news. Earning announcement is also one of reason for such good or bad news, which affects the behavior of stock returns. Ball and Brown (1968) were the first to note that even after earnings are announced, estimated cumulative "abnormal" returns continue to drift up for "good news" firms and down for "bad news" firms. Foster, Olsen, and Shevlin (1984) are among the many who have replicated the phenomenon. They estimate that over the 60 trading days subsequent to an earnings announcement, a long position in stocks with unexpected earnings in the highest decile, combined with a short position in stocks in the lowest decile, yields an annualized "abnormal" return of about 25%, before transactions costs.

Competing explanations for post-earnings-announcement drift fall into two categories. One class of explanations suggests that at least a portion of the price response to new information is delayed. The delay might occur either because traders fail to assimilate available information, or because certain costs (such as the costs of transacting or the opportunity costs of implementing and monitoring a trading strategy) exceed gains from immediate exploitation of information loss a sufficiently large number of traders. A second class of explanations suggests that, because the
capital-asset-pricing model (CAPM) used to calculate abnormal returns is either incomplete or misestimated, researchers fail to adjust raw returns fully for risk.

As a result, the so-called abnormal returns are nothing more than fair compensation for bearing risk that is priced but not captured by the CAPM estimated by researchers. In the case of post-earnings-announcement drift, this explanation requires that firms with unexpectedly high (low) earnings become more (less) risky on some unrecognized dimension. Several of the results were difficult to reconcile with plausible explanations based on incomplete risk adjustment by Bernard and Thomas (1989). However, they were consistent with a delayed response to information. What was less clear is why a delayed price response would occur. While abnormal returns to trading on post announcement drift may be within the transactions costs for small individual investors, a transactions-cost based explanation raises several difficult unanswered questions. Moreover, one of tests done by them suggested an alternative explanation for a delay that prices were affected by investors who fail to recognize fully the implications of current earnings for future earnings.

Thus, different asset pricing models helps in determining future returns on asset. However, if these returns are not as per expected returns through asset pricing model, remainder part consider as abnormal returns. Abnormal returns may negative also and cumulative affect over period should be zero in case of efficient market. But many researcher found there is presence of abnormal returns in market with the help of price behavior and when fundamental changes. These results were shown with the help of checking weak form and semi strong form of market efficiency. In next part we try to cover different research across world, which talks about random walk and efficient market hypothesis.

### 3.3 Random Walk and Efficient Market Hypothesis

In the two-parameter portfolio model of Tobin (1958), Markowitz (1959), and Fama (1965), the capital market is assumed to be perfect in the sense that investors are price takers and there are neither transactions costs nor information costs. However, Fama and MacBeth (1973) have studied different model for capital asset valuations and confirms the tests of Friend and Blume
(1970) and those of Black, Jensen, and Scholes (1972) indicate that, at least in the period since 1940, on average actual returns was systematically greater than expected returns. These difference between actual and expected returns was showed systematical positive abnormal returns, which questioning random walk theory that talks about non predictability of returns.

The Ball and Brown (1967) identified the portions of firm income that can be associated with the economy and the industry to which the firm belongs. Beaver (1970) conducted an exploratory study on accounting rates of return series, in which primary conclusion was that these measures tended to be mean reverting and he was also careful about pointing out that undefeated income series do not necessarily behave in the same manner as rates of return series. Another study conducted by Ball and Watts (1972) concentrated on examining the dependence in undefeated income time-series. Earlier research that had used income time-series as predictor model inputs seemingly established that there was little or no dependence in the series.’ Much of the evidence obtained from these studies was derived from examination of changes in income.

Ball and Watts, since their interest in the behavior of income series was primary, added exponential smoothing models as their primary analytical tool. Their study indicated that, in general, accounting income follows a sub martingale process. That is, the best predictor of period "t" income is the income of period t - 1. Buck master and Brooks (1974) also were primarily concerned with the time-series behavior of accounting income and utilized exponential models as the primary analytical tool.

In fact, Brooks and Buck master (1976) found that: (1) in the year subsequent to the extremely low observations, both operating income and extraordinary items tended to move back up towards the levels preceding the period containing the extremely low observations and (2) the best predictions of operating income in the period following the low observations were provided by the first order smoothing model with a smoothing constant of .333. This evidence of time series properties of accounting income, which again helps to forecast future earning of firm and helps to understand valuation to create abnormal returns out of investment in fundamentally strong firm. This is only possible in case of absence of semi-strong form of market efficiency.
The centerpiece of neoclassical financial theory (Efficient Capital Market Hypothesis) has been the dominating view on the working of financial markets for some time. Efficient market hypothesis says all the information is reflected in asset price and thus there isn’t any opportunity of arbitrage or earning extra on investment. However, Keynes (1936) holds almost opposite view. He argued with some hint of disapproval that the stock market works like a beauty contest and operated with a very short time horizon. That is, stock market prices are influenced more by speculative factors than by the real worth of the assets, and therefore these prices should not be regarded as giving the right incentives for production, investment and portfolio decisions.

Again some analysis of informational role of prices has come up with the paradox that if price perfectly aggregate and disseminate dispersed private information no agent will have an incentive to acquire and utilize private information (Grossman and Stiglitz, 1980). Torben (1984) has again showed two serious flaws in phrase “price fully reflects all information” namely, those asset prices are indeterminate and that the notion of information is not well defined.

Keim and Stambaugh (1986) found statistically significant predictability in stock prices by using forecasts based on certain predetermined variables. In addition, Fama and French (1987) show that long holding-period returns are significantly negatively serially correlated, implying that 25 to 40 percent of the variation of longer-horizon returns is predictable from past returns. Lo and Mackinlay (1988) provided further evidence that stock prices do not follow random walks by using a simple specification test based on variance estimators. His empirical results indicated that the random walk model is generally not consistent with the stochastic behavior of weekly returns, especially for the smaller capitalization stocks.

However, in contrast to the negative serial correlation that Fama and French (1988) found for longer horizon returns, he found significant positive serial correlation for weekly and monthly holding-period returns. For example, using 1216 weekly observations from September 6, 1962, to December 26, 1985, he computed the weekly first-order autocorrelation coefficient of the equal-weighted Center for Research in Security Prices (CRSP) returns index to be 30 percent! The statistical significance of his results is robust to heteroscedasticity. He also developed a
simple model which indicates that these large autocorrelations cannot be attributed solely to the effects of infrequent trading. This empirical puzzle becomes even more striking when he showed that autocorrelations of individual securities are generally negative. Of course, these results do not necessarily imply that the stock market is inefficient or that prices are not rational assessments of "fundamental" values. But in fact it shows presence of market inefficiency.

As Leroy (1973) and Lucas (1978) have showed, rational expectations equilibrium prices need not even form a martingale sequence, of which the random walk is a special case. Therefore, without a more explicit economic model of the price-generating mechanism, a rejection of the random walk hypothesis has few implications for the efficiency of market price formation. Although Lo and Mackinlay (1988) test results may be interpreted as a rejection of some economic model of efficient price formation, there may exist other plausible models that are consistent with the empirical findings.

Fama and French (1988) also examine autocorrelations of stock returns for increasing holding periods. In the result for the 1926-85 sample periods, large negative autocorrelations for return horizons beyond a year are consistent with the hypothesis that mean-reverting price components are important in the variation of returns. The estimates for industry portfolios suggest that predictable variation due to mean reversion is about 35 percent of 3-5 year return variances. Returns are more predictable for portfolios of small firms. Predictable variation is estimated to be about 40 per cent of 3-5 year return variances for small-firm portfolios. The percentage fall is around 25 percent for portfolios of large firms.

Results of Fama and French (1988) add mounting evidence that stock returns are predictable (See e.g., Bodie 1976; Jaffe and Mandelker 1976; Nelson 1976; Fama and Schwert 1977; Fama 1981; Campbell 1987; French, Schwert and Stambaugh 1987). Again their work focus on short return horizons and common conclusion was that predictable variation is a small part (usually less than 3 per cent) of the variation of returns. There is little in the literature that foreshadows their estimates that 25-45 percent of the variation of 3-5 year stock returns is predictable form past returns. If so it clearly indicates presence of inefficient market, which may helps to generate
abnormal returns with some of strategies. In next part our discussion is related to literature which talks about one of strategies that helps to create abnormal return if market is inefficient.

### 3.4 Overreaction and Momentum/Contrarian Strategies

Evidence that expected stock returns vary through time is plentiful. See, for example Bodie (1976), Jaffe and Mandelker (1976), Nelson (1976), Fama and Schwert (1977), Fama (1981), Keim and Stambaugh (1986), and French, Schwert, and Stambaugh (1987). The common conclusion, usually from tests on monthly data is that stock returns are predictable, but the implied time variation of expected returns is a small fraction (usually less than 3 percent) of return variances.

Fama and French (1986) find negative serial correlation in stock returns that becomes stronger for return horizons beyond a year and that implies stronger predictability of long-horizon returns. Returns are also more predictable for small-firm portfolios than for large-firm portfolios. Past returns explain about 25 per cent of 3 to 5 year variances for large-firm portfolios and about 40 per cent for small-firm portfolios. In short stock returns are predictable and if so one can easily generates abnormal returns from market with the help of some trading strategies. Two such strategies are momentum and contrarian, which explain market overreaction hypothesis.

Howe (1986) tried to analyze effect of good and bad news on stock returns and found that market shows overreaction to different news again affect is not sudden but distributed through to the following 1 year span. He also showed possible implication of this overreaction to create higher returns from market with suggestion of buying stock during good new and selling stock during bad news. He also gives idea regarding square off such short time position when market in way overreaction to this news.

However, De Bondt and Thaler (1985, 1987) first time explained creation of abnormal returns with evidence of existence of market overreaction using contrarian/ momentum investment strategy which calls for buying today’s “winner” and selling today’s “losers” for short-term and buying today’s “losers” and selling today’s “winners” for long term to create abnormal/excess
return due to inefficient market. They includes all the listed stocks in U.S. stock market for their study, which confirms overreaction in stock prices to some big news/events regardless of whether the events are positive or negative. This overreaction leads to abnormal price fluctuation. Their results suggest that selling past “winners” and buying past “losers” generate abnormal positive returns for longer period horizon around for one year to three years. Thus, their findings support use of contrarian strategy for generating abnormal returns. In way, it is supporting the overreaction hypothesis.

Chan (1988) found that the estimation of the abnormal return to the contrarian investment strategy is sensitive to the model and estimation methods. Using a simple he found that the contrarian strategy earns a very small abnormal return, which is probably economically insignificant. He was found no strong evidence in support of the hypothesis. Based on study he suggested two features about winners and losers in the stock market make the estimation of abnormal returns sensitive to the procedures used. First, the losers' betas increase after a period of abnormal loss, and the winners' betas decrease after a period of abnormal gain. Betas estimated from the past should not be used. Second, when one needs to evaluate the risk-return relation over an extended period of time that involves updating of portfolios, it is incorrect to base the analysis on the relation between the average return and average beta because both the betas and expected market-risk premium might respond to some common state variables and are thus correlated.

The contrarian strategy appears to have an ability to pick riskier losers when the expected market-risk premium is high, probably because losers suffer larger losses at economic downturns than at upturns. An investor who follows the contrarian strategy is likely to find that his or her risk exposure varies inversely with the level of economic activity (and consumption). On average, the investor realizes above-market returns, but that excess return is likely to be a normal compensation for the risk in the investment strategy. If so abnormal returns cant created through just contrarian/momentum strategy shows evidence of market efficiency.

Conrad and Kaul (1988) characterize the stochastic behavior of expected returns on common stock. They assume market efficiency and postulate an autoregressive process for conditional
expected returns. They use weekly returns of 10 size-based portfolios over the 1962-85 period and find that (1) the variation through time in expected returns is well characterized by a stationary first-order autoregressive process; (2) the extracted expected returns explain a substantial proportion (up to 26 per cent) of the variance in realized returns, and the magnitude of this proportion has a monotonic (inverse) relation with size; (3) the degree of variation in expected returns also changes systematically over time; and (4) the forecasts subsume the information in other potential predictor variables.

However, Brown and Harlow (1988) found surprising asymmetries existence in both direction and time for the stock returns, which confirms market overreaction. They also showed relation between magnitude and intensity of overreaction to initial price change of stocks. Further, Zarowin (1990) found that the tendency for losers to outperform winners is not due to investor overreaction, but to the tendency for losers to be smaller-sized firms than winners. When losers are compared to winners of equal size, there is little evidence of any return discrepancy and in periods when winners are smaller than losers, winners outperform losers.

Based on different studies done by different researcher it is become highly controversial issue in financial economics that whether stocks overreact or not. Chopra, Lakonishok and Ritter (1992) found an economically-important overreaction effect even after adjusting for size and beta. In portfolios formed on the basis of prior five-year returns, extreme prior losers outperform extreme prior winners by 5-10% per year during the subsequent five years. Although they found a pronounced January seasonal, their evidence suggests that the overreaction effect is distinct from tax-loss selling effects. Interestingly, the overreaction effect is substantially stronger for smaller firms than for larger firms. Returns consistent with the overreaction hypothesis are also observed for short windows around quarterly earnings announcements.

Jegadeesh and Titman (1993) found not only the evidence of long run success of contrarian investment strategy but also found that momentum strategies generate significant positive returns in short run over 3–12-month holding periods. Using US market data from 1965-1989, they documented the reversal of momentum after about nine month to twelve month period. Their
study supports momentum strategy for generating significantly positive returns in short run for about 3-12 months holding period.

While in long run contrarian strategy works for generating significantly positive returns for the holding period of 1-3 years. The results of Jegadeesh and Titman (1993) had thrown a new light on seminal study of De Bondt & Thaler (1985, 1987) and found evidence of short term momentum precedes long term reversal. Although all the results provided strong evidence of market inefficiency, different studies documented different explanations for such abnormal returns. Jegadeesh and Titman (2001) again found that beyond 12 month period momentum of stock price is non-sustainable using US market data from 1990-1998. After conceptualization of contrarian/ momentum strategy several behavioural explanations were found and presented to jointly explain the short-run cross-sectional momentum in stock returns documented by Jegadeesh and Titman (1993) and the long-run cross-sectional reversal in stock returns documented by DeBondt and Thaler (1985, 1987).

Conrad and Kaul (1993) found the contrarian strategy is profitable for very short-term (weekly, monthly) and long-term (2–5 years, or longer) intervals from US market. He also found that the momentum strategy is profitable for short-term (3–12-month) intervals. Chang, McLeavey and Rhee (1995) also found abnormal profits of contrarian strategies in the Japanese markets. Again in 1997 Richards (1997) examined possible explanations for "winner-loser reversals" in the national stock market indices of 16 countries. There was no evidence that loser countries are riskier than winner countries either in terms of standard deviations, covariance with the world market or other risk factors, or performance in adverse economic states of the world. While there was evidence that small markets are subject to larger reversals than large markets, perhaps due to some form of market imperfection, the reversals are not only a small-market phenomenon. The apparent anomaly of winner loser reversals in national market indices therefore remains unresolved.

Again in support of overreaction Daniel, Hirshleifer, and Subrahmanyam (1998) found that investors are overconfident about their private information whether it is negative or positive and
overreact to it. Now, if these investors have a self-attribute bias, then investors attribute success to their own skills more than they should and attribute failures to external noise more than they should. The consequence of this behaviour leads to increase in overconfidence after the confirmation of news. The increase in overconfidence creates furthers momentum generates short term momentum returns. This overreaction in momentum prices will be corrected in the long-run as investors realize their errors and observe future news. Hence, increased overconfidence results in short-run momentum and long-run reversal create abnormal returns.

By contrast to that in 1998 Conrad and Kaul (1998) argued that the profitability of momentum strategies may be the result of data-mining and momentum portfolio shows abnormal returns in any post ranking period is true irrespective of the length of test period. Similarly, against the all of above stated behavioural studies, which explains short term momentum and long term reversal, some scholars argued that the returns from these strategies are just compensation for taking additional risk or may be the product of the data mining. Conrad and Kaul (1998), one of those scholars suggest that there is no case of long term reversal. This is diagonally opposite to what the different behavioral studies suggests where after short term momentum prices will reverse to more fundamental levels in long run.

The criticism of Conard and Kaul (1998) led to another study by Jegadeesh and Titman (2001). They used data from 1990 to 1998 with an overlapping test periods. Their study has eliminated small cap stocks from the study to check whether the earlier momentum returns were actually dominated by small cap, high-risk and illiquid stock or otherwise. Generally, it is possible to manipulate price of small cap stocks compare to large cap stocks. Their focus is for short term momentum in their study choosing two year holding period post formation. They also tested the period of two to five years after formation for post holding period returns. The evidence of momentum profits of Jegadeesh and Titman (1993) confirm again in 2001 with almost same magnitude for same holding period, that actually has proved that the earlier momentum profits were not the result of data-mining.
It suggests that not only small firm effect the result but the elimination of small cap also shows superior returns. Compared to large cap stocks, superior returns on small cap stocks disappeared in subsequent studies using data from the periods after the small firm effect from earlier studies got published. That means market has learnt quickly and hence such superior returns disappeared from small cap stocks. However momentum returns were still present with the same magnitude in 2001 as they were in 1993. This study is suggested that momentum returns are not just the temporary anomaly but it may have to do with some systemic cognitive bias which sustains for a long time. It also proves that momentum profit is just not the result of some small, illiquid and risky stocks and most noteworthy the reversal found in their post holding period cumulative returns, which render support to the explanations of behavioral theorists and provides evidence against the Conrad and Kaul hypothesis.

Hong and Stein (1999) have presented a model that is based on initial under-reaction to information. It also shows subsequent overreaction, which eventually leads to stock price reversal to adjust price to fundamental value in the long-run. The model talks about two types of investors, “momentum traders” or let us say “technical analyst” and "news-traders" or let us say “fundamental analysts”. The momentum traders rely exclusively on the information in past price changes while news-traders rely purely on their internal/external information. Hence price is driven initially by the fundamental analyst as they receive and react to their internal/external information as soon as they come. Then the news gradually gets transmitted to the market where technical analyst may get breakouts on their charts and react to the news. This leads to initial under-reaction till the time momentum traders are not reacting to the news and subsequent overreaction when momentum traders react to the news. In long run however this overreaction disappears and price reverts to its fundamental in long run.

Schiereck, De Bondt and Webar (1999) studied all major companies listed on the FSE for the 1961-91 periods in Germany stock market. Momentum and contrarian strategies appeared to beat a passive approach that invested in the market index. They tried to reconcile the results with standard theories, as well as with known price anomalies. However, factors such as beta, risk, or firm size do not easily account for the results. Because several of the strategies require limited
trading, their implementation costs are modest. They conclude, therefore, that the results were economically meaningful—that is, substantial enough to be of interest to portfolio managers.

From the viewpoint of behavioral finance, what is perhaps most surprising is how closely the results for Germany match the findings for the United States—even though equity markets are organized very differently and even though there are profound differences in the social, cultural, and economic environment. Maybe general traits in human behavior and psychology overcome these differences and ultimately drive the speculative dynamics of asset prices in world financial markets. In fact in recent years many research tried to find out applicability of overreaction to create excess return through the different countries of globe. In next part our try is to cover recent studies related to our discussion of efficient market and overreaction hypothesis.

### 3.5 Recent Studies Regarding Creation of Abnormal Returns through Momentum/Contrarian Strategies

Not only in US but recently even in global equity markets different findings related to random walk theory is available. Abraham, Seyyad and Alsakran (2002) found absence of weak form of market efficiency in gulf stock markets with the help of variance ratio test. Dias, Lopes, Martins and Benzinho (2004) confirms form Iberian Stock market with two major index Portuguese Stock Index (PSI-20) and Spanish Stock Index (IBEX-35) presence of efficient market or existence of random walk theory with the help of unit tool tests. They use daily data from January 1993 to September 2001 for the PSI-20 and daily data from October 1990 to September 2001 for the IBEX-35. However, they were not able to confirm presence of weak form of market efficiency with the help of variance ratio test and serial correlation method. Al-Khazali, Ding and Pyun (2007) again found non-rejection of random walk in Middle East and North America (MENA) due to small stock markets.

While, Borges (2007) found absence of weak-form market efficiency applied to the PSI-20 index prices of the Lisbon Stock Market from January 1993 to December 2006. As an emerging stock market, it is unlikely that it is fully information-efficient, but they showed that the level of weak-form efficiency has increased in last five years of analysis. In 2008 Borges (2008) again found

In India Ahmad, Ashraf and Ahmed (2006) attempts to seek evidence for the weak form efficient market hypothesis using the daily data for stock indices of the National Stock Exchange (NSE), Index National Fifty (Nifty), and the Bombay Stock Exchange, Index Sensitive Index (Sensex), for the period of 1999-2004. The random walk hypothesis for the Nifty and the Sensex stock indices were rejected. Both the stock markets have found relatively more inefficient in the last two-three years of analysis, and have high and increasing volatility. Non-parametric tests also indicating that distribution of the underlying variables were not normal and the deviation from normality has found higher last two-three years of analysis. Both the indices show a negative autocorrelation at lag 2, indicating over-reaction one day after information arrival, followed by a correction on the next day. The study suggests immediate dissemination of information on foreign institutional investor trades and equity holding and the need to improve free float of equity to move towards efficiency.

Due increasing demand of higher returns through portfolio manager it become necessary to develop some techniques to get abnormal returns. In every country behavior of people remain almost same and there is possibility of overreaction in any equity market, which may leads to some abnormal returns. In recent time many researcher concentrate to understand momentum/contrarian strategies for the creation of abnormal returns in different country.

Chui (2000) found significant positive abnormal returns with contrarian investment strategy in Japanese and Korean markets. Hameed & Ting (2000) found evidence of market overreaction hypothesis (contrarian strategy) in Malaysia. Kang, Liu and Xiaoyan Ni (2002) using data from 1993-2000 have found significant short-term contrarian and intermediate-term momentum profits in China. However, in case of equal weight portfolio they found momentum profits are not distinct. While distinct contrarian profits are due to excessive overreaction. Reasons for this
overreaction may be (1) The dominance of individual investor, (2) lack of reliable information (specifically in small firms) and (3) Possible presence of syndicate speculator who favors to create bullish sentiment on small stocks. They also examined value weighted portfolio and conclude that there was presence of momentum/contrarian profits in Chinese markets.

Bildik and Gulay (2002) examines the momentum and contrarian effects on stock returns in one of the leading emerging markets, Istanbul Stock Exchange (ISE) between years 1991 and 2000 by using the same empirical methodology in Jegadeesh and Titman (1993). It also investigates the weak-form efficiency of the stock market by examining the profitability of a number of contrarian strategies based on past prices, size, price, book-to-market, earnings-to-price ratios of stocks. Compounded annual return difference between the top-winners and top-losers is around 15% in favor of loser-stocks since the average return difference during the 10-year period is 1.14% per month. Empirical findings for the longer-term average returns up to 36 month holding periods reveal a reversal of returns from 15 months to 36 months. They also found that average abnormal returns and the average abnormal return difference per month between losers and winners increase as the holding period extends. Results also indicate that there is a downward trend in average returns for the winner stocks based upon the length of past returns that is used for portfolio formation but upward trend for the losers.

On the other end, Hameed & Kusandi (2002) found no evidence of contrarian profits in six Pacific Basin markets. While, Rouwenhorst (1998), Forner and Marhuenda (2003) and Griffin, Ji & Martin (2005) found existence of momentum in many non-US countries, the quantum of momentum returns in non-US countries was small, and in the case of Asia, insignificant. For example, Griffin, Ji & Martin (2005) estimated average monthly returns of 0.78%, 0.77% and 0.40% for the Americas (excluding the US), Europe and Asia respectively.

Forner and Marhuenda (2003) showed that these two phenomena momentum/contrarian seem to be present in Spanish stock markets, and in particular that the 12-month momentum strategy and the 60-month contrarian strategy yield positive abnormal returns, although the effectiveness of the contrarian strategy is under suspicion when non-overlapping test periods are used. Their
study therefore provides additional evidence that the results obtained were not from data snooping.

As far as use of contrarian/momentum strategy was concern Brozynski, Menkhoff and Schmidt (2003) found evidence from a questionnaire survey of fund managers that the majority of respondents rely on momentum, contrarian and buy-&-hold strategies to some degree. Although there were few applicants who exclusively rely on a single trading strategy, clear preferences emerged. All kinds of predetermined trading strategies are preferred by younger and less experienced professionals. Moreover, contrarian traders show signs of overconfidence, disposition effect and reliance on non-fundamental information. A more conventional contrast is provided by fundamentally oriented and risk averse buy-&-hold traders, whereas momentum traders appear as the least risk averse professionals who may aim for exploiting the sub-optimal behavior of others.

However, in recent years there were some studies which confirm momentum/contrarian profits. It leads to help fund manager to create abnormal returns with these two strategies. Xing-qiang and Zhi-ping (2007) examined momentum and contrarian effects in China’s stock market during 1994-2004 and found that no medium momentum effects exist. However, contrarian strategy works effectively over the horizon of 18-36 months. 1-month gap for avoiding bid-ask bounce and lead-lag effect make no considerable change to their empirical results. Transaction costs seem to have no significant impact on contrarian strategies’ profit. Addae-Dapaah and Peiying (2009) found presence of momentum/contrarian profits in REITs. Joshipura M. (2009) confirmed the behavioural explanations of overreactions hypotheses in long run for the Indian listed stocks. Hann and Kakes (2011) also found presence of momentum/contrarian profits from Dutch institutional investor.

Malin and Bornholt (2010) found evidence of contrarian profits from 18 developed market indices. They classify contrarian profits in to early stage and late stage contrarian strategies. First talks about short-term reversal based on short term formation of winner and loser portfolios.
While, second one was talk about long term investment strategy. Using recent short-term performance to determine which contrarian indices appear ready to reverse and which do not, they define late stage and early stage contrarian strategies. Late stage strategies are consistently more profitable than both pure contrarian and early stage contrarian strategies. Studies subsample results confirm a general weakening in contrarian strategy profitability post-December 1989.

Chen, Jiang and Li (2010) divided their study with respect to market state (Bull, Consolidated or Bearish) and found evidence of momentum profits are presents in bull or ‘up’ market trend for the data from 1995 to 2010 in Chinese market. Contrarian profits were more in case of bearish of ‘down’ trend of market. However, in consolidated or stable phase momentum/contrarian profits were not shown significance results.

These contrarian/momentum profits required to explain behavior of investor, which explained in many studies those, are done in recent period. One of that is of Ramiah, Li and Carter (2010). Their study investigated contrarian investment strategies, for equities listed on the Australian Stock Exchange. They examined the relationship between stock returns of extreme portfolios with past trading volume and other finance fundamental factors including firm size, sales, earnings per share (EPS), capital expenditure (CAPEX) and leverage for equities within these portfolios. The empirical results demonstrate that contrarian behaviour was a persistent feature of stock returns for strategies examined in Australia. They also document the returns of contrarian portfolios, which could be as high as 1.75% per month. More interestingly, the empirical results did not support the view that trading volume and EPS affect stock returns. It also showed that contrarian profits are driven by small firms, firms with low levels of sales, firms that do not invest heavily in capital and firms with low borrowings.

Furthermore, Zhang (2010) also tried to understand source of abnormal returns through momentum strategy. They found for winner’s portfolio autocorrelation was quite negligible than in the loser’s portfolio. They found these momentum abnormal returns may be autocorrelation of stocks with their own past returns. Recently, in 2011 He and Li (2011) found that
momentum/contrarian profits may affect market stability. In way in stable market momentum/contrarian profits did not works. It means if contrarian/momentum profits existing only when market is volatile, which may be result of overreaction.

3.6 Conclusion

From above review of literature it is clear that many developed/developing countries may show overreaction. This overreaction can be used to generate abnormal returns with the help of momentum/contrarian strategy. However, timing of applicability of momentum and contrarian is different in different countries. It is also observed that many researcher points out effect of size on the occurrence of overreaction in stock market. Thus, here in this study our tri is to identify existence of momentum/contrarian profit (Only possible if market is inefficient or market is overreacted) and if contrarian profit exist than to identify time of reversal for getting abnormal returns. Our tri is also to identify effect of size on the outcome of momentum/contrarian profit.
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