"MOMENTUM AND CONTRARIAN STRATEGIES IN BOMBAY STOCK EXCHANGE (BSE)"

Aryan Sanjay Prabhakar[1] Sourav Ranjan Panda[2] Varun Korada[3]
B.COM (Finance &Accountancy)
Department of Professional Studies
Christ (Deemed to be University)
Bengaluru, India

Dr. Ravi Thangjam[4]
Department of Professional Studies, Christ University, Karnataka, India

Abstract

The study is based on the Indian stock market with respect to momentum and contrarian strategies using the daily adjusted closing prices of ten sectoral indices of Bombay Stock Exchange(BSE) for a period of six financial years. The sectoral indices were examined on the notion that the test outcome will give an obvious picture on the investment strategies to be adopted with stocks of various sectors. The study has been divided into short and long-term periods and every period has been additionally isolated into formation(arrangement) and holding(trial) periods. The variation of the average abnormal returns of winner and loser portfolio has been examined. In view of the year to year return information of BSE, it was found that majority of the sectoral portfolios follows contrarian investment movement and this evidence questions presence of weak form of Efficient Market Hypothesis in Indian market. The investigation is valuable to investors who have pre-determined investment horizons. The findings also have real ramifications for portfolio management strategies.

Keywords: Momentum Strategies, Contrarian Strategies, Bombay Stock Exchange, Sectoral Indices, Abnormal Returns, Winner/Loser Portfolio, Efficient Market Hypothesis

I. Introduction

The value based way to deal with stock speculation has for quite some time been debatable. Over centuries, countless investment strategies have been evolved to address this critical area of investing in stock market for a fetching portfolio, factoring the time horizon of the investment. Momentum and contrarian effects, which are two robust market anomalies, have tested the traditional finance framework for a considerable length of time. Stock price movements are liable to volatility as the market information changes on a daily basis. During volatile times, many investors get spooked and start to scrutinize their investment strategies. The investor's activity towards market information can be either rational or irrational. Two common

investment strategies to address such volatile situations are Momentum strategies and Contrarian strategies. The momentum-based portfolio exchanging technique is all the while purchasing stocks with high past returns (winners)and offering stocks with low past returns (washouts). On the other hand, a contrarian investment strategy is synchronous purchasing of inadequately performed securities and offering of very much performed securities. Despite the fact that there exist many empirical and statistical significant confirmations supporting the presence of momentum and contrarian profits in developed markets not very many are focused on less created and developing markets. Consequently, there exists an enormous gap in existing literature. The Indian market has undergone many changes in the last couple of decades in terms of volumes and liquidity, regulations allowing short sales in the cash market and reduction in transactions costs.

II. Review of literature.

(Maheshwari & Dhankar, 2016, May), **A study on momentum and contrarian profitability by Ms. Supriya Maheshwari and Prof. Raj S Dhankar (May, 2016) on the insights of Indian Stock market with alternative approaches explores the momentum and long contrarian strategy** in the Stock Market of India, where they have used the data from the NSE and used multiple return computation method to examine the similarities and differences, to check if the profits are because of the return computation errors. Their period of the study was from Jan '97 to Mar '13. It is examined whether the returns from the strategies are because of the excess return calculated by the use of inappropriate method or not. The results obtained from the study favours momentum and the long term contrarian strategies, that the changes in the returns computational method does not alter the momentum and long term contrarian strategies. They found that the differences between the arithmetic returns and buy-hold returns were less and not statistically insignificant. Their findings provide evidences which can be used by the investment communities including various investment companies, mutual fund managers, retail investors from which their investments can be improved by using momentum strategies in the short term and the contrarian strategies in the long term, not only in the Indian stock market, but any stock market in general. Their study ignores the transaction cost involved in the implementation of these strategies.

(M, 2016, April-May) Aravind M, A study on the momentum and contrarian strategies as an investigation with reference to sectorial portfolios in the NSE. According to his study, in a country like India, which is a developing economy, investors have the belief that selecting an investment option is too monotonous as the Stock Market has variety of stocks from various sectors with sharp price movements which creates volatility. His study was conducted to form strategies based on the sectoral performances of the stocks. The period of his study is between April 2009 and March 2015. The indices were studied by considering that the results from the tests will provide clarity on the investment strategies that are to be adopted with various stock indices. After the analysis of the trends of the eleven sectors that were examined

and strategies employed, the results suggest that the evidence of short term contrarian effects in the sectors like Auto, Banking, Energy, Media and Metal Sectors exists. The short term momentum effects show less uncertainty of returns in the above said sectors. These directions would help the investors in shaping his decisions while investing. The conclusion of the study was that the long term return trends suggests the persistence of the momentum effect and the investors can decide to invest in long term after examining the historical trends. He also states that his conclusion is not accurate as the general trend may vary from sector to sector.

(Singh, 2018, May) Ms. Anshu Singh examines momentum and contrarian strategies as study from the National Stock Exchange, India. Her study is about the impact of momentum and contrarian style of stock investing for various sectors in the Indian Stock Market. The examination of the study is done based on the time series of 8 years of daily prices of 50 blue chip companies listed on the National Stock Exchange. The study was conducted mainly to understand the presence of momentum and contrarian effect in the Stock Market with respect to NIFTY 50 Stocks. And also to understand the impact of these strategies on stock returns on the short term as well as long term period. The time horizon while conducting the study was divided and broken down into Formation and Holding periods. Also the abnormal returns i.e., gains or losses generated by the winners and losers of past in the holding period was studied and observed. And also the trend reversal from the positive to negative or negative to positive suggested a contrarian strategy and the continuation of formation period trend (positive or negative) in the subsequent holding period showed a momentum effect. In the study most of the large capital stocks returns follow momentum effect and also it is upheld by the fact that 72% of the NIFTY 50 Stocks have shown a momentum effect in the short term as well a long term while the remaining show contrarian effect. The sectors like Financial Services, Telecom, Information Technology, Pharmaceuticals, Automobile, and Metals have shown the presence of both the effects in either short term or long term

According to her study, stock picking in these sectors will require a top down analysis to decide upon an investment style and the contrarian strategies can be used based on the investor's risk tolerance and time horizon, even though many stock returns follow the momentum strategy.

(Han, 2013, August) Dongming Han's study on the evaluation of the profitability of momentum and contrarian strategies in the China's Stock Market, gives a brief on the profitability of short-term and medium momentum and contrarian strategies effect in the China Capital Market. The objective of this study is to understand both the strategies and help the Chinese investors to gain abnormal return based on the historical information of the market and also to analyse the difference between the momentum and contrarian return based on different firm size. This study has been conducted on the basis of few needs that were to be analysed. The study was conducted by analysing the winner and loser abnormal return based on

method used by Jegadeesh and Titman ('93), generating the momentum and contrarian return according to winner and loser returns and also based on different market size of the firms and by testing the relationship between existence of momentum and historical return. The major limitation of this study is that the zero is assumed to be the transaction cost in the portfolio, since, if the transaction cost existed, the result would have changed significantly. After analysing the results, the study concludes that the different size of stock selected influences the momentum and contrarian effects in the Stock Market and there was a difference in the excess returns of the different formation periods and holding period. Most of the contrarian effect existed on the short term formation and holding periods.

(Wouassom, 2016, Sept), Alain Wouassom has conducted a study on Momentum and Contrarian Trading Strategies: Implication of risk sharing and Informational Efficiency of Security Markets. This study is conducted by investigating the profitability of the Momentum and Contrarian Strategies in the International Equity Markets. He has introduced for the first time the use of countries indices performance to momentum and contrarian portfolio selection. He shows that the investors can switch different countries while adopting the worldwide strategies. He examines the risk factors in explaining the global momentum and contrarian profits and derives that the global momentum strategies obtain significant abnormal returns after adjusting consecutively for World Fama and French Risks, and world market state risks. The study also finds that there is strong relation between macroeconomic risk factors, like the world industrial production and the return of momentum and also there is no relation substantially between world risk factors and the contrarian profits. The results of the study suggest that the returns can be earned in excess in the long run by using Global Investment Strategies, based on the historical prices.

III. Research Design

Scope of Study:

This research focuses on evaluating the investment opportunities in various sectors based on the variation in return of sectoral indices of BSE. Ten sectoral indices have been considered for testing the presence of momentum and contrarian strategies which is as follows:

1. S&PBSEFinance
2. S&PBSE Fast Moving Consumer Goods
3. S&PBSEHealthcare
4. S&PBSE Information Technology
5. S&PBSETelecom
6. S&PBSEBankex
7. S&PBSECapital Goods
8. S&PBSEMetal

9. S&PBSEOil &Gas
10. S&PBSEPower

Statement of Problem:

As indicated by the Efficient Market Hypothesis (EMH), stocks dependably exchange at their fair value on stock market, making it unusual for investors to either buy underestimated stocks or sell stocks at inflated prices & that utilizing data in light of past stock prices does not assist financial specialists with earning additional profits. This theory is additionally affirmed by random walk theory which says that as share prices move in an arbitrary manner it is difficult to gain unusual return by anticipating future share prices movement in light of past prices movement.

This examination aims at testing for presence of momentum and contrarian strategies and thus testing weak form of market efficiency which asserts that predominant returns cannot be created based on the basis of investment strategies based on historical data and if any such returns are earned it may be a mere compensation for the higher risk taken. Such an attempt could not be found while looking at the prior research works with reference to BSE. Additionally, earlier literature focuses around assessing returns and formulation of investment strategies based on random portfolios. This study has a practical importance where investors may have opportunities to beat the market to earn zero cost profits.

Objectives of the Study:

1. To evaluate the presence of contrarian and momentum effect with respect to sectoral portfolios in BSE.
2. To compare and contrast the return potential of these strategies (momentum and contrarian) in connection with various sectors in the short term as well as long term period.

Source of Data:

Secondary data has been taken for the purpose of the study. The data is collected from PROWESS which is a financial database offered by the Centre for Monitoring Indian Economy (CMIE) for the period starting from 1 April, 2012 to 31 March, 2018 & following websites:

https://www.moneycontrol.com/

https://www.bseindia.com/

Hypothesis:

Null Hypothesis (H_0):

The momentum and contrarian strategies does not provide significant returns to the investors

Alternate Hypothesis (H_1):

The momentum and contrarian strategies provide significant returns to investors.

Significant return indicates the minimum return of the benchmark index during the holding period.

Data Analysis & Tools:

Data Description

This research covers daily returns information of 10 sectoral portfolios enlisted with the BSE over a period of six years.

The data utilized in this paper comprises of adjusted closing prices of select sectoral indices in Bombay Stock Exchange and the benchmark index S&P BSE Sensex which includes 30 of the substantial, delegate and liquid stocks traded in BSE It involves analysis of (1480 * 10)daily price observations. This study adopted an explanatory research design that uses both qualitative and quantitative data.

Methodology:

- The entire study is divided into two time horizons i.e. long term comprising of six years of price observations dating from 01/04/2018 to 31/03/2018 and short term investment for a period of two years dating from 01/04/2016 to 31/03/2018.
- The time horizon is further divided into formation and testing periods which is as follows:

Time Horizon	Formation Period	Testing Period
Long Term	01.04.2012 to 31.03.2015	01.04.2015 to 31.03.2018
Short Term	01.04.2016 to 31.03.2017	01.04.2017 to 31.03.2018

- Daily returns of all sectoral indices along with the benchmark index are calculated and annualised over the above mentioned time horizons for better representation.
- Beta coefficients of all the sectoral portfolios are computed from daily adjusted closing prices using slope function. The independent variable has been considered as BSE SENSEX while the dependent variable has been considered as the select sectoral indices.
- The market adjusted returns i.e. sectoral portfolio returns over benchmark index are computed.
- The sectoral portfolios which outperformed the benchmark index are winner portfolios.
- The sectoral portfolios which were unable to beat the benchmark index are called loser portfolios.
- Based on the abnormal returns generated by both winner and loser portfolios in the testing period either momentum or contrarian strategies are applicable.

Expected Outcome:

The expected outcome of this study is knowledge of use of contrarian or momentum strategy in order to take advantage of undervaluation or overvaluation of sectoral portfolios and gain better returns & to understand the impact of these strategies (contrarian and momentum) on sectoral returns in the short term as well as long term period. Contrarian strategies have great potential to generate maximum positive return from the

long term perspective which suggests that investors can take a decision for long term investing that run contrary to the consensus.

Limitations of the Study:

- This study is based only on Ten Sectoral Portfolios of BSE.
- It assumes that undervaluation and overvaluation of stocks can be completely dealt by using contrarian and momentum strategies.
- The study does not cover any other investment strategies apart from momentum and contrarian strategies to measure the volatility in the stock price movements of the sectoral indices.
- The results are based on probability value and are not certain.
- The time frame of the study is restricted to 6 years i.e. (2012-2018) which does not give a complete picture of the performance in the previous years.

IV. Data Analysis and Interpretation:

This section is divided into 3 parts. First part deals with the short term return trend analysis in which annualised returns of adjusted closing prices of select sectoral portfolios along with that of benchmark index over a period of six years are used for analysis. Second part deals with long term return trend analysis in which annualised returns of adjusted closing prices of sectoral portfolios along with that of benchmark index over a period of two years were used for analysis. The third part deals with t test to compute level of significance of abnormal returns obtained.

The table shows the Annualized Returns for Sectoral Portfolios and Sensex during Formation and Holding periods.

Long Term Period		
Annualised Sectoral Portfolio Returns		
INDEX	Formation Period	Holding Period
SENSEX	17.148%	5.337%
SPBSEBank	20.929%	8.504%
SPBSECG	19.429%	1.967%
SPBSEF	20.129%	10.602%
SPBSEFMCG	20.175%	9.433%
SPBSEH	38.138%	-9.493%
SPBSEIT	23.314%	2.405%
SPBSEM	-5.830%	11.914%
SPBSEOG	4.959%	16.227%
SPBSEP	-0.050%	-0.190%
SPBSETel	9.641%	-4.982%

Short Term Period		
Annualised Sectoral Portfolio Returns		
INDEX	Formation Period	Holding Period
SENSEX	17%	10.44%
SPBSEBank	33%	10.86%
SPBSECG	27%	8.76%
SPBSEF	38%	13.36%
SPBSEFMCG	20%	10.66%
SPBSEH	1%	-15.24%
SPBSEIT	-8%	18.15%
SPBSEM	58.50%	12.76%
SPBSEOG	51%	7.08%
SPBSEP	27%	-7.17%
SPBSETel	-2%	7.63%

Analysis of Short Term Return Trend:

Short term trend is studied using the annualised returns obtained from the daily prices for a period of 250 days. The short term trend is also divided into two time horizons, i.e., "Formation Period" and "Holding Period". The formation period analysis consists of annualised returns of price observations for a period of one year from 1 April, 2016 to 31 March, 2017. The holding period analysis consists of annualized returns of price observations for a period of one year from 1 April, 2017 to 31 March, 2018. The daily price observations considered are adjusted closing prices for the day.

The mechanism used for classifying winner and loser portfolios is as follows:

The returns of the sectoral indices were assessed and computed separately for the formation period and holding period and they were compared with the benchmarking index using the daily adjusted closing prices of each index. The indices of the particular sectors that gave positive abnormal returns were categorised as winner portfolios and the sectors that gave a negative abnormal returns are categorised as loser portfolios.

The short term trend analysis shown above in the table, gives a clear representation of the winner and loser portfolios of the sectoral indices with the benchmarking index as SENSEX. In this analysis, the portfolios that were created with respect to the particular sectors like Bank, Capital Goods, Finance, FMCG, Metals, Oil & Gas, Power has performed with high abnormal returns in the formation period, with 12%, 7%, 17%, 5%, 37%, 36%, 11%, which were further categorised as the winner portfolios as they possess the positive abnormal returns, and the rest of the sectors which possess negative abnormal returns have been categorised into the loser portfolios.

Short Term Return Trend					
INDEX	Annualised Returns(F)	Abnormal Returns(F)	Annualised Returns(H)	Abnormal Returns(H)	STRATEGY
	FORMATION		HOLDING		
WINNER PORTFOLIO					
SPBSEBank	32.85%	**12%**	10.86%	**-1%**	**Contrarian**
SPBSECG	26.66%	**7%**	8.07%	**8%**	Momentum
SPBSEF	37.71%	**17%**	13.36%	**2%**	Momentum
SPBSEFMCG	19.56%	**5%**	8.07%	**1%**	Momentum
SPBSEM	58.50%	**37%**	12.76%	**-2%**	**Contrarian**
SPBSEOG	50.65%	**36%**	7.08%	**-2%**	**Contrarian**
SPBSEP	27.48%	**11%**	-7.17%	**-17%**	**Contrarian**
LOSER PORTFOLIO					
SPBSEH	1.35%	**-11%**	-15.24%	**-24%**	Momentum
SPBSEIT	-8.08%	**-20%**	18.15%	**12%**	**Contrarian**
SPBSETel	-1.51%	**-16%**	7.63%	**-4%**	Momentum
S&P BSE SENSEX short term annualised returns are 17% for formation period and 11% for holding period.					
Source: Secondary data analysis.					

While opting for the momentum strategy, an assumption is taken that the past trend repeats in the future too. And so the winner portfolios i.e. Capital Goods, Finance, FMCG, that maintained positive abnormal returns signals the momentum strategy of the investors, since these portfolios have possessed positive abnormal returns during the formation and holding period. And the remaining portfolios have a contrarian effect, since they obtain negative abnormal returns in the holding period.

The remaining portfolios that possessed negative abnormal returns in the formation period, Health, IT and Telecom have been categorised in the loser portfolios. In the holding period, the portfolios that obtained negative abnormal returns, i.e. Health sector in this analysis, is said to have momentum effect. And the remaining two portfolios, out of the three portfolios in the loser portfolio, i.e., IT and Telecom have obtained positive abnormal returns in the holding period. Therefore, these two sectors signal contrarian strategy to the investors. This strongly suggests that there exists volatility in the stocks of the short term period.

Analysis of Long Term Return Trend:

Long term return trend is studied using the annualised returns obtained from daily prices of 740 days over a period of 6 years. This data is divided into two time horizons, “formation period” and “holding period”. The formation period analysis consists of annualised returns of price observations for a period of three years

from 1 April, 2012 to 31 March, 2015. The holding period analysis consists of annualized returns of price observations for a period of three years from 1 April, 2015 to 31 March, 2018. The daily price observations considered are adjusted closing prices for the day.

The mechanism used for classifying winner and loser portfolios is as follows:

The individual annualised returns of all 10 sectorial portfolios were computed along with that of benchmark index using daily adjusted closing prices. These individual annualised returns for each sectoral portfolio and the benchmark index were computed separately for formation period and holding period.

Long Term Return Trend					
INDEX(2012-18)	Annualised Returns(F)	Abnormal Returns(F)	Annualised Returns(H)	Abnormal Returns(H)	STRATEGY
	FORMATION		HOLDING		
WINNER PORTFOLIO					
SPBSEF	20.129%	**19.8%**	10.602%	**4%**	Momentum
SPBSEFMCG	20.175%	**9.2%**	9.433%	**5%**	Momentum
SPBSEH	38.138%	**30.4%**	-9.493%	**-14%**	**Contrarian**
SPBSEIT	23.314%	**14.0%**	2.405%	**-1%**	**Contrarian**
SPBSETel	9.641%	**11.0%**	-4.982%	**-9%**	**Contrarian**
LOSER PORTFOLIO					
SPBSEBank	20.929%	**-2.7%**	8.504%	**2%**	**Contrarian**
SPBSECG	19.429%	**-3.1%**	1.967%	**-4%**	Momentum
SPBSEM	-5.830%	**-26.2%**	11.914%	**5%**	**Contrarian**
SPBSEOG	4.959%	**-12.9%**	16.227%	**11%**	**Contrarian**
SPBSEP	-0.050%	**-18.8%**	-0.190%	**-6%**	Momentum
S&P BSE SENSEX long term annualised returns are 17.148% for formation period and 5.337% for holding period.					
Source: Secondary data analysis.					

The market adjusted returns i.e. the abnormal return of sectoral portfolio return over benchmark index is computed. During the formation period, the sectoral portfolios which gave positive abnormal returns over and above benchmark index were classified as winner portfolios and the sectoral portfolios which underperformed benchmark index were classified as loser portfolios.

In the long term return trend analysis performed above during formation period, the portfolios formed with companies in Finance, FMCG, Health, IT and Telecom sectors outperformed benchmark index with 19.8%, 9.2%, 30.4%, 14% and 11% respectively. Out of 5 winning portfolios mentioned above only sectoral portfolio in Finance and FMCG sector have positive abnormal returns during holding period, for which a momentum strategy is suggested and for the remaining winning portfolios i.e. for portfolios in Health, Telecom sectors contrarian strategy is suggested.

In the long term return trend analysis performed above during holding period, the portfolios in Banking, Capital goods, Metals, Oil and Gas and Power sectors outperformed benchmark index with -2.7%, -3.1%, -

26.2%, -12.9% and -18.8% respectively. Out of 5 loser portfolios listed above only sectoral portfolio in Capital Goods and Power sector have underperformed benchmark index during holding period, for which a momentum strategy is suggested and for the remaining loser portfolios i.e. for portfolios constructed with companies in Bank, Metals and Oil and Gas contrarian strategy is suggested.

Analysis of Variation in Return Trend:

The results of above analysis do not provide a clear picture as against which strategy to be followed. Different sectors suggest different strategies to be followed both in long term and short term horizons in each of the respective winner and loser portfolios. So, to arrive at a common strategy to be adopted for winner and loser portfolios, independent t- test is performed against abnormal returns of respective portfolios for which momentum and contrarian strategies are suggested during both short term and long term. The independent variable for this purpose is the benchmark index's return during both short and long term horizons.

SHORT TERM PERIOD					
INDEX	**Annualised Returns(F)**	**Abnormal Returns(F)**	**Annualised Returns(H)**	**Abnormal Returns(H)**	**Strategy**
Momentum					
SPBSECG	26.66%	**7%**	8.07%	**8%**	Momentum
SPBSEF	37.71%	**17%**	13.36%	**2%**	Momentum
SPBSEH	1.35%	**-11%**	-15.24%	**-24%**	Momentum
Contrarian					
SPBSEBank	32.85%	**12%**	10.86%	**-1%**	**Contrarian**
SPBSEFMCG	19.56%	**5%**	8.07%	**1%**	**Contrarian**
SPBSEM	58.50%	**37%**	12.76%	**-2%**	**Contrarian**
SPBSEOG	50.65%	**36%**	7.08%	**-2%**	**Contrarian**
SPBSEP	27.48%	**11%**	-7.17%	**-17%**	**Contrarian**
SPBSEIT	-8.08%	**-20%**	18.15%	**12%**	**Contrarian**
SPBSETel	-1.51%	**-16%**	7.63%	**-4%**	**Contrarian**

LONG TERM PERIOD					
INDEX	Annualised Returns(F)	Abnormal Returns(F)	Annualised Returns(H)	Abnormal Returns(H)	Strategy
Momentum					
SPBSEF	20.129%	**19.8%**	10.602%	**4%**	Momentum
SPBSEFMCG	20.175%	**9.2%**	9.433%	**5%**	Momentum
SPBSECG	19.429%	**-3.1%**	1.967%	**-4%**	Momentum
SPBSEP	-0.050%	**-18.8%**	-0.190%	**-6%**	Momentum
Contrarian					
SPBSEH	38.138%	**30.4%**	-9.493%	**-14%**	**Contrarian**
SPBSEIT	23.314%	**14.0%**	2.405%	**-1%**	**Contrarian**
SPBSETel	9.641%	**11.0%**	-4.982%	**-9%**	**Contrarian**
SPBSEBank	20.929%	**-2.7%**	8.504%	**2%**	**Contrarian**
SPBSEM	-5.830%	**-26.2%**	11.914%	**5%**	**Contrarian**
SPBSEOG	4.959%	**-12.9%**	16.227%	**11%**	**Contrarian**

t-test has been employed to compute the level of significance of average abnormal returns. It was to find out whether momentum and contrarian strategies yield significant positive returns when compared with the bench mark, i.e. index return.

The results of the test are as follows:

t-test results				
Measure	SHORT TERM		LONG TERM	
	Momentum	Contrarian	Momentum	Contrarian
t statistic	-0.785	-1.336	-0.857	-0.632
p-value	0.514	0.230	0.454	0.555

The p-values obtained are significantly greater than 0.05 at 95% level of confidence, which indicates there is no evidence to reject the null hypothesis i.e. momentum and contrarian strategies do not provide significant return to the investor.

Amid the trial (testing period), if the difference between average abnormal returns of the winner portfolio and loser portfolio is a positive figure, it indicates momentum effect and if the difference is a negative figure, it indicates contrarian effect which is mathematically expressed as follows:

Measure	Short Term		Long term	
	Winner Portfolio	Loser Portfolio	Winner Portfolio	Loser Portfolio
Average Abnormal Returns	-1.56%	-5.23%	-3.02%	1.74%

$R_{wh} - R_{lh} > 0$ signals a momentum effect

$R_{wh} - R_{lh} < 0$ signals a contrarian effect

where, R_{wh} indicates average abnormal return for winner portfolio during holding period and R_{lh} indicate average abnormal return for loser portfolio during holding period.

From the above analysis, values of 3.67% and -4.76% are the differences between winner and loser portfolio's average abnormal returns, for long term and short term respectively, which hints towards presence of the momentum effect during short term and the contrarian effect during the long term.

V. Key Findings and Suggestion

The investigation focuses on the investment strategies to be adopted in the short term and long term with respect to various sectors of BSE. The abnormal returns generated by the past winners and past losers in the holding period has been examined. A pattern inversion (from positive to negative or negative to positive) recommended a contrarian style. The continuation of formation period trend (positive or negative) in the subsequent holding period flagged a momentum effect. More closely, Bank, Metal, Oil & Gas, and Power sectors generate positive abnormal returns (12%, 37%, 36%, 11%) while compared with benchmark index during 2016-17.Subsequently, these sectors produced negative abnormal returns of (-1%, -2%, -2%, -17%) respectively during the test period 2017-18.This signals the presence of a contrarian impact showing that speculators can make profit only if they are willing to invest with "past losers" or disposing "past winners". Both these techniques appear to work for a few segments where mixed results are obtained.

Sectors like Health, Power and Telecom have shown presence of both the effects in either short term or long term. Stock picking in these divisions will require a top down analysis to choose a speculation style.

The following sectoral portfolios like Banking, Metal, Oil and Gas and IT showed presence of contrarian effect in both long term and short term horizons, which implies an investing in past winners for Banking, Metal and Oil and Gas sectors whereas in case of IT sector it implies investing in past losers.

<table>
<tr><th rowspan="2">INDEX</th><th colspan="2">Strategy</th></tr>
<tr><th>Short Term Period</th><th>Long Term Period</th></tr>
<tr><td>SPBSECG</td><td colspan="2" rowspan="3">Momentum</td></tr>
<tr><td>SPBSEF</td></tr>
<tr><td>SPBSEFMCG</td></tr>
<tr><td>SPBSEBank</td><td colspan="2" rowspan="4">Contrarian</td></tr>
<tr><td>SPBSEIT</td></tr>
<tr><td>SPBSEM</td></tr>
<tr><td>SPBSEOG</td></tr>
<tr><td>SPBSEH</td><td>Momentum</td><td>Contrarian</td></tr>
<tr><td>SPBSEP</td><td>Contrarian</td><td>Momentum</td></tr>
<tr><td>SPBSETel</td><td>Momentum</td><td>Contrarian</td></tr>
</table>

Sectors like Capital Goods, Finance and FMCG has continued to show momentum effect both in short term and long term horizons, which implies investing in past winners i.e. Finance and FMCG and for Capital

Goods it implies investing in past loser (Capital Goods portfolio indicates momentum effect in long term horizon).

Conclusion:

The results of the t testdo not reject the null hypothesis as the probability values are much higher than 0.05 at 95% level of confidence. Hence, it can be inferred that there is no significant difference between the strategies to be used for obtaining superior returns. Majority of the sectoral portfolios in long term horizons suggest use of contrarian strategies for generating maximum return, as the difference between winner and loser portfolio return is less than zero (-4.76%), whereas the sectoral portfolios in short term horizon show a momentum effect as the difference between winner and loser portfolios return is greater than zero (3.67%).Buying past loser stocks and selling past winner stocks will generate profit under contrarian movement. The results strongly suggest that there exists the evidence of short term contrarian effect in sectors like Bank, Metal, Oil and Gas, IT and Power and long term contrarian effect in sectors like Bank, IT, Oil and Gas, Metal, Telecom and Health, whereas a short term momentum effect is observed in Capital Goods, Finance, FMCG, Health and Telecom and long term momentum effect is observed in sectors like Capital Goods, Finance, FMCG and Power Nearness of contrarian impact can acquire instability stock costs and an uptrend can become a down-trend within a short span of time. The short term momentum effect signals lesser instability of returns in the said sectors.

However, selection of an investment strategy is purely dependent on the risk tolerance level of an investor and his investment goals. If the investor is too risk averse, he can maintain a strategic distance from segments where contrarian impact exists. If the speculator is keen on taking risk, he can utilize contrarian venture procedures by picking segments which report abnormal loss in the past.

References:

1. (Maheshwari & Dhankar, 2016, May), Momentum and Contrarian Profitability, (AJHSS), Volume 4, Issue-1, May, 2016. ISSN: 2320-9720
2. (Singh, Momentum and Contrarian Investment Strategies- A Study from NSE, India , 2018, May), Momentum and Contrarian Investment Strategies, (IJBMI), Volume 7, Issue 5, Ver. 1, ISSN: 2319-8028
3. (Wouassom, Momentum and Contrarian Trading Strategies: Implication for Risk-sharing and Informational Efficiency of Security Markets, 2016, Sept), Momentum and Contrarian Trading Strategies, (QM,UoL)
   http://qmro.qmul.ac.uk/xmlui/handle/123456789/24859 (For Addn. Info)
4. (M, 2016, Apr-May), Contrarian and Momentum Strategies, (NMIMS MR), Volume XXIX, ISSN: 0971-1023
5. (Han, 2013), Evaluating the Profitability of Momentum vs. Contrarian Strategies, MFIN 6692