

STUDY OF MOMENTUM INVESTING IN 52-WEEK HIGH AND 52-WEEK LOW STOCKS

Research Project Report

**Submitted to the Punjab Agricultural University
in partial fulfillment of the requirements
for the degree of**

**MASTER OF BUSINESS ADMINISTRATION
in
FINANCIAL MANAGEMENT
(Minor Subject: Economics)**

By

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CERTIFICATE I

This is to certify that the project report entitled, “**Study of Momentum Investing in 52-Week High and 52-Week Low Stocks**” submitted for the degree of **Master of Business Administration** in the subject of **Financial Management** (Minor subject: **Economics**) of the Punjab Agricultural University, Ludhiana, is a bonafide research work carried out by **Ruchika Rajpal (L-2009-BS-21-MBA)** under my supervision and that no part of this research project has been submitted for any other degree.

The assistance and help received during the course of investigation have been fully acknowledged.

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CERTIFICATE II

This is to certify that the research project entitled, “**Study of Momentum Investing in 52-Week High and 52-Week Low Stocks**” submitted by **Ruchika Rajpal (L-2009-BS-21-MBA)** to the Punjab Agricultural University, Ludhiana, in partial fulfillment of the requirements for the degree of **Master of Business Administration**, in the subject of **Financial Management** (Minor subject: **Economics**) has been approved by the external examiner along with internal examiner after an oral examination on the same.

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ABSTRACT

Momentum investing in stock markets has been reported in several developed and emerging stock markets. This study entitled “Study of Momentum Investing in 52-Week High and 52-Week Low Stocks”, aimed to empirically examine the momentum investing in selected stocks. In order to achieve the objectives, a total of 250 stocks comprising 50 stocks every year (25 stocks from 52-week high stocks and 25 stocks from 52-week low stocks) from NSE stock universe were selected from 2006 to 2010. The adjusted closing prices were obtained and returns were first compared with zero return (raw comparison). Further relative comparisons with the returns of S&P CNX NIFTY, CNX NIFTY JUNIOR and S&P CNX 500 were done for the same time period. The results revealed the presence of nil momentum investing in 52 week high stocks during short term period (30 days). For the intermediate period (90days) and long period (180 days) momentum investing worked particularly in 52 week high stocks. On the other hand in case of 52 week low stocks, momentum investing worked very well in short term period. In term of relative comparison it was found that momentum investing didn’t work at all in 52 week high stocks but was highly effective, although amid slight trend reversals, in 52 week low stocks.

Key Words: Momentum Investing, 52-Week High Stocks, 52-Week Low Stocks.

Signature of Major Advisor

Signature of the Student

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Chapter I

INTRODUCTION

This chapter contains information on Indian stock market, financial investments, types of investment strategies and their various types, mode of investment strategies etc.

All these are covered under following heads:

- 1.1 Stock Market**
- 1.2 Indian Stock Market**
- 1.3 Financial Investments**
- 1.4 Investing Strategies**
- 1.5 Fundamental Analysis and Technical Analysis**
- 1.6 Momentum Investing**

1.1 Stock Market

A stock market may be a physical place, sometimes known as a stock exchange, where brokers gather to buy and sell stocks and other securities. The term is also used more broadly to include electronic trading that takes place over computer and telephone lines. In fact, in many markets around the world, all stock trading is handled electronically. Stock exchange is the term used for the overall market in which shares are issued and traded on exchanges or in over-the-counter markets. Stock market is also called the equity market, the market for trading equities, it is one of the most vital areas of a market economy because it provides companies with access to capital and allows investors to own companies and participate in economic growth.

The stock market is made up of the primary and secondary markets. The primary market is where new issues (IPOs) first are offered, with any subsequent trading going on in the secondary market. Thus the distinction between the primary and secondary market is that in former, the securities are issued or sold by the original fund seeker, i.e. the borrower and bought by the original fund supplier, i.e. the lender, whereas in the latter, the securities are traded amongst the investors or the speculators and no new savings are channelized into the investment. Both the markets have their own significance in the proper working of any economy. The primary market mobilizes resources from the households or other fund-surplus

units and makes available to meet the long-term capital requirements of corporate business and industry in the form of equity/debt capital.

Stock Exchange is a place, whether physical or electronic, where stocks, bonds, and/or derivatives in listed companies are bought and sold. A stock exchange may be a private company, a non-profit, or a publicly-traded company (some exchanges have shares that trade on their own floors). Stock exchanges also provide the facilities for the issue and redemption of securities as well as other financial instruments and capital events including the payment of income or dividends. A stock exchange provides a regulated place where brokers and companies may meet in order to make investments on neutral ground. Most countries have a main exchange and many also have smaller, regional exchanges. The trading of Securities such as stocks and bonds is conducted in stock exchanges, which are grouped under the general term stock market. The stock market is an important institution for capitalist countries because it encourages investment in corporate securities, providing capital for new businesses and income for investors.

The stock market is one of the most important sources for companies to raise money. Stock market allows businesses to be publicly traded, or raise additional capital for expansion by selling shares of ownership of the company in a public market. The liquidity that an exchange provides affords investors the ability to quickly and easily sell securities. This is an attractive feature of investing in stocks, compared to other less liquid investments such as real estate. The stock market is often an indicator of a country's economic strength and development. Rising share prices, for instance, tend to be associated with increased business investment and vice versa. An economy where stock market is on rise is considered to be an up and coming economy.

The movements of prices in a market or a section of market are captured in price indices called stock market indices. A primary application is to use the index values to compute total returns and risk for an aggregate market or some component return as benchmark to judge the performance of individual portfolios. Such indices are usually market capitalization weighted, with the weights reflecting the contribution of the stock to the index. The constituents of the index are reviewed frequently to include/exclude in order to reflect the changing business environment. Market capitalization/capitalisation (often market cap) is a measurement of the size of a business enterprise (corporation) equal to share price times the number of shares outstanding of a public company. Companies generally are divided into large-cap, mid-cap, and small-cap on the basis of market capitalization.

1.2 Indian Stock Market

India's stock market has a long history, over the period, the market has grown manifold. Perhaps no other market in the Indian economy has witnessed so drastic change in its operational and regulatory framework as the stock market has. Most of the development has come to it after India's independence and especially after 1991, when the country embarked upon the triplet policy of liberalization, privatization, and globalization. Key progressive initiatives in recent years include screen based trading, dematerialization of share certificates, rolling settlement, establishment of the Securities and Exchange Board of India and resulted in manifold growth of stock markets in India. The Indian stock markets have witnessed a transformation over last decade; it is now placed among the mature markets of the world.

The two most important exchange houses of Indian stock market are Bombay stock exchange and National stock exchange. Many other regional stock exchanges have obtained the membership of these two exchanges in India. Bombay Stock Exchange is the oldest stock exchange in Asia what is now popularly known as the BSE was established as "The Native Share & Stock Brokers' Association" in 1875. Over the past 135 years, BSE has facilitated the growth of the Indian corporate sector by providing it with an efficient capital raising platform. The oldest stock exchange in Asia (established in 1875) and the first in the country to be granted permanent recognition under the Securities Contract Regulation Act, 1956, Bombay Stock Exchange Limited (BSE) has had an interesting rise to prominence over the past 133 years. Today, BSE is the world's number 1 exchange in the world in terms of the number of listed companies (over 4900). It is the world's 5th most active in terms of number of transactions handled through its electronic trading system. And it is in the top ten of global exchanges in terms of the market capitalization of its listed companies (as of December 31, 2009). BSE is the first exchange in India and the second in the world to obtain an ISO 9001:2000 certification. The BSE Index, SENSEX, is India's first and most popular Stock Market benchmark index. Futures and options on the index are also traded at BSE. BSE, as a brand, has been and is synonymous with the capital market in India. Its SENSEX is the benchmark equity index that reflects the health of the Indian economy (Anonymous, 2010a).

The National Stock Exchange of India Limited has genesis in the report of the High Powered Study Group on Establishment of New Stock Exchanges. It recommended promotion of a National Stock Exchange by financial institutions (FIs) to provide access to investors from all across the country on an equal footing. Based on the recommendations, NSE was promoted by leading Financial Institutions at the behest of the Government of India and was incorporated in November 1992 as a tax-paying company unlike other stock exchanges in the country. On its recognition as a stock exchange under the Securities

Contracts (Regulation) Act, 1956 in April 1993, NSE commenced operations in the Wholesale Debt Market (WDM) segment in June 1994. The Capital Market (Equities) segment commenced operations in November 1994 and operations in Derivatives segment commenced in June 2000 (Anonymous, 2010b).

1.3 Financial Investments

Financial investment is the commitment of funds into financial instruments, such as securities, bonds, real estate and currencies. The term “investment” is closely related to the disciplines of finance and economics and essentially refers to “savings” or “deferred consumption,” which involves purchasing an asset or making a deposit in a bank in the hope of future returns. The term “investment” is used differently in economics and finance. By the term investment, an economist refers to real investment, such as in a machine or a house. On the other hand, a finance professional would refer to a financial asset as an investment. Such financial assets could be money that is deposited in a bank or invested in the money market. Financial investments are of several types, including equities, debt instruments, derivatives, currencies and real estate. These financial assets are acquired with the expectation of future cash flows and may increase or decrease in value resulting in capital gains or losses to investors (Anonymous, 2010c).

1.4 Investing Strategies

For becoming an effective investor there is always need for a plan that can guide the choice of investments, the way of allocation in to different assets, duration for which the investment is made and time of selling the investments. This is called an investment strategy. A well-planned investment strategy is prerequisite for making any investment decisions. An investment strategy is generally based upon long run period and hence formulation of investment strategy largely depends upon factors such as long-term goals of the investor and risks that have bearing on the investment. Investment strategy deals with the overall, long-term guidelines that you set up and implement in an attempt to ensure success in meeting your financial goals.

Most strategies used to invest in stock market fall into three general categories: fundamental analysis, technical analysis, or buy and hold the market.

1.5 Fundamental Analysis and Technical Analysis

The biggest part of fundamental analysis involves delving into the financial statements. Also known as quantitative analysis, this involves looking at revenue, expenses, assets, liabilities and all the other financial aspects of a company. Fundamental analysts look at this information to gain insight on a company's future performance. A major part of

fundamental analysis involves details about the balance sheet, income statement, and cash flow statement and how they all fit together. But there is more than just number crunching when it comes to analyzing a company. This is where qualitative analysis comes in - the breakdown of all the intangible, difficult-to-measure aspects of a company.

Fundamental analysis is a technique that attempts to determine a security's value by focusing on underlying factors that affect a company's actual business and its future prospects. On a broader scope, one can perform fundamental analysis on industries or the economy as a whole. The term simply refers to the analysis of the economic well-being of a financial entity as opposed to only its price movements. Fundamental analysis serves to answer questions, such as: Is the company's revenue growing? Is it actually making a profit? Is it in a strong-enough position to beat out its competitors in the future? Is it able to repay its debts? Is management trying to "cook the books"? The fundamental analysis is a toolbox to help to get answers of these questions. The term fundamental analysis is used most often in the context of stocks, but one can perform fundamental analysis on any security, from a bond to a derivative. As long as one look at the economic fundamentals, one is doing fundamental analysis.

The fundamental analysis approach is primarily concerned with value; it examines factors that determine a company's expected future earnings and dividends as well as the continued dependability of those earnings and dividends. It also attempts to put a value on the stock accordingly. Therefore, an investor who uses this approach seeks out stocks that are a good value; in other words, stocks that are priced low relative to their perceived value. The assumption is that the stock market will later recognize the value of the stock and its price will consequently increase (Anonymous, 2010d). Fundamental analysis involves examining the economic, financial and other qualitative and quantitative factors related to a security in order to determine its intrinsic value. While typically this method is used to evaluate the value of a company's stock, its use can be extended for any kind of security, such as bonds or currency. Fundamental analysis, which is also known as quantitative analysis, involves searching deeply into a company's financial statements (such as profit and loss account and balance sheet) in order to study various financial indicators (such as revenues, earnings, liabilities, expenses and assets). Such analysis is usually carried out by analysts, brokers and savvy investors.

Two Approaches are used by the investors while carrying out fundamental analysis. These are Top-down approach and Bottom-up approach. In Top-down approach, an analyst investigates both international and national economic indicators, such as GDP growth rates, energy prices, inflation and interest rates. The search for the best security then trickles down

to the analysis of total sales, price levels and foreign competition in a sector in order to identify the best business in the sector. In Bottom-up approach, an analyst starts the search with specific businesses, irrespective of their industry/region (Anonymous, 2010e).

The end goal of performing fundamental analysis is to produce a value that an investor can compare with the security's current price, with the aim of figuring out what sort of position to take with that security (underpriced = buy, overpriced = sell or short) (Anonymous, 2010f).

Technical analysis is a method of evaluating securities by analyzing statistics generated by market activity, such as past prices and volume. Technical analysts do not attempt to measure a security's intrinsic value, but instead use charts and other tools to identify patterns that can suggest future activity (Anonymous, 2010g). Technical analysis is the study of price, volume and open interest, primarily through the use of charts to determine probable future prices. So it is the process of analyzing a security's historical prices and it is study of the action of the market deals. Technical analysis is an art to identify a trend reversal at a relatively early stage and a ride on that trend until the weight of the evidence proves that the trend has reversed. So technical analysis takes into account all hopes, fears and knowledge, including reasonable expectation, discounted or incorporated in the current price and it consider studying the price is all that is necessary. (Anonymous, 2010h)

Technical analysis deals in probabilities; it is an art and also a science. Technical analysis used various scientifically derived indicators (leading or lagging indicators) to identify a trend reversal at an early stage. Technical analysis base on the assumption that the emotions of market participants does not change, investors will react in a similar way they did in the past which result in the prices movement are likely to be the same as well. Basically Technical Analysis is the study of Stock Market Behavior, Stock Market and Business Cycle primary through the use of stocks charts to forecasting future prices movement. The evidence in this case is represented by the numerous scientifically derived indicators. The technical approach to investment is essentially a reflection of the idea that prices move in trends that are determined by the changing attitudes of investors toward a variety of economic, monetary, political, and psychology. Technical indicators are categorized into leading indicators, lagging indicators, Trend Indicators, Volume Indicators, Momentum Indicators and Volatility Indicators (Anonymous, 2010i).

Technical analysis is a non-traditional way of picking stocks to buy and sell. It is based off of human emotions and patterns in those emotions. A technical trader realizes that stocks do not move up and down because a company is making or losing money. A stock goes up

and down based off of supply and demand. If there are more buyers than sellers a stock will normally go up until it reaches a point where sellers start to come in. If a stock has more sellers than buyers it can push the stock down until the stock gets to a low enough point and buyers start to come back in. Technical analysis tries to play off of this. They notice human emotions create patterns and trends that occur over and over again. So playing off of these trends and patterns rather than looking at a company's financials can be a smart way to approach the market (Anonymous, 2010j).

1.6 Momentum Investing

Momentum investing is an investment strategy that aims to capitalize on existing trends in the market. The momentum investor believes that large increases in the price of security will be followed by additional gains and vice versa for declining values. Momentum investing is a system of buying stocks or other securities that have had high returns over the past three to twelve months, and selling those that have had poor returns over the same period. Momentum investors don't worry about asset allocation or diversification because their strategy doesn't allow them to; the goal is always be in the most popular and fastest growing investments. They manage risk by moving quickly out of industries and assets that start showing the sign of deteriorating performance. To participate in momentum investing, a trader takes a long position in an asset, which has shown an upward trend in price, or short sell a security that has been in a downtrend. It has been reported that this strategy yields average yields of 1% per month for the following three to twelve months after the trade (Jegadeesh and Titman, 1993). While no consensus exists about validity of this claim, economists have trouble reconciling this phenomenon using the efficient-market hypothesis. Two main hypotheses have been submitted to explain the effect in terms of an efficient market. In the first, it is assumed that momentum investors bear significant risk for assuming this strategy, and thus the high returns are compensation for the risk. The second theory assumes that momentum investors are exploiting behavioural shortcomings in other investors, such as investor herding, investor over and under reaction and confirmation bias.

Buying recent winners and short prior losers guarantees time-varying factor exposure in accordance with the performance of common risk factors during the ranking period. Momentum strategies which base winner or loser status on stock-specific return components were more profitable than those based on total returns. Neither industry effects nor cross-sectional differences in expected returns are the primary cause of momentum phenomena (Grundy and Martin, 2001). Nearness to 52-week high dominated and was better predictor of future returns than past returns (for both individual and industry). The long term reversals did

not occur when past performance was measured and the long term reversals and short-term momentum were not part of the same phenomena (George and Hwang, 2004).

One of the common modes of momentum investing is following 52-week high/low investing. Explaining 52-week high and low momentum investing, George and Hwang (2004) noted that traders used the 52-week high as a reference point against which they evaluated the potential impact of news. When good news pushed a stock's price near or to new 52-week high, traders were reluctant to bid the price of the stock higher even if information warranted it. The information eventually prevailed and the prices moved up and resulted in continuation. Similarly, when bad news pushed a stock's price far from 52-week high traders were initially unwilling to trade the stock at prices that were as low as the information implied. The information eventually prevailed and the prices fell.

52-week high/low means the highest and lowest price at which a stock has traded in the past 12 months, or 52 weeks. Long position means buying of a security such as a stock, commodity, or currency, with the expectation that the asset will rise in value. Similarly short position means the sale of a borrowed security, commodity, or currency with the expectation that the asset will fall in value. Although very few studies have been conducted in India regarding various aspects of momentum investing, so there is need to understand and study the effect of 52-week high and 52-week low momentum investing strategies on the performance of investment portfolio.

In view of the same the objectives of the study are:

1. To study and analyze the performance of momentum investing in 52-week high stocks.
2. To study and analyze the performance of momentum investing in 52-week low stocks.

Chapter II

REVIEW OF LITERATURE

A brief review of literature is of immense importance with respect to any research. It is essential for understanding the scope and spectrum of subject development. Following are the relevant literature regarding the proposed study:

Jegadeesh and Titman (1993) demonstrated that over an investment period of three to twelve months past “winners”, on an average, continued to perform better and past “losers” continued to perform worse, but such a phenomenon remained in existence for 2 years.

Grinblatt *et al* (1995) studied the extent to which mutual funds purchased stocks based on their past returns as well as their tendency to exhibit “herding” behavior. The evidence indicated that mutual funds had tendency to buy stocks based on their past returns. During the period of study the tendency to buy past winners as well as to herd was shown to be highly correlated with fund performance over our period of study. On an average the funds following momentum strategies realized significant excess performance while contrarian funds realized virtually no performance. Relatively weak evidence was found that funds tended to buy and sell the same stocks at the same time.

Chan *et al* (1996) conducted this study with the objective of tracing the sources of the predictability of future stock returns based on past returns. So they examined whether the predictability of future returns from past returns was due to the market's underreaction to information, in particular to past earnings news. Past return and past earnings surprised as each predicted large drifts in future returns after controlling for the other. Market risk, size, and book-to-market effects did not explained the drifts. There was little evidence of subsequent reversals in the returns of stocks with high price and earnings momentum. Security analysts' earnings forecasts also responded sluggishly to past news, especially in the case of stocks with the worst past performance. The results suggested a market that responded only gradually to new information.

Wermers (1997) examined that continuous use of momentum investment strategies by mutual funds had implications for the persistence of survivorship bias controversies and concluded that best performing funds during the year were the best performers during the following year, with exception of a few years. It was also found that active use of momentum strategies was the reason of performance persistence and no persistence was there after controlling 1-year momentum effect in stock returns.

Rouwenhorst (1998) attempted to address the concern (that return reversal and continuation were only two of many patterns that empirical researchers had uncovered using substantially same database of U.S. stocks) by studying return patterns in an international context. This study primarily focused on international return continuation within markets and across markets at the individual stock level using a sample of 2190 stocks from 12 European countries in the period of 1978-1995 and because of the length of the of the sample period, the study concentrated only on patterns in medium-term returns. International equity markets exhibited medium-term return continuation. The main finding of the study was that between 1980 and 1995 an internationally diversified portfolio of past medium-term Winners outperformed a portfolio of medium-term Losers after correcting for risk by more than 1 percent per month. Return continuation was present in all twelve sample countries and lasted on average for about one year. Return continuation was negatively related to firm size, but was not limited to small firms. The international momentum returns were correlated with those of the United States which suggested that exposure to a common factor may drive the profitability of momentum strategies.

Berk *et al* (1999) conducted a study and developed a model that described investment decision making by individual firms. The valuation of the cash flows that resulted from these decisions, along with the firm's option to grow in the future, led to dynamics for conditional expected returns. This dynamic model of expected returns helped explaining a number of important features of the cross-sectional and time series behaviour of stock return, and the biases that might be induced by a model that ignored these dynamics. As a consequence of optimal investment choices, a firm's assets and growth options change in predictable ways. Using dynamic model, this study explained that this imparted predictability to changes in a firm's systematic risk, and its expected return. Simulations showed that the model simultaneously reproduces: (i) the time-series relation between the book-to-market ratio and asset returns; (ii) the cross-sectional relation between book-to-market, market value, and return; (iii) contrarian effects at short horizons; (iv) momentum effects at longer horizons; and (v) the inverse relation between interest rates and the market risk premium.

Lui *et al* (1999) tested for the presence of momentum profits in the UK over the period of 1977 to 1998. The analysis presented that significant momentum profits were present in both comprehensive sample of UK stocks and an accounting sub sample. The robustness of the result was confirmed by an analysis of sub period results, seasonal effects and the persistence of momentum profits. It was also found that controlling for factors known to be associated with differences in average returns, such as size, stock price, book-to-market ratio, and cash earnings-to-price ratio, cannot explain momentum profits. So they concluded

that the momentum effect derived from market underreaction to either industry- or firm-specific information and it had a significant, independent phenomenon in UK stock returns.

Moskowitz and Grinblatt (1999) conducted this study and documented a strong and prevalent momentum effect in industry components of stock returns which accounted for much of the individual stock momentum anomaly. This study largely focused on the positive persistence in stock returns (or momentum effect) over intermediate investment horizons (6 to 12 months) and explored various explanations for its existence. In this study specifically, momentum investment strategies, which bought past winning stocks and sold past losing stocks, were significantly less profitable once we control for industry momentum. By contrast, industry momentum investment strategies, which bought stocks from past winning industries and sold stocks from past losing industries, appeared highly profitable, even after controlling for size, book-to-market equity, individual stock momentum, the cross-sectional dispersion in mean returns, and potential microstructure influences

Grundy and Martin (2001) conducted a study in which they investigated both the risks and the possible sources of the reward to a short-term momentum strategy which was long prior winners and short prior losers. Buying recent winners and short prior losers guarantees time-varying factor exposure in accordance with the performance of common risk factors during the ranking period. Momentum strategies which base winner or loser status on stock-specific return components were more profitable than those based on total returns. So it was found that neither industry effects nor cross-sectional differences in expected returns are the primary cause of momentum phenomena.

Griffin *et al* (2003) comprehensively investigated the linkage between macroeconomic risk and momentum using several techniques and a large international data set covering 40 countries. New evidence on dissipation of momentum profits was provided by them. It was found that neither an unconditional model based on the Chen, Roll, and Ross (1986) factors nor a conditional forecasting model based on lagged instruments provided any evidence that macroeconomic risk variables can explain momentum. In addition it was found that, momentum profits around the world were economically large and statistically reliable in both good and bad economic states. Further, these momentum profits reverse over 1-to 5-year horizons, an action inconsistent with existing risk-based explanations of momentum.

Bange and Miller (2004) studied the existence of momentum trading strategies in a global domain by using strategic and tactical asset allocation recommendations and found strong evidence that the investment houses adjusted their strategic allocation across equity

and cash and tactical allocations across country-specific equity weights because of relative return rankings across countries.

Bird *et al* (2004) studied index (passive) investing and momentum investing and found that there was a significant departure from efficient pricing. According to the study both index and momentum investors together were large in number in investor universe and both had caused price inefficiency.

Cooper *et al* (2004) tested overreaction theories of short-run momentum and long-run reversal in the cross section of stock returns. Momentum profits depend on the state of the market, as predicted. It was found that momentum profits were increased as the lagged market return increases. However, at high levels of lagged market returns, the profits diminished but were not eliminated. Authors also found significant long-run reversal in the down states although there was no initial momentum. This finding indicated that long-run reversal was not solely due to the corrections of prior momentum. From 1929 to 1995, the mean monthly momentum profit following positive market returns is 0.93%, whereas the mean profit following negative market returns is -0.37%. The up-market momentum reversed in the long-run. The results were robust to the conditioning information in macroeconomic factors. Moreover, it was found that macroeconomic factors were unable to explain momentum profits.

George and Hwang (2004) compared momentum investment strategies and concluded that nearness to 52-week high dominated and was better predictor of future returns than past returns (for both individual and industry). It was also concluded that long term reversals did not occur when past performance was measured and the long term reversals and short-term momentum were not part of the same phenomena.

Korajczyk and Sadka (2004) tested whether momentum strategies remained profitable after considering market frictions induced by trading. Intraday data were used to estimate alternative measures of proportional and non-proportional (price impact) trading costs. The price impact models implied that abnormal returns to portfolio strategies declined with portfolio size. Authors calculated break-even fund sizes that lead to zero abnormal returns. In addition to equal- and value-weighted momentum strategies, authors derived a liquidity-weighted strategy designed to reduce the cost of trades. Equal-weighted strategies performed the best before trading costs and the worst after trading costs. Liquidity-weighted and hybrid liquidity/value-weighted strategies had the largest break-even fund sizes: \$5 billion or more (relative to December 1999 market capitalization) may be invested in these momentum strategies before the apparent profit opportunities vanished.

Doukas and Mcknight (2005) tested two behavioural theories to explain momentum in stock returns and concluded that momentum was the result of gradual diffusion of private information and systematic errors were found in earning expectations as investors undervalued the statistical weight of new information which showed investors psychological conservatism.

Griffin *et al* (2005) investigated issues relating to both price and earning momentum and concluded that momentum was more beneficial and profitable on the long side than on short side; using both price and earnings momentum together produces larger economic profits. It was also concluded that momentum strategies benefited more from diversification than market index strategies and momentum strategies were volatile i.e. momentum was worth serious consideration for active portfolio managers.

Benson *et al* (2007) examined the active asset allocation decisions of Australian multisector fund managers to determine whether active fund managers engage in momentum strategies. An evidence was found which supported the existence. This evidence existed in the Australian equities, Australian Fixed Interest and Listed Property asset classes. Interestingly, balanced funds adopted contrarian strategies in the International Equities asset class. It was also examined in this study that whether there was any association between a fund's market timing skill and the execution of momentum strategies. The results showed that fund managers with no market timing skill are momentum investors.

Dittmar *et al* (2007) developed a new approach to test whether momentum was indeed an anomaly in that it reflected delayed reactions, or continued overreactions, to firm specific news. The methodology did not depend on a specific model of expected returns and, more importantly, did not require a decomposition of momentum profits. Yet the authors provided distinct testable predictions that can be discriminated between the two diametrically opposed causes for the profitability of momentum strategies: time-series continuation in the firm-specific component of returns, and cross-sectional differences in expected returns and systematic risks of individual securities. The results showed that, contrary to the common belief in the profession, momentum was not an anomaly; authors found no evidence of continuation in the idiosyncratic component of individual-security returns. More specifically, there was no evidence that under- (or continued over-) reaction to firm-specific news was the cause for the remarkable and continued success of momentum strategies at intermediate horizons. On the contrary, momentum appeared to be a perfectly understandable phenomenon in a world in which different securities had different expected returns and risks. The results were reassuring because if momentum were to arise solely or predominantly from irrational serial covariance in the firm-specific components of returns, it would not only violate market

efficiency in its weakest form but also bring into question the reasonable belief that individuals were risk-averse and therefore demanded a (rather large?) risk premium. The evidence was instead consistent with momentum being driven entirely by cross-sectional differences in expected returns and risks of individual securities.

Sagi and Seaholes (2007) had studied the firms that exhibited momentum and the firms that did not. In it the authors were concerned about two questions: (i) Do-firm specific attributes (revenues, costs, and real options) affected the ability of past returns to predict future expected returns?; and (ii) How can firm-specific attributes be used to create “enhanced momentum strategies”? It was found that a firm's revenues, costs, and growth options combined to determine the dynamics of its return autocorrelation. Authors used these insights to implement momentum strategies (buying winners and selling losers) with both numerically simulated returns and CRSP/Compustat data. In both sets of data, momentum strategies that used firms with high revenue growth volatility, low costs, or valuable growth options outperformed traditional momentum strategies by approximately 5% per year.

Sefton and Scowcroft (2007) conducted this study because the extensive literature on price momentum effects was a potential source of confusion for portfolio managers as conflicting explanations gave rise to different implications for portfolio strategy. Was momentum a stock level phenomenon or was it subsumed by industry or style effects? What were the performance implications of imposing sector or style neutrality? How did price momentum impact estimates of tracking errors or Sharpe ratios? In a value weighted large cap universe, such as the Global MSCI, it was found that price return momentum was driven largely by industry momentum; it did not appear to be explained by individual stock momentum. Further, this return continuation was not a result of either cross sectional dispersion in industry mean returns, or by varying industry exposure to systematic risk. In small cap universes stock specific effects assumed greater importance. Over both of the sample periods, 1992-01 to 2003-03 and 1980-01 to 2003-03, value investors would have reduced risk by imposing sector neutrality whilst growth managers could have profited from both a growth strategy and a momentum strategy by relaxing sector constraints; though the effects were stronger over the more recent past. In practice, any group of companies sharing a common characteristic has the potential to exhibit price momentum effects. Such a characteristic could be as simple as industry or country or more generally any characteristic that investors expect to impact performance. Controlling the risk in any portfolio therefore required monitoring style exposure.

Chen *et al* (2008) conducted a study and found that the momentum profits were realized through price adjustments reflecting cash flow news. In particular, there was a

consistent cross-sectional trend, from short-term momentum to long-term reversal, that happened to earnings shocks, to analyst revisions on future cash flows at all horizons, and to prices. The evidence suggested that investors believe that the earnings shocks provided new information on future cash flows, which was then incorporated into cash flow forecasts and prices. Accordingly, the realized momentum profits can be completely explained by the cross-sectional variation of earnings shocks or cash flow news. Importantly, these cash flow variables dominated the lagged returns in explaining the realized momentum profits. Therefore, the realized momentum profits represented surprises that had little to do with the ex ante expected momentum profits. In fact, the expected momentum profits were significantly negative.

Liu and Zhang (2008) studied that recent winners had temporarily higher loadings than recent losers on the growth rate of industrial production. The loading spread derived mostly from the positive loadings of winners. The growth rate of industrial production was a priced risk factor in standard asset pricing tests. In many specifications, this macroeconomic risk factor explained more than half of momentum profits. Authors concluded that risk played an important role in driving momentum profits.

Asness *et al* (2009) on the basis that value and momentum ubiquitously generated abnormal returns for individual stocks within several countries, across country equity indices, government bonds, currencies, and commodities, conducted a study. Authors studied jointly the global returns to value and momentum and explore their common factor structure. It was found that value (momentum) in one asset class was positively correlated with value (momentum) in other asset classes, and value and momentum were negatively correlated within and across asset classes. Liquidity risk was positively related to value and negatively to momentum, and its importance increased over time, particularly following the liquidity crisis of 1998. These patterns emerged from the power of examining value and momentum everywhere simultaneously and were not easily detectable when examining each asset class in isolation.

Kido (2009) studied that finance researchers had established a strict timeline in the relationship between previous returns and future returns. Over a short-term period-generally defined as shorter than three months-there existed a reversal effect by which stocks that exhibited positive (negative) returns in the past experienced negative (positive) returns in the near future. Over an intermediate-term period-generally defined as between three and twelve months-there existed a momentum effect whereby stocks that exhibited positive (negative) returns in the past will experience positive (negative) returns in the future. This paper provided two contributions to the literature on the momentum effect. First, it demonstrated

that centering the measurement dates of prior returns around company-specific earnings announcement dates caused a short-term momentum effect rather than a reversal. Second, it showed that the short-term momentum effect created by the centering process retained its explanatory power even in the face of post-earnings announcement drift.

Liu *et al* (2009) studied 52-week high momentum strategy in international stock markets and concluded that 52-week high momentum profits were robust in major stock markets and the long run reversals did not occur but the profits were not significant in most market once the transactions costs were considered. The study also depicted that 52-week high as a price level was better predictor of future returns than macroeconomic risk factors or the acquisition price. It was also suggested that markets were not semi-strong efficient.

Au and Shapiro (2010) in this article discussed the risk and return relationships of value and momentum, which they believed had shifted. Alpha and risk factor volatility had reached extremes. They found that market risk, or beta, correlations for both factors had reversed and resulted in changed and magnifications of return relationships. Decomposing these interactions allowed authors to better understand the underlying risks of portfolios constructed using value or momentum signals in their alpha or risk models.

Chui *et al* (2010) examined that how cultural differences influenced the returns of momentum strategies. Cross-country cultural differences were measured with an individualism index, which was related to overconfidence and self-attribution bias. The evidence in this paper indicated that culture can have an important effect on stock return patterns, which was consistent with the idea that investors in different cultures interpret information in different ways and were subject to different biases. It was found that individualism was positively associated with trading volume and volatility, as well as to the magnitude of momentum profits. Momentum profits were also positively related to analyst forecasted dispersion, transaction costs, and the familiarity of the market to foreigners, and negatively related to firm size and volatility. However, the addition of these and other variables did not dampen the relation between individualism and momentum profits.

There was a conflict between views of many researchers about momentum investing. Most of the researches showed that momentum investing existed and was effective especially on long side than on short side. Kido (2009) showed that in short time (i.e. less than 3 months) reversal effect existed and over intermediate period (i.e. 3-12 months) exhibited momentum effects. Two studies found that 52-week high was better predictor of future returns than other factors. Thus, the literature provided evidence for existence of momentum investing.

Chapter III

RESEARCH METHODOLOGY

The present chapter is focused on the methodology used to achieve the objectives of the study as given in Chapter 1. It is imperative to decide upon and document a research methodology well in advance to carry out the research in a most systemic and effective way. This chapter consists of the following sections:

3.1 Conceptual Framework of the study

3.2 Population and sample

3.3 Collection of data

3.4 Analysis of data

3.5 Limitations of study

These sections are discussed as follows:

3.1 Conceptual Framework of the study

The main theme of the present investigation has been conceptualized within a framework to avoid a disorder or an ambiguity in the process of conducting the study. The present study is based on the objectives to study and analyze the performance of momentum investing in 52-week high stocks and 52-week low stocks. Momentum investing is an investment strategy that aims to capitalize on existing trends in the market. The momentum investor believes that large increases in price of security will be followed by additional gains and vice versa for declining values. The whole study is based on secondary data.

3.2 Population and sample

The population for the study is all stocks in Indian capital market. For meeting the objectives of the study, stocks were selected from universe of stocks listed on National Stock Exchange (NSE). A list of 52-week high and 52-week low stocks was prepared repeatedly from "The Economic Times". Such a list was prepared for 5 years i.e. from 2006 to 2010. From 1st January of every year whenever any stock touched its 52-week high or 52-week low for the first time, it was selected for the study till the number reached 25 in both the sets. Therefore for every year, 50 stocks were studied and thus the total sample was of 250 stocks. Long portfolio was created for 52-week high stocks and short portfolio was created for 52-week low stocks. Every year portfolio of equal value was constructed using selected stocks. As soon as stock was selected for inclusion in the portfolio, it was treated as investment. The performance of each portfolio was analyzed after 30 days, 90 days and 180 days from the date

of selection of last stock in each set. The date of selection of last stock has been considered as period 0 and the date after 30 days, 90 days and 180 days were referred as period 1 (i.e. short period), period 2 (i.e. intermediate period) and period 3 (i.e. long period) respectively.

3.3 Collection of data

For the purpose of the study, stock prices were collected from the website (www.nseindia.com). Data consisted of closing prices of selected stocks for the period 1, period 2 and period 3 respectively. Opening prices of these stocks for the day next to period 0 were taken. Prices were adjusted to stock specific events or corporate actions like right issue, split bonus etc. Both the raw performance and relative performance with S&P CNX NIFTY, CNX NIFTY JUNIOR and S&P CNX 500 were studied. For the purpose of analysis even closing values of S&P CNX NIFTY, CNX NIFTY JUNIOR and S&P CNX 500 for period 0, period 1, period 2 and period 3 respectively were obtained.

3.4 Analysis of data

Performances of 52-week high and 52-week low stocks were analyzed in following manner. All the calculations were performed in MS excel version 2003.

To calculate the return from each stock in different periods (i.e. for period 1, period 2 and period 3) the following formula was applied:

$$R_n = [(P_C - P_O) / P_O] \cdot 100$$

Where R_n = Return for n^{th} period

P_C = Adjusted closing price of the stock for n^{th} period

(Here n = 30 days, 90 days and 180 days)

P_O = Adjusted opening price of the stock on the next day of period 0

Similarly returns of S&P CNX NIFTY, CNX NIFTY JUNIOR and S&P CNX 500 were calculated in following manner:

$$R_{\text{NIFTY}_n} = [(P_{\text{CNIFTY}_n} - P_{\text{CNIFTY}_0}) / P_{\text{CNIFTY}_0}] \cdot 100$$

Where R_{NIFTY_n} = Return of S&P CNX NIFTY for n^{th} period

(Here n = 30 days, 90 days and 180 days)

P_{CNIFTY_n} = Closing price of S&P CNX NIFTY for n^{th} period

(Here n = 30 days, 90 days and 180 days)

$P_{\text{CNIFTY}0}$ = Closing price of S&P CNX NIFTY for period 0

$$R_{\text{NIFTYJR}} = [(P_{\text{CNIFTYJRn}} - P_{\text{CNIFTYJR0}}) / P_{\text{CNIFTYJR0}}] \cdot 100$$

Where R_{NIFTYJRn} = Return of CNX NIFTY JUNIOR for nth period

(Here n = 30 days, 90 days and 180 days)

$P_{\text{CNIFTYJRn}}$ = Closing price of CNX NIFTY JUNIOR for nth period

$P_{\text{CNIFTYJR0}}$ = Closing price of CNX NIFTY JUNIOR for period 0

$$R_{\text{CNX500}} = [(P_{\text{CCNX500n}} - P_{\text{CCNX5000}}) / P_{\text{CCNX5000}}] \cdot 100$$

Where R_{CNX500n} = Return of S&P CNX for nth period

(Here n = 30 days, 90 days and 180 days)

P_{CCNX500n} = Closing price of S&P CNX 500 for nth period

P_{CCNX5000} = Closing price of S&P CNX 500 for period 0

After collection of data, tables were constructed and secondary data were analyzed using the following statistical tools:

- Mean
- Standard deviation
- One sample t-test

3.4.1 Mean:

The arithmetic mean (or simply the mean) return is the sum of the entire return distribution divided by the number of return items in the list. Its formula is:-

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

Where, n = number of observations in sample

x_i = Individual return

\bar{x} = Mean return

3.4.2 Standard Deviation:

Standard deviation is a measure of the variability or dispersion of a population, a data set, or a probability distribution. A low standard deviation indicates that the data points tend to be very close to the same value (the mean), while high standard deviation indicates that the data are spread out over a large range of values. The sample standard deviation measures the variability of data in a sample. The formula for standard deviation used in the study is:

$$s = \sqrt{\frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2}$$

Where, s = sample standard deviation of return

n = Number of observations in sample

x_i = Individual return

\bar{x} = Mean return

3.4.3 t- test:

One sample t-test is a statistical procedure used to examine the mean difference between the sample and the known value of the population mean. A random sample from the population is drawn and then sample mean is compared with the population mean and statistical decision is made as to whether or not the sample mean is different from the population. t test uses assumptions namely: normal distribution, dependent variable, random sample and independent cases.

$$t = \frac{\bar{x} - \mu}{S} \sqrt{n}$$

Where, t = one sample t-test value

μ = Population return

S = Standard deviation of return

\bar{x} = Mean return

n = Number of return observations in sample

Analysis was done first using population return as zero, thereafter actual returns of Indices were compared with stock returns.

3.5 Limitations of Study

The study is subject to certain constraints and limitations. These are listed below so that the findings of the study could be understood in right perspective and direction:

1. The study was based on secondary data. Thus, the results incorporate all the limitations inherent with secondary data.
2. The study was conducted for a period of time for the period of 5 years. To gain better understanding longer period may give a better picture.
3. Only NSE stocks were tested.

Chapter IV

RESULTS AND DISCUSSION

This chapter contains analysis and discussion of the empirical study conducted on the basis of methodology described in Chapter III. The analysis of secondary data collected was done to study and analyze the performance of momentum investing in 52-week high stocks and 52-week low stocks. For this purpose, this chapter is divided into 3 sections.

4.1 Raw and relative performance of the portfolio created from 52-week high stocks

4.2 Raw and relative performance of the portfolio created from 52-week low stocks

4.3 Discussion

These sections are discussed as follows:

4.1 Raw and relative performance of the portfolio created from 52-week high stocks

In section 4.1.1 average returns of the 52-week high stocks were compared from zero for period 1 (30 days), period 2 (90 days) and for period 3 (180 days). In section 4.1.2 average returns of the 52-week high stocks were compared for period 1 (30 days), period 2 (90 days) and for period 3 (180 days) with the returns of S&P CNX NIFTY, CNX NIFTY JUNIOR and S&P CNX 500 respectively.

4.1.1 Raw performance of the portfolio created from 52-week high stocks

For studying the raw performance of the portfolio created from NSE closing prices of these stocks were taken for period 1, period 2 and period 3. Similarly opening prices of next day to period 0 were taken. So using these prices returns were calculated after period 1, period 2 and period 3 respectively.

Table 4.1 shows the returns after period 1, period 2 and period 3 of individual stocks and average returns, standard deviation and t-statistics for the portfolio created from 52-week high stocks for the year 2006. The highest return in period 1 of 27.70% was of Goldiam International Limited. Kalaptaru Power Transmission Limited gave return of 23.03% in period 1. There were 10 negative returns in the period 1. Dabur India Limited gave negative return of -46.51% in period 1. The highest return in period 2 of 115.18% was of Kalaptaru Power Transmission Limited. There were 6 negative returns in period 2. The highest return in period 3 was 43%. During period 3, 16 stocks gave negative returns. Average returns for period 1, period 2 and period 3 were 4.52%, 17.55% and -8.54% respectively. Similarly

standard deviations for these periods were 14.84%, 36.30% and 24.58% respectively. Return for period 1 was not significantly different from zero ($t = -1.523$, $P = 0.134$). Average stock return for period 2 was significantly different from zero ($t = -2.417$, $P = 0.019$). Return for period 3 was not significantly different from zero ($t = 1.737$, $P = 0.089$).

Table 4.2 shows the returns after period 1, period 2 and period 3 of individual stocks and average returns, standard deviation and t-statistics for the portfolio created from 52-week high stocks for the year 2007. The highest return in period 1 of 59.09% was of Cybertech Systems And Software Ltd. CMC Limited gave positive return of 56.65% in period 1. 14 stocks gave negative returns in the period 1. The highest return in period 2 of 61.63% was of CMC Limited. There were 19 stocks that gave negative returns in period 2. Most negative return was -32.80% of Century Textiles & Industries Limited in period 2. The highest return in period 3 was 111.04% of Educomp Solutions Limited. During period 3, 12 stocks gave negative returns. Average returns for period 1, period 2 and period 3 were 5.22%, -7.95% and 23.15% respectively. Similarly standard deviations for these periods were 18.34%, 21.96% and 47.05% respectively. Return for period 1 was not significantly different from zero ($t = -1.423$, $P = 0.161$). Similarly average stock return for period 2 was not significantly different from zero ($t = 1.811$, $P = 0.076$). But return for period 3 differs significantly from zero ($t = -2.460$, $P = 0.018$).

Table 4.3 shows the returns after period 1, period 2 and period 3 of individual stocks and average returns, standard deviation and t-statistics for the portfolio created from 52-week high stocks for the year 2008. In period 1 only 1 stock gave positive return i.e. 7.43%. Highest negative return of -50.35% was given by Abhishek Industries Limited. Apollo Tyres Limited gave negative return of -47.41% in period 1. All stocks gave negative returns in the period 2. The highest negative return in period 2 of -87.90% was of Action Construction Equipment Ltd. During period 3 all stocks gave negative returns. The highest negative return in period 3 of -90.79% was again of Action Construction Equipment Ltd. Aftek Limited gave negative return of -65.23% in period 3. Abhishek Industries Limited gave negative return of -64.87% in the same period i.e. period 3. Average returns for period 1, period 2 and period 3 were -26.13%, -41.71% and -46.70% respectively. Similarly standard deviations for these periods were 14.66%, 17.91% and 19.01% respectively. Return for period 1 was significantly different from zero ($t = 8.913$, $P = 0.000$). Similarly average stock returns for period 2 and period 3 were significantly different from zero (for period 2: $t = 11.644$, $P = 0.000$, for period 3: $t = 12.283$, $P = 0.000$)

Table 4.1: Performance of 52-Week High Stocks (2006)

Name of the stocks	Return in % (30 days later)	Return in % (90 days later)	Return in % (180 days later)
3i Infotech Limited	-7.64	-1.15	-20.29
Asian Electronics Limited	-2.49	23.61	-17.10
Asian Paints Limited	4.27	8.34	-2.61
Astrazeneca Pharma India Limited	-4.42	11.06	7.23
Balrampur Chini Mills Limited	22.66	61.29	0.04
Bannari Amman Sugars Limited	9.13	25.39	-0.58
Bharat Electronics Limited	9.50	34.86	8.27
Beml Limited	16.76	26.90	-11.26
Bhartiya International Limited	9.85	29.79	18.39
Classic Diamonds (India) Limited	13.08	6.89	21.27
Dabur India Limited	-46.51	-41.65	-33.40
The Dhampur Sugar Mills Limited	8.88	30.48	-24.77
DS Kulkarni Developers Limited	24.57	52.41	0.63
Geojit BNP Paribas Financial Services Ltd.	-2.36	1.04	-6.17
Gujrat Narmada Valley Fertilizers Company Limited	-7.73	-6.37	-23.91
Goldiam International Limited	27.70	39.09	-1.66
Gruh Finance Limited	-1.52	5.90	43.00
Gujrat State Fertilizers & Chemicals Ltd.	4.04	-0.03	3.85
Honeywell Automation India Limited	3.74	53.37	-3.90
IFGL Refractories Limited	-3.14	-1.87	-31.75
Indraprastha Gas Limited	-2.54	3.31	-22.08
Jindal Steel & Power Limited	-3.39	23.87	-10.00
Kalaptaru Power Transmission Limited	23.03	115.18	-18.45
KCP Sugar and Industries Corporation Limited	12.96	-84.30	-91.61
Lakshmi Machine Works Limited	4.26	21.30	3.66
Average in %	4.52	17.55	-8.54
S.D in %	14.84	36.30	24.58
t value	-1.523	-2.417	1.737
P value	0.134	0.019	0.089

(t value test the hypothesis of difference of return, different from zero)

Table 4.2: Performance of 52-Week High Stocks (2007)

Name of the stocks	Return in % (30 days later)	Return in % (90 days later)	Return in % (180 days later)
Aban Offshore Limited	-1.08	17.52	86.02
Aditya Birla Nuvo Limited	-3.05	-21.20	5.31
Allcargo Global Logistics Limited	5.96	-16.74	-18.54
Batliboi Limited	10.18	-17.43	26.49
Bhushan Steel Limited	9.73	30.48	78.41
Can Fin Homes Limited	-2.92	-18.89	-19.38
Carborundum Universal Limited	-7.92	-25.77	-8.96
Century Plyboards (India) Limited	-7.69	-24.73	-24.56
Century Textiles & Industries Limited	-4.75	-32.80	-9.47
CMC Limited	56.65	61.63	65.97
Cybertech Systems And Software Ltd.	59.09	-4.07	33.97
Donear Industries Limited	-0.57	-11.19	-8.11
Educomp Solutions Limited	-5.29	-6.35	111.04
Ess Dee Aluminium Limited	15.58	-0.39	82.20
Goldstone Technologies Limited	19.99	-14.20	28.13
Grasim Industries Limited	-2.08	-27.45	-7.62
Hind Rectifiers Limited	-8.90	-30.14	-11.67
India Infoline Limited	-4.98	5.16	126.70
Infosys technologies limited	-0.16	-15.39	-14.47
IPCA Laboratories limited	8.29	1.33	25.82
Jindal Steel & Power Limited	5.54	-0.97	53.79
JSW Steel Limited	17.90	20.12	52.89
Kale Consultants Limited	-12.47	-27.73	-25.94
Kesar Enterprises Limited	-17.29	-27.29	-42.12
KPIT Cummins Infosystems Limited	0.91	-12.26	-7.12
Average in %	5.22	-7.95	23.15
S.D in %	18.34	21.96	47.05
t value	-1.423	1.811	-2.460
P value	0.161	0.076	0.018

(t value test the hypothesis of difference of return, different from zero)

Table 4.3: Performance of 52-Week High Stocks (2008)

Name of the stocks	Return in % (30 days later)	Return in % (90 days later)	Return in % (180 days later)
Aarti Industries Limited	-20.15	-40.40	-36.10
Abhishek Industries Limited	-50.35	-61.36	-64.87
Action Construction Equipment Ltd.	-26.54	-87.90	-90.79
Adani Enterprises Limited	-30.09	-52.19	-51.08
Adhunik Metaliks Limited	-34.46	-45.14	-49.36
Allied Digital Services Limited	-7.78	-14.17	-12.12
Advanta India Limited	-19.68	-25.98	-40.49
Aftek Limited	-41.67	-57.29	-65.23
Agro Dutch Industries Limited	-38.23	-51.21	-59.52
Aksh Optifibre Limited	-16.93	-42.05	-57.92
Allahabad Bank	-11.97	-18.03	-15.13
Alkyl Amines Chemicals Limited	-36.98	-45.94	-62.59
Alok Industries Limited	-25.92	-44.70	-61.74
Apar Industries Limited	-15.85	-13.75	-17.14
Apollo Hospitals Enterprise Limited	-24.15	-29.76	-44.81
Apollo Tyres Limited	-47.41	-57.76	-61.21
Arvind remedies limited	-1.28	-11.79	-14.36
Aro Granite India Limited	-32.21	-55.75	-54.45
Asian Granito India Limited	-36.10	-53.06	-53.35
Assam Company India Limited	-4.64	-23.32	-26.32
Astral Poly Technik Limited	-38.70	-53.45	-54.92
Agro Tech Foods Limited	-29.15	-45.27	-49.06
Bajaj Electricals Limited	-30.68	-40.37	-45.93
Balkrishna Industries Limited	7.43	-26.82	-32.97
Bal Pharma Limited	-39.77	-45.04	-46.18
Average in %	-26.13	-41.71	-46.70
S.D in %	14.66	17.91	19.01
t value	8.913	11.644	12.283
P value	0.000	0.000	0.000

(t value test the hypothesis of difference of return, different from zero)

Table 4.4 shows the returns after period 1, period 2 and period 3 of individual stocks and average returns, standard deviation and t-statistics for the portfolio created from 52-week high stocks for the year 2009. The highest return in period 1 of 68.60% was of Pantaloon Retail (India) Limited. In period 1 Mawana Sugars Limited gave positive return of 68.12%. Hero Honda Motors Limited gave return of 63.92% in the same period. Only 5 stocks gave negative returns in the period 1. Tata Communications Limited gave negative return of -11.84%. The highest return in period 2 of 83.13% was of Maruti Suzuki India Limited. Pantaloon Retail (India) Limited gave return of 72.60% in period 2. Mawana Sugars Limited gave return of 78.50% in the same period. 7 stocks gave negative return in period 2. Reliance Mutual Fund gave negative return of -22.30% in period 2. The highest return in period 3 was 106.28% of Mawana Sugars Limited. Pantaloon Retail (India) Limited gave return of 85.45% in period 3. Maruti Suzuki India Limited gave positive return of 75.19% in the same period. 5 stocks gave negative return in period 3. Average returns for period 1, period 2 and period 3 were 20.27%, 24% and 24.58% respectively. Similarly standard deviations for these periods were 26.73%, 33.17% and 37.57% respectively. Return for period 1 was significantly different from zero ($t = -3.791$, $P = 0.001$). Return from portfolio for period 2 was also significantly different from zero ($t = -3.617$, $P = 0.001$). Similarly return for period 3 differs significantly from zero ($t = -3.272$, $P = 0.003$).

Table 4.5 shows the returns after period 1, period 2 and period 3 of individual stocks and average returns, standard deviation and t-statistics for the portfolio created from 52-week high stocks for the year 2010. The highest return in period 1 of 105.51% was of AML Steel Limited. 13 stocks gave negative return in period 1. Most negative return in period 1 was -42.67%. AI Champdany Industries Limited gave negative return of -29.13% in the same period. Bayer Cropscience Limited gave return of 48.26% in period 2. There were 9 stocks that gave negative return in period 2. Thinksoft Global Services Limited gave negative return of -67.03% in period 2. 20 Microns Limited gave negative return of -26.49% in the same period. The highest return in period 3 was 63.79% which was of Bayer Cropscience Limited. 10 stocks gave negative return in period 3. Most negative return in period 3 was -69.45% of Thinksoft Global Services Limited. Average returns for period 1, period 2 and period 3 were 0.89%, 4.82% and 8.06% respectively. Standard deviations for these periods were 25.44%, 23.87% and 5.72% respectively. Return for period 1 was not significantly different from zero ($t = -0.175$, $P = 0.862$). Return from portfolio for period 2 was not significantly different from zero ($t = -1.010$, $P = 0.318$). Similarly return for period 3 was not significantly different from zero ($t = -1.409$, $P = 0.165$).

Table 4.4: Performance of 52-Week High Stocks (2009)

Name of the stocks	Return in % (30 days later)	Return in % (90 days later)	Return in % (180 days later)
Hindustan Unilever Limited	1.20	18.07	9.68
Alfa Laval (India) Limited	-9.06	-12.92	12.61
Norben Tea & Exports Limited	5.59	-10.49	-9.79
Reliance Mutual Fund	4.66	3.55	13.10
Cambridge Solutions Limited	0.73	-22.30	-2.74
Hero Honda Motors Limited	63.92	82.31	70.39
Benchmark Mutual Fund- Gold Benchmark	1.77	0.99	10.08
Pantaloon Retail (India) Limited	68.60	72.60	85.45
UTI Mutual Fund- UTI Gold	-2.24	-2.05	6.05
GlaxoSmithKline Pharmaceuticals Limited	1.01	14.95	32.46
Kotak Mutual Fund- Gold	-2.37	-2.65	5.41
Colgate Palmolive (India) Limited	13.10	41.97	49.67
Quantum Gold Fund	-4.33	-5.15	3.04
Alkali Metals Limited	59.83	9.61	-35.58
Mawana Sugars Limited	68.12	78.50	106.28
NTPC Limited	11.47	9.70	4.29
Benchmark Mutual Fund- Shariah Benchmark	33.75	37.50	37.51
Tata Communications Limited	-11.84	-14.99	-39.21
Autolite (India) Limited	22.17	62.39	16.52
Maruti Suzuki India Limited	33.39	83.13	75.19
GlaxoSmithKline Consumer Healthcare Ltd.	22.74	52.79	66.37
Hindustan National Glass & Industries Ltd.	3.48	6.16	11.69
Pfizer Limited	14.09	11.27	26.62
LIC Housing Finance Limited	35.85	54.28	74.43
Sanwaria Agro Oils Limited	71	30.6	-15.2
Average in %	20.27	24	24.58
S.D in %	26.73	33.17	37.57
t value	-3.791	-3.617	-3.272
P value	0.001	0.001	0.03

Table 4.5: Performance of 52-Week High Stocks (2010)

Name of the stocks	Return in % (30 days later)	Return in % (90 days later)	Return in % (180 days later)
AI Champdany Industries Limited	-29.13	-20.38	-3.75
AML Steel Limited	105.51	31.05	55.43
Cadila healthcare Himited	11.79	19.66	33.00
Carol Info Services Limited	-9.06	5.04	18.75
CCL India Limited	2.97	-4.89	-8.30
Cummins India Limited	3.97	26.50	40.06
First Leasing Company of India Limited	-2.88	2.79	4.72
Hyderabad Industries Limited	-2.61	12.22	8.05
Infotech Enterprises Limited	-0.90	8.73	-10.95
KCP Limited	-8.73	-9.01	-10.76
Kwality Dairy (India) Limited	-17.16	-8.52	-17.31
National Fertilizers Limited	-0.60	-10.43	-0.47
Ramkrishna Forgings Limited	6.55	25.87	6.68
Thinksoft Global Services Limited	-42.67	-67.03	-69.45
Triveni Engineering & Industries Ltd.	1.29	-10.88	-14.75
TTK Healthcare Limited	-5.31	31.42	33.41
ZEE Entertainment Enterprises Limited	6.20	13.52	14.77
Zicom Electronic Security Systems Ltd.	-5.89	-19.95	-34.18
Bayer Cropscience Limited	14.16	48.26	63.79
Oracle Financial Services Software Ltd.	8.92	1.55	1.48
Torrent Pharmaceuticals Limited	3.64	21.68	25.48
20 Microns Limited	-24.68	-26.49	-5.79
Bank of Baroda	4.84	22.96	32.50
Pfizer Limited	5.55	14.52	30.57
Ahluwalia Contracts (India) Limited	-3.60	12.08	8.48
Average in %	0.89	4.82	8.06
S.D in %	25.44	23.87	5.72
t value	-0.175	-1.010	-1.409
P value	0.862	0.318	0.165

(t value test the hypothesis of difference of return, different from zero)

4.1.2 Relative performance of the portfolio created from 52-week high stocks

For studying the relative performance of portfolio with S&P CNX NIFTY (depicted as Nifty in tables), CNX NIFTY JUNIOR (depicted as Nifty Jr. in tables) and S&P CNX 500 (depicted as CNX 500 in tables), the returns of these indices for period 1, period 2 and period 3 were calculated.

Table 4.6: Comparison of Returns of 52-Week High Stocks with Returns of S&P CNX NIFTY for Period 1 (30 days)

Year	Nifty Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	4.8	4.52	14.84	-0.094	0.926
2007	3.2	5.22	18.34	0.551	0.587
2008	-16.4	-26.13	14.66	-3.320	0.003
2009	26.5	20.27	26.73	-1.166	0.255
2010	3.8	0.89	25.44	-0.572	0.572

Table 4.6 shows S&P CNX NIFTY returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week high stocks for period 1 for the years 2006, 2007, 2008, 2009 and 2010. In the year 2006 the average stock return (M = 4.52%) was less than Nifty return (M = 4.8%) and S.D = 14.84% but it was not significantly different from the Nifty return (t = -0.094, P = 0.926). In the year 2007 Nifty return (M = 3.2%) was less than average stock return (M = 5.22%). Standard deviation was 18.34%. The portfolio return was not significantly different from the Nifty return (t = 0.551, P = 0.587). In the year 2008 both the Nifty and average stock returns were negative. Standard deviation was 14.66%. Only in this year the average stock return was significantly different from Nifty return (t = -3.320, P = 0.003). In the year 2009 and 2010 Nifty returns were more than average portfolio returns. In the year 2009 standard deviation was 26.73% and in the year 2010 standard deviation was 25.44%. In both these years the average portfolio returns were not significantly different from Nifty returns.

Table 4.7 shows CNX NIFTY JUNIOR returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week high stocks for period 1 of the years 2006, 2007, 2008, 2009 and 2010. In the year 2006 the average stock return (M = 4.52%) was almost similar to Nifty Jr. return (M = 4.5%) and S.D = 14.84%. The average stock return was not significantly different from the Nifty Jr. return (t = 0.007, P = 0.995). In the year 2007 Nifty Jr. return (M = 2.2%) was less than average stock return (M = 5.22%). Standard deviation was 18.34%. The average stock return was not significantly different from the Nifty Jr. return (t = 0.824, P = 0.418). In the year 2008 both the Nifty Jr. return (M = -

19.8%) and average stock return (M = -26.13%) were negative. Standard deviation was 14.66%. In this year the average stock return was significantly different from Nifty Jr. return (t = -2.160, P = 0.041). In the year 2009 the average stock return (M = 20.27%) was less than Nifty Jr. return (M = 44.2%) and S.D = 26.73% but the average stock return was significantly different from the Nifty Jr. return (t = -4.477, P = 0.000). In the year 2010 Nifty Jr. return (M = 3.4%) was more than average stock return (M= 0.89%). In this year the average return was not significantly different from Nifty Jr. return (t = -0.494, P = 0.626).

Table 4.7: Comparison of Returns of 52-Week High Stocks with Returns of CNX NIFTY JUNIOR for Period 1 (30 days)

Year	Nifty Jr. Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	4.5	4.52	14.84	0.007	0.995
2007	2.2	5.22	18.34	0.824	0.418
2008	-19.8	-26.13	14.66	-2.160	0.041
2009	44.2	20.27	26.73	-4.477	0.000
2010	3.4	0.89	25.44	-0.494	0.626

Table 4.8 shows S&P CNX 500 returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week high stocks for period 1 of the years 2006, 2007, 2008, 2009 and 2010. In the year 2006 the average stock return (M = 4.52%) was more than CNX 500 return (M = 3.9%) and S.D = 14.84% but it was not significantly different from the CNX 500 return (t = 0.209, P = 0.836). In the year 2007

Table 4.8: Comparison of Returns of 52-Week High Stocks with Returns of S&P CNX 500 for Period 1 (30 days)

Year	CNX 500 Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	3.9	4.52	14.84	0.209	0.836
2007	3.3	5.22	18.34	0.524	0.605
2008	-19.2	-26.13	14.66	-2.364	0.026
2009	33.6	20.27	26.73	-2.494	0.020
2010	1.3	0.89	25.44	-0.081	0.936

CNX 500 return (= 3.3%) was less than portfolio return (= 5.22%). Standard deviation was 18.34%. The average stock return was not significantly different from the CNX 500 return (t = 0.524, P = 0.605). In the year 2008 both the CNX 500 return (M = -19.2%) and average stock return (M = -26.13%) were negative. Standard deviation was 14.66%. In this year the

average stock return was significantly different from CNX 500 return ($t = -2.364$, $P = 0.026$). In the year 2009 the average stock return ($M = 20.27\%$) was less than CNX 500 return ($M = 33.6\%$ and $S.D = 26.73\%$). The average stock return was significantly different from the CNX 500 return ($t = -2.494$, $P = 0.020$). In the year 2010 standard deviation was 25.44% . In the year 2010 CNX 500 return ($M = 1.3\%$) was more than average stock return ($M = 0.89\%$). In this year the average return was not significantly different from CNX 500 return ($t = -0.081$, $P = 0.936$).

Table 4.9 shows S&P CNX NIFTY returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week high stocks for period 2 of the years 2006, 2007, 2008, 2009 and 2010. In the year 2006 the average stock return ($M = 17.55\%$) was less than Nifty return ($M = 22.5\%$) and $S.D = 36.30\%$ but it was not significantly different from the Nifty return ($t = -0.682$, $P = 0.502$).

Table 4.9: Comparison of Returns of 52-Week High Stocks with Returns of S&P CNX NIFTY for Period 2 (90 days)

Year	Nifty Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	22.5	17.55	36.30	-0.682	0.502
2007	-9.3	-7.95	21.96	0.307	0.762
2008	-22.9	-41.71	17.91	-5.251	0.000
2009	29.1	24	33.17	-0.769	0.449
2010	6.6	4.82	23.87	-0.373	0.713

In the year 2007 both the Nifty return and average stock return were negative. Standard deviation was 21.96% . The average stock return was not significantly different from the Nifty return ($t = 0.307$, $P = 0.762$). In the year 2008 again both the Nifty and average stock returns were negative. Standard deviation was 17.91% . In this year the average stock return was significantly different from Nifty return ($t = -5.251$, $P = 0.000$). In the year 2009 the average stock return ($M = 24\%$) was less than Nifty return ($M = 29.1\%$) and $S.D = 33.17\%$. The average stock return was not significantly different from the Nifty return ($t = -0.769$, $P = 0.449$). In the year 2010 standard deviation was 23.87% . In the year 2010 Nifty return ($M = 6.6\%$) was more than average stock return ($M = 4.82\%$). In this year the average stock return was not significantly different from Nifty return ($t = -0.373$, $P = 0.713$).

Table 4.10 shows CNX NIFTY JUNIOR 500 returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week high stocks for period 2 of the years 2006, 2007, 2008, 2009 and 2010. In the year 2006 the average stock return (M

= 17.55%) was almost equal to Nifty Jr. return (M = 17.8%) and S.D = 36.30%. The average stock return was not significantly different from the Nifty Jr. return (t = -0.035, P = 0.973). In the year 2007 both the Nifty Jr. and average stock returns were negative. Standard deviation was 21.96%. The average stock return was not significantly different from the Nifty Jr. return (t = 0.056, P = 0.955). In the year 2008 again both the Nifty Jr. and average stock returns were negative. Standard deviation was 17.91%. In this year the average stock return was not significantly different from Nifty Jr. return (t = -1.342, P = 0.192). In the year 2009 the average stock return (M = 24%) was less than Nifty Jr. return (M = 56.9%) and S.D = 33.17%. The average stock return was significantly different from the Nifty Jr. return (t = -4.960, P = 0.000). In the year 2010 standard deviation was 23.87%. In the year 2010 Nifty Jr. return (M = 9%) was more than average stock return (M = 4.82%). In this year the average stock return was not significantly different from Nifty Jr. return (t = -0.876, P = 0.390).

Table 4.10: Comparison of Returns of 52-Week High Stocks with Returns of CNX NIFTY JUNIOR for Period 2 (90 days)

Year	Nifty Jr. Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	17.8	17.55	36.30	-0.035	0.973
2007	-8.2	-7.95	21.96	0.056	0.955
2008	-36.9	-41.71	17.91	-1.342	0.192
2009	56.9	24	33.17	-4.960	0.000
2010	9	4.82	23.87	-0.876	0.390

Table 4.11 shows S&P CNX 500 returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week high stocks for period 2 of the years 2006, 2007, 2008, 2009 and 2010. In the year 2006 the average stock return (M = 17.55%) was less than CNX 500 return (M= 20.7%) but it was not significantly different from the CNX 500 return (t = -0.434, P = 0.668). In the year 2007 both the CNX 500 and average stock returns were negative. Standard deviation was 21.96%. The average stock return was not significantly different from the CNX 500 return (t = 0.353, P = 0.728). In the year 2008 again both the CNX 500 return and average stock return were negative. Standard deviation was 17.91%. In this year the average stock return was significantly different from CNX 500 return (t = -3.576, P = 0.002). In the year 2009 the average stock return (M = 24%) was less than CNX 500 return (M = 37%) and S.D = 33.17%. The average stock return was not significantly different from the CNX 500 return (t = -1.960, P = 0.062). In the year 2010 CNX 500 return (M = 3.5%) was less than average stock return (M = 4.82%). In this year the

average stock return was not significantly different from CNX 500 return ($t = 0.277$, $P = 0.785$).

Table 4.11: Comparison of Returns of 52-Week High Stocks with Returns of S&P CNX 500 for Period 2 (90 days)

Year	CNX 500 Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	20.7	17.55	36.30	-0.434	0.668
2007	-9.5	-7.95	21.96	0.353	0.728
2008	-28.9	-41.71	17.91	-3.576	0.002
2009	37	24	33.17	-1.960	0.062
2010	3.5	4.82	23.87	0.277	0.785

Table 4.12 shows S&P CNX NIFTY returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week high stocks for period 3 of the years 2006, 2007, 2008, 2009 and 2010. In the year 2006 the average stock return ($M = -8.54\%$) was negative and less than Nifty return ($M = 11.1\%$) and $S.D = 24.58\%$ but the average stock return was significantly different from the Nifty return ($t = -3.995$, $P = 0.001$). In the year 2007 the Nifty return ($M = 7.6\%$) was less than average stock return ($M = 23.15\%$). Standard deviation was 47.05% . The average stock return was not significantly different from the Nifty return ($t = 1.652$, $P = 0.111$). In the year 2008 both the Nifty and average stock returns were negative.

Table 4.12: Comparison of Returns of 52-Week High Stocks with Returns of S&P CNX NIFTY for Period 3 (180 days)

Year	Nifty Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	11.1	-8.54	24.58	-3.995	0.001
2007	7.6	23.15	47.05	1.652	0.111
2008	-34.2	-46.70	19.01	-3.288	0.003
2009	25.9	24.58	37.57	-0.176	0.862
2010	10.9	8.06	28.6	-0.497	0.624

Standard deviation was 19.01% . In this year the average stock return was significantly different from Nifty return ($t = -3.288$, $P = 0.003$). In the year 2009 the average stock return ($M = 24.58\%$) was less than Nifty return ($M = 25.9\%$) and $S.D = 37.57\%$ but the average stock return was not significantly different from the Nifty return ($t = -0.176$, $P = 0.862$). In the year 2010 standard deviation was 28.6% . In the same year Nifty return ($M = 10.9\%$) was

more than average stock return (M = 8.06%). In this year the average stock return was not significantly different from Nifty returns (t = -0.497, P = 0.624).

Table 4.13 shows CNX NIFTY JUNIOR 500 returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week high stocks for period 3 of the years 2006, 2007, 2008, 2009 and 2010. In the year 2006 both the Nifty Jr. return (M = -5%) and average stock return (M = -8.54%) were negative and S.D = 24.58%. The average stock return was not significantly different from the Nifty Jr. return (t = -0.719, P = 0.479). In the year 2007 Nifty Jr. return (M = 22.1%) was less than average stock return (M = 23.15%).

Table 4.13: Comparison of Returns of 52-Week High Stocks with Returns of CNX NIFTY JUNIOR for Period 3 (180 days)

Year	Nifty Jr. Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	-5	-8.54	24.58	-0.719	0.479
2007	22.1	23.15	47.05	0.111	0.912
2008	-50.7	-46.70	19.01	1.052	0.303
2009	62.4	24.58	37.57	-5.034	0.000
2010	15.2	8.06	28.6	-1.249	0.224

Standard deviation was 47.05%. The average stock return in this year was not significantly different from the Nifty Jr. return (t = 0.111, P = 0.912). In the year 2008 both the Nifty Jr. return (M = -50.7%) and average stock return (M = -46.70%) were negative. Standard deviation was 19.01%. In this year the average stock return was not significantly different from Nifty Jr. return (t = 1.052, P = 0.303). In the year 2009 the average stock return (M = 24.58%) was much less than Nifty Jr. return (M = 62.4%) and S.D = 37.57%. The average stock return was significantly different from the Nifty Jr. return (t = -5.034, P = 0.000). In the year 2010 standard deviation was 28.6%. In the year 2010 Nifty Jr. return (M = 15.2%) was more than average stock return (M = 8.06%). In this year the average stock return was not significantly different from Nifty Jr. returns (t = -1.249, P = 0.224).

Table 4.14 shows S&P CNX 500 returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week high stocks for period 3 of the years 2006, 2007, 2008, 2009 and 2010. In the year 2006 the average stock return (M = -8.54%) was negative and less than CNX 500 return (M = 4.6%) and S.D = 24.58%. The average stock return was significantly different from the CNX 500 return (t = -2.673, P = 0.013). In

the year 2007 CNX 500 return (M= 9.3%) was less than average stock return (M = 23.15%) and S.D = 47.05%. The average stock return was not significantly different from the CNX

Table 4.14: Comparison of Returns of 52-Week High Stocks with Returns of S&P CNX 500 for Period 3 (180 days)

Year	CNX 500 Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	4.6	-8.54	24.58	-2.673	0.013
2007	9.3	23.15	47.05	1.472	0.154
2008	-40.5	-46.70	19.01	-1.631	0.116
2009	34.2	24.58	37.57	-1.280	0.213
2010	7.8	8.06	28.6	0.045	0.965

500 return (t = 1.472, P = 0.154). In the year 2008 both the CNX 500 and average stock returns were negative. Standard deviation was 19.01%. In this year the average stock return was not significantly different from CNX 500 return (t = -1.631, P = 0.116). In the year 2009 the average stock return (M = 24.58%) was less than CNX 500 return (M= 34.2%) and S.D = 37.57%. The average stock return was not significantly different from the CNX 500 return (t = -1.280, P = 0.213). In the year 2010 standard deviation was 28.6%. In the same year CNX 500 return (M = 7.8%) was less than average stock return (M = 8.06%). In this year the average stock return was not significantly different from CNX 500 returns (t = 0.045, P =0.965).

4.2 Raw and relative performance of the portfolio created from 52-week low stocks

In section 4.2.1 average returns of the 52-week low stocks were compared from zero for period 1 (30 days), period 2 (90 days) and for period 3 (180 days). In section 4.2.2 average returns of the 52-week low stocks were compared for period 1 (30 days), period 2 (90 days) and for period 3 (180 days) with the returns of S&P CNX NIFTY, CNX NIFTY JUNIOR and S&P CNX 500 respectively.

4.2.1 Raw performance of the portfolio created from 52-week low stocks

For studying the raw performance of the portfolio created from NSE closing prices of these stocks were taken for period 1, period 2 and period 3. Similarly opening prices of next day to period 0 were taken. So using these prices returns were calculated after period 1, period 2 and period 3 respectively.

Table 4.15: Performance of 52-Week Low Stocks (2006)

Name of the stocks	Return in % (30 days later)	Return in % (90 days later)	Return in % (180 days later)
Eicher Motors Limited	13.28	40.04	-4.70
Tata Sponge Iron Limited	-1.64	30.00	-20.04
Sunflag Iron And Steel Company Limited	15.38	45.00	-5.77
PVR Limited	8.55	22.19	-13.53
Ramco Systems Limited	-22.44	-26.23	-49.45
Samtel Color Limited	-19.56	-24.14	-44.99
Uttam Galva Steels Limited	14.73	21.55	-23.43
Celebrity Fashions Limited	-19.53	-10.00	-48.02
Aarti Drugs Limited	-11.37	-11.37	-20.25
Kernex Microsystems (India) Limited	-5.43	-8.83	-50.64
Marksans Pharma Limited	21.91	9.93	-48.18
Orient Abrasives Limited	-15.16	-17.58	-45.48
Indo Rama Synthetics (India) Limited	3.63	6.30	-21.95
The Tinsplate Company of India Limited	0.84	19.61	-20.00
Balkrishna Industries Limited	-12.38	-27.19	-55.84
Gujrat NRE Coke Limited	-2.28	2.33	-30.22
Jet Airways (India) Limited	-2.24	-3.03	-47.99
Polyplex Corporation Limited	-16.48	-13.69	-39.88
Radaan Mediaworks India Limited	-20.42	11.27	-40.14
Sasken Communications Technologies Limited	6.04	10.17	-8.55
Pricol Limited	-2.32	11.22	-19.63
SPL Industries Limited	1.10	4.48	-45.74
Rajvir Industries Limited	12.25	49.59	61.44
Sterling Tools Limited	-15.78	-13.73	-42.12
Nitin Spinners Limited	-19.25	-32.08	-60.38
Average in %	-3.54	3.84	-29.82
S.D in %	13.24	22.84	25.21
t value	1.339	-0.840	5.914
P value	0.187	0.405	0.000

(t value test the hypothesis of difference of return, different from 0)

Table 4.15 shows the returns after period 1, period 2 and period 3 of individual stocks and average returns, standard deviation and t-statistics for the portfolio created from 52-week low stocks for the year 2006. The highest return in period 1 of 21.91% was of Marksans Pharma Limited. There were 15 negative returns in the period 1. Highest negative return for period 1 was -22.44% of Ramco Systems Limited. Radaan Mediaworks India Limited gave negative return of -20.42% in the same period. The highest return in period 2 of 49.59% was of SPL Industries Limited. There were 11 stocks that gave negative returns in period 2. Highest negative return in period 2 was -32.08% and it was of Nitin Spinners Limited. Balkrishna Industries Limited gave negative return of -27.19% in the same period. The highest and only positive return in period 3 was 61.44% which was given by Rajvir Industries Limited. Highest negative return in period 3 was -60.38% of Nitin Spinners Limited. Balkrishna Industries Limited gave negative return of -55.84% in the same period. Average returns for period 1, period 2 and period 3 were -3.54%, 3.84 % and -29.82% respectively. Similarly standard deviations for these periods were 13.24%, 22.84% and 25.21% respectively. Return for period 1 was not significantly different from zero ($t = 1.339$, $P = 0.187$). Similarly average stock return for period 2 was not significantly different from zero ($t = -0.840$, $P = 0.405$). But return for period 3 differs significantly from zero ($t = 5.914$, $P = 0.000$).

Table 4.16 shows the returns after period 1, period 2 and period 3 of individual stocks and average returns, standard deviation and t-statistics for the portfolio created from 52-week low stocks for the year 2007. The highest return in period 1 of 32.56% was of Zee News Limited. 19 stocks gave negative returns in the period 1. Raj Rayon Industries Limited gave negative return of -25.93% in period 1. The highest return in period 2 of 27.84% was of Sakthi Sugars Limited. There were 20 stocks that gave negative returns in period 2. Most negative return was -43.42% of Raj Rayon Industries Limited in period 2. Ruchira Enterprises Limited and Kesar Enterprises Limited gave negative returns of -36.64% and -34.91% respectively in the same period. The highest return in period 3 was 52.31% of Zee News Limited. During period 3, 18 stocks gave negative returns. Highest negative return was -51.03% of Raj Rayon Industries Limited in period 3. Kesar Enterprises Limited and Ruchira Enterprises Limited gave negative returns of -48.23% and -41.38% respectively in the same period. Average returns for period 1, period 2 and period 3 were -6.52%, -13.54% and -8.75% respectively. Similarly standard deviations for these periods were 12.94%, 18.16% and 23.27% respectively. Return for period 1 was significantly different from zero ($t = 2.519$, $P = 0.015$). Similarly average stock return for period 2 was significantly different from zero ($t = 3.728$, $P = 0.001$). But return for period 3 was not significantly different from zero ($t = 1.880$, $P = 0.072$).

Table 4.16: Performance of 52-Week Low Stocks (2007)

Name of the stocks	Return in % (30 days later)	Return in % (90 days later)	Return in % (180 days later)
Banco Products (I) Limited	5.19	-3.65	1.67
Rohit Ferro-Tech Limited	0.00	-6.20	10.23
Ruchira Enterprises Limited	-21.98	-36.64	-41.38
Kesar Enterprises Limited	-8.14	-34.91	-48.23
Prajay Engineers Syndicate Ltd.	-6.16	-13.36	-1.70
Indo Asian Fusegear Limited	-8.17	-14.26	-0.04
The Oudh Sugar Mills Limited	-22.37	-27.63	-34.91
Paramount Communications Ltd.	11.76	-31.22	-24.89
Plastiblends India Limited	-12.45	-18.71	-15.45
Rajshree Sugars & Chemicals Ltd.	-17.31	-23.51	-25.00
Surana Industries Limited	-5.92	-19.43	-7.02
Bajaj Hindusthan Limited	-23.83	-15.87	-24.90
Berger Paints (I) Limited	-6.09	-21.85	6.52
HBL Power Systems Limited	-11.56	-18.20	-1.84
Sharyans Resources Limited	-1.96	0.10	-2.04
Panoramic Universal Limited	8.63	-1.52	-27.27
Raj Rayon Industries Limited	-25.93	-43.42	-51.03
Arihant Foundations & Housing Ltd.	-20.30	-30.65	-9.14
Bannari Amman Sugars Limited	-4.19	9.44	4.64
Zee News Limited	32.56	22.38	52.31
MM Forgings Limited	-3.68	-5.77	-6.05
Donear Industries Limited	-2.38	3.67	-9.16
Sakthi Sugars Limited	2.94	27.84	13.06
Ramco Industries Limited	-14.39	-34.61	-6.03
Tata Metaliks Limited	-7.04	-0.70	28.85
Average in %	-6.52	-13.54	-8.75
S.D in %	12.94	18.16	23.27
t value	2.519	3.728	1.880
P value	0.015	0.001	0.072

(t value test the hypothesis of difference of return, different from 0)

Table 4.17: Performance of 52-Week Low Stocks (2008)

Name of the stocks	Return in % (30 days later)	Return in % (90 days later)	Return in % (180 days later)
Lumax Industries Limited	-42.88	-62.82	-71.06
BGR Energy Systems Limited	-22.79	-38.61	-57.17
Donear Industries Limited	-49.34	-55.66	-73.06
JMC Projects (India) Limited	-20.00	-35.47	-63.43
Manaksia Limited	-41.85	-40.82	-59.92
Aurobindo Pharma Limited	-37.71	-31.86	-42.39
ORG Informatics Limited	-47.02	-52.93	-69.84
Container Corporation of India Limited	2.06	7.73	-7.61
Hexaware Technologies Limited	-8.42	-5.82	-39.49
Infosys Technologies Limited	4.59	9.72	4.09
Patni Computer Systems Limited	-15.56	-9.66	-21.79
Brigade Enterprises Limited	-17.33	-47.67	-67.71
Merck Limited	-13.57	-17.91	-25.31
Satyam Computer Services Limited	14.41	24.05	-0.69
Cambridge Solutions Limited	-26.97	-31.79	-24.97
KSB Pumps Limited	-14.58	-8.12	-34.68
NIIT Technologies Limited	-30.11	-21.08	-41.51
Precision Pipes and Profiles Company Ltd.	-36.07	-25.16	-39.22
Renaissance Jewellery Limited	-28.10	-37.55	-67.48
Tata Consultancy Services Limited	-1.98	9.89	-10.09
Tech Mahindra Limited	-25.29	-2.21	-9.69
Transformers And Rectifiers (India) Ltd.	-21.03	-34.93	-53.29
ACC Limited	4.42	9.00	-26.29
Allcargo Global Logistics Limited	10.01	15.32	12.31
Allsec Technologies Limited	-5.05	-18.38	-59.70
Average in %	-18.81	-20.12	-38
S.D in %	18.17	24.29	26.03
t value	5.174	4.140	7.300
P value	0.000	0.000	0.000

(t value test the hypothesis of difference of return, different from 0)

Table 4.17 shows the returns after period 1, period 2 and period 3 of individual stocks and average returns, standard deviation and t-statistics for the portfolio created from 52-week low stocks for the year 2008. In period 1 only 5 stocks gave positive returns and highest return was 14.41%. Highest negative return of -49.34% was given by Donear Industries Limited in period 1. ORG Informatics Limited gave negative return of -47.02% in period 1. 19 stocks gave negative returns in the period 2. The highest negative return in period 2 of -62.82% was of Lumax Industries Limited. Donear Industries Limited gave negative return of -55.66% in period 2. Brigade Enterprises Limited gave negative return of -47.67% in period 2. During period 3, 23 stocks gave negative returns. The highest negative return in period 3 of -73.06% was again of Donear Industries Limited. Lumax Industries Limited gave return of -71.06% in period 3. Even ORG Informatics Limited gave negative return of -69.84% in period 3. Brigade Enterprises Limited gave negative return of -67.71% in the same period. Average returns for period 1, period 2 and period 3 were -18.81%, -20.12% and -38% respectively. Similarly standard deviations for these periods were 18.17%, 24.29% and 26.03% respectively. Return for period 1 was significantly different from zero ($t = 5.174$, $P = 0.000$). Similarly average stock returns for period 2 and period 3 were significantly different from zero (for period 2: $t = 4.140$, $P = 0.000$, for period 3: $t = 7.300$, $P = 0.000$).

Table 4.18 shows the returns after period 1, period 2 and period 3 of individual stocks and average returns, standard deviation and t-statistics for the portfolio created from 52-week low stocks for the year 2009. There were 24 stocks which gave negative returns in period 1. The highest negative return in period 1 of -44.94% was of Indus Fila Limited. Hikal Limited gave negative return of -33.53% in period 1. The highest return in period 2 of 50.54% was of Jai Corp Limited. Indo Count Industries Limited gave positive return of 28.38% in period 2. The highest negative return in period 2 was -39.04%. ICSA (India) Limited gave negative return of -28.69% in period 2. The highest return in period 3 was 226.71% of Jai Corp Limited. Himadri Chemicals and Industries Limited gave positive return of 191.02% in period 3. Return of Indo Count Industries Limited in period 3 was 83.78% in period 3. Lakshmi Precision Screws Limited gave return of 62.34% in the same period. The highest negative return of -45.20% in period 3 was again of Indus Fila Limited. Average returns for period 1, period 2 and period 3 were -17.40%, -4.64% and 44.26% respectively. Similarly standard deviations for these periods were 11.1%, 20.28% and 56.88% respectively. Return for period 1 was significantly different from zero ($t = 7.841$, $P = 0.000$). Average stock return for period 2 was not significantly different from zero ($t = 1.143$, $P = 0.264$). Similarly return for period 3 did not differ significantly from zero ($t = -1.442$, $P = 0.156$).

Table 4.18: Performance of 52-Week Low Stocks (2009)

Name of the stocks	Return in % (30 days later)	Return in % (90 days later)	Return in % (180 days later)
Aksh Optifibre Limited	-29.20	-7.20	12.00
Bharat Bijlee Limited	-13.19	1.76	57.51
Donear Industries Limited	-2.88	-1.92	34.29
Indo Count Industries Limited	-5.41	28.38	83.78
ICSA (India) Limited	-37.76	-28.69	23.76
Jai Corp Limited	-8.52	50.54	226.71
KDL Biotech Limited	-10.96	-39.04	17.40
Kothari Products Limited	-15.33	-6.33	24.77
Minda Industries Limited	-3.23	16.57	63.53
Windsor Machines Limited	-21.43	1.14	42.86
Precot Meridian Limited	-12.77	2.15	39.32
Sharyans Resources Limited	-19.70	6.84	12.69
Wheels India Limited	-8.96	-15.37	19.40
Zenith Exports Limited	-14.20	-22.82	-14.12
Saksoft Limited	-10.71	-17.09	-1.79
Bharat Gears Limited	-14.92	11.78	46.86
Classic Diamonds (India) Limited	-19.12	4.90	51.47
Geometric Limited	-22.50	-20.91	28.64
Gokaldas Exports Limited	-21.40	-20.00	18.08
Graphite India Limited	-14.46	-12.44	52.72
Himadri Chemicals and Industries Ltd.	-20.41	3.67	191.02
Hikal Limited	-33.53	-23.28	6.30
Indus Fila Limited	-44.94	-36.79	-45.20
Lakshmi Precision Screws Limited	0.00	12.21	62.34
Mahindra Lifespace Developers Ltd.	-29.49	-3.98	52.14
Average in%	-17.40	-4.64	44.26
S.D in %	11.1	20.28	56.88
t value	7.841	1.143	-1.442
P value	0.000	0.264	0.156

(t value test the hypothesis of difference of return, different from 0)

Table 4.19: Performance of 52-Week Low Stocks (2010)

Name of the stocks	Return in % (30 days later)	Return in % (90 days later)	Return in % (180 days later)
Alkali Metals Limited	-11.99	3.34	-9.24
Amarjothi Spinning Mills Limited	-4.43	33.37	52.21
Astec LifeSciences Limited	-29.05	-20.47	0.61
Cranes Software International Limited	-17.50	-35.21	-46.46
D-Link (India) Limited	-9.41	11.26	10.92
Elnet Technologies Limited	-8.89	3.68	17.44
Excel Infoways Limited	-16.23	5.28	-12.36
Godrej Properties Limited	6.79	2.77	38.77
Jupiter Bioscience Limited	-4.92	3.09	2.23
MMTC Limited	1.44	-7.17	-1.55
Northgate Technologies Limited	-22.18	-26.69	-37.78
REI Six Ten Retail Limited	-82.45	-25.05	-43.66
TRF Limited	40.87	65.86	25.95
Vipul Limited	-18.64	-16.69	-30.34
Ahluwalia Contracts (India) Limited	15.49	34.05	29.74
Hydro S & S Industries Limited	-0.42	10.56	6.67
Marg Limited	17.57	19.06	7.18
Tata Communications Limited	-6.81	-12.65	-11.83
Whirlpool of India Limited	20.54	43.24	110.54
Bayer Cropscience Limited	13.65	49.21	64.84
D.B.Corp Limited	-5.16	1.65	-1.34
Gillanders Arbuthnot & Company Ltd.	6.69	16.97	15.21
Super Sales India Limited	2.00	31.21	28.94
Abbott India Limited	81.58	91.36	132.11
Sunteck Realty Limited	-29.23	-21.24	-21.09
Average in %	-2.42	10.44	13.10
S.D in %	28.71	30.56	42.91
t value	0.422	-1.708	-1.526
P value	0.675	0.094	0.140

(t value test the hypothesis of difference of return, different from 0)

Table 4.19 shows the returns after period 1, period 2 and period 3 of individual stocks and average returns, standard deviation and t-statistics for the portfolio created from 52-week low stocks for the year 2010. The highest return in period 1 of 81.58% was of Abbott India Limited. Most negative return in period 1 was -82.45%. There were 8 stocks that gave negative return in period 2. The highest return of 91.36% in period 2 was again of Abbott India Limited. The highest return in period 3 was 132.11% which was again of Abbott India Limited. The highest negative return in period 3 was -46.46%. Average returns for period 1, period 2 and period 3 were -2.42%, 10.44% and 13.10% respectively. Standard deviations for these periods were 28.71%, 30.56% and 42.91% respectively. Return for period 1 was not significantly different from zero ($t = 0.422$, $P = 0.675$). Return from portfolio for period 2 was not significantly different from zero ($t = -1.708$, $P = 0.094$). Similarly return for period 3 was not significantly different from zero ($t = -1.526$, $P = 0.140$).

4.2.1 Relative performance of the portfolio created from 52-week low stocks

For studying the relative performance of portfolio created with S&P CNX NIFTY (depicted as Nifty in tables), CNX NIFTY JUNIOR (depicted as Nifty Jr. in tables) and S&P CNX 500 (depicted as CNX 500 in tables), the returns of these indices for period 1, period 2 and period 3 were calculated.

Table 4.20: Comparison of Returns of 52-Week Low Stocks with Returns of S&P CNX NIFTY for Period 1 (30 days)

Year	Nifty Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	3.9	-3.54	13.24	-2.812	0.010
2007	1.4	-6.52	12.94	-3.060	0.005
2008	-1	-18.81	18.17	-4.899	0.000
2009	-2.6	-17.40	11.1	-6.669	0.000
2010	5.2	-2.42	28.71	-1.328	0.197

Table 4.20 shows S&P CNX NIFTY returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week low stocks for period 1 of the year 2006, 2007, 2008, 2009 and 2010. In the year 2006 the average stock return ($M = -3.54\%$) was negative and less than Nifty return ($M = 3.9\%$) and $S.D = 13.24\%$. The average stock return was significantly different from the Nifty return ($t = -2.812$, $P = 0.010$). In the year 2007 Nifty return ($M = 1.4\%$) was much more than average stock return ($M = -6.52\%$). Standard deviation was 12.94%. The portfolio return was significantly different from the Nifty return ($t = -3.060$, $P = 0.005$). In the year 2008 both the Nifty and average stock returns were negative. Standard deviation was 18.17%. In this year the average stock return

was significantly different from Nifty return ($t = -4.899$, $P = 0.000$). Again in the year 2009 both Nifty and average stock returns were negative. In the year 2009 standard deviation was 11.1% and in the year 2010 standard deviation was 28.71%. During this year average stock return was significantly different from Nifty return ($t = -6.669$, $P = 0.000$). In the year 2010 Nifty returns were more than average portfolio returns. In this year the average portfolio returns was not significantly different from Nifty returns ($t = -1.328$, $P = 0.197$).

Table 4.21: Comparison of Returns of 52-Week Low Stocks with Returns of CNX NIFTY JUNIOR for Period 1(30 days)

Year	Nifty Jr. Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	5.1	-3.54	13.24	-3.265	0.003
2007	-1.3	-6.52	12.94	-2.016	0.055
2008	-3.9	-18.81	18.17	-4.101	0.000
2009	-8.9	-17.40	11.1	-3.830	0.001
2010	5.6	-2.42	28.71	-1.397	0.175

Table 4.21 shows CNX NIFTY JUNIOR returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week low stocks for period 1 of the year 2006, 2007, 2008, 2009 and 2010. In the year 2006 the average stock return ($M = -3.54\%$) was negative and less than Nifty Jr. return ($M = 5.1\%$) and $S.D = 13.24\%$. The average stock return was significantly different from the Nifty Jr. return ($t = -3.265$, $P = 0.003$). In the year 2007 both the Nifty Jr. return portfolio return were negative. Standard deviation was 12.94%. The average stock return was not significantly different from the Nifty Jr. return ($t = -2.016$, $P = 0.055$). In the year 2008 again both the Nifty Jr. return and average stock returns were negative. Standard deviation was 18.17%. In this year the average stock return was significantly different from Nifty Jr. return ($t = -4.101$, $P = 0.000$). In the year 2009 again both the Nifty Jr. and average stock returns were negative ($S.D = 11.1\%$). The average stock return was significantly different from the Nifty Jr. return ($t = -3.830$, $P = 0.001$). In the year 2010 standard deviation was 28.71%. In the same year Nifty Jr. return ($M = 5.6\%$) was more than average stock return ($M = -2.42\%$). In this year the average stock return was not significantly different from Nifty Jr. return ($t = -1.397$, $P = 0.175$).

Table 4.22 shows S&P CNX 500 returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week low stocks for period 1 of the year 2006, 2007, 2008, 2009 and 2010. In the year 2006 the average stock return ($M = 4.9\%$) was

Table 4.22: Comparison of Returns of 52-Week Low Stocks with Returns of S&P CNX 500 for Period 1 (30 days)

Year	CNX 500 Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	4.9	-3.54	13.24	-3.190	0.004
2007	0	-6.52	12.94	-2.519	0.019
2008	-2.2	-18.81	18.17	-4.569	0.000
2009	-4	-17.40	11.1	-6.038	0.000
2010	3	-2.42	28.71	-0.945	0.354

negative and less than CNX 500 return (M= -3.54%) and S.D = 13.24% but the average stock return was significantly different from the CNX 500 return (t = -3.190, P = 0.004). In the year 2007 average stock return was negative (= -6.52%). Standard deviation was 12.94%. The average stock return was significantly different from the CNX 500 return (t = -2.519, P = 0.019). In the year 2008 both the CNX 500 and average stock returns were negative. Standard deviation was 18.17%. In this year the average stock return was significantly different from CNX 500 return (t = -4.569, P = 0.000). In the year 2009 again both the average stock return (M = -17.40%) and CNX 500 return were negative (M = -4%) and S.D = 11.1%. The average stock return was significantly different from the CNX 500 return (t = -6.038, P = 0.000). In the year 2010 standard deviation was 28.71%. In the same year CNX 500 return (M = 3%) was more than average stock return (M = -2.42%). In this year the average stock return was not significantly different from CNX 500 returns (t = -0.945, P = 0.354).

Table 4.23: Comparison of Returns of 52-Week Low Stocks with Returns of S&P CNX NIFTY for Period 2 (90 days)

Year	Nifty Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	23.1	3.84	22.84	-4.217	0.000
2007	-2.4	-13.54	18.16	-3.068	0.005
2008	-3.3	-20.12	24.29	-3.461	0.002
2009	14.5	-4.64	20.28	-4.718	0.000
2010	8.1	10.44	30.56	0.383	0.705

Table 4.23 shows S&P CNX NIFTY returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week low stocks for period 2 of the year 2006, 2007, 2008, 2009 and 2010. In the year 2006 the average stock return (M = 3.84 %) was much less than Nifty return (M = 23.1%) and S.D = 22.84%. The average stock return

was significantly different from the Nifty return ($t = -4.217$, $P = 0.000$). In the year 2007 both the Nifty and average stock returns were negative. Standard deviation was 18.16%. The average stock return was significantly different from the Nifty return ($t = -3.068$, $P = 0.005$). In the year 2008 again both the Nifty and average stock returns were negative. Standard deviation was 24.29%. In this year the average stock return was significantly different from Nifty return ($t = -3.461$, $P = 0.002$). In the year 2009 the average stock return ($M = -4.64\%$) was negative and less than Nifty return ($M = 14.5\%$) and $S.D = 20.28\%$. The average stock return was significantly different from the Nifty return ($t = -4.718$, $P = 0.000$). In the year 2010 standard deviation was 30.56%. In the year 2010 Nifty return ($M = 10.44\%$) was more than average stock return ($M = 8.1\%$). In this year the average stock return was not significantly different from Nifty returns ($t = 0.383$, $P = 0.705$).

Table 4.24: Comparison of Returns of 52-Week Low Stocks with Returns of CNX NIFTY JUNIOR for Period 2 (90 days)

Year	Nifty Jr. Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	-21.5	3.84	22.84	5.546	0.000
2007	-1.1	-13.54	18.16	-3.426	0.002
2008	-13	-20.12	24.29	-1.465	0.156
2009	5.7	-4.64	20.28	-2.549	0.018
2010	10.2	10.44	30.56	0.039	0.969

Table 24 shows CNX NIFTY JUNIOR 500 returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week low stocks for period 2 of the year 2006, 2007, 2008, 2009 and 2010. In the year 2006 the average stock return ($M = 3.84\%$) was positive and Nifty Jr. return was negative ($M = -21.5\%$) and $S.D = 22.84\%$. The average stock return was significantly different from the Nifty Jr. return ($t = 5.546$, $P = 0.000$). In the year 2007 both the Nifty Jr. and average stock returns were negative. Standard deviation was 18.16%. The average stock return was significantly different from the Nifty Jr. return ($t = -3.426$, $P = 0.02$). In the year 2008 again both the Nifty Jr. return and average stock return were negative. Standard deviation was 24.29%. In this year the average stock return was not significantly different from Nifty Jr. return ($t = -1.465$, $P = 0.156$). In the year 2009 the average stock return ($M = -4.64\%$) was negative and Nifty Jr. return ($M = 5.7\%$) was positive and $S.D = 20.28\%$. The average stock return was significantly different from the Nifty Jr. return ($t = -2.549$, $P = 0.018$). In the year 2010 standard deviation was 30.56%. In the year 2010 Nifty Jr. return ($M = 10.2\%$) was almost similar to average stock return ($M =$

10.44%). In this year the average return was not significantly different from Nifty Jr. return ($t = -0.039$, $P = 0.969$).

Table 4.25: Comparison of Returns of 52-Week Low Stocks with Returns of S&P CNX 500 for Period 2 (90 days)

Year	CNX 500 Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	22.2	3.84	22.84	-4.020	0.001
2007	-3.2	-13.54	18.16	-2.847	0.009
2008	-7.4	-20.12	24.29	-2.617	0.015
2009	11.7	-4.64	20.28	-4.028	0.000
2010	4.9	10.44	30.56	0.907	0.374

Table 4.25 shows S&P CNX 500 returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week low stocks for period 2 of the year 2006, 2007, 2008, 2009 and 2010. In the year 2006 the average stock return ($M = 3.84\%$) was much less than CNX 500 return ($M = 22.2\%$) and $S.D = 22.84\%$. The average stock return was significantly different from the CNX 500 return ($t = -4.020$, $P = 0.001$). In the year 2007 both the CNX 500 and average stock returns were negative. Standard deviation was 18.16% . The average stock return was significantly different from the CNX 500 return ($t = -2.847$, $P = 0.009$). In the year 2008 again both the CNX 500 and average stock returns were negative. Standard deviation was 24.29% . In this year the portfolio return was significantly different from CNX 500 return ($t = -2.617$, $P = 0.015$). In the year 2009 the average stock return ($M = -4.64\%$) was negative and CNX 500 return was positive ($M = 11.7\%$) and $S.D = 20.28\%$. The average stock return was significantly different from the CNX 500 return ($t = -4.028$, $P = 0.000$). In the year 2010 standard deviation was 30.56% . In the same year CNX 500 return ($M = 4.9\%$) was less than average stock return ($M = 10.44\%$). In this year the average stock return was not significantly different from CNX 500 returns ($t = 0.907$, $P = 0.374$).

Table 4.26 shows S&P CNX NIFTY returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week low stocks for period 3 of the year 2006, 2007, 2008, 2009 and 2010. In the year 2006 the average stock return ($M = -29.82\%$) was negative and less than Nifty return ($M = 5\%$) and $S.D = 25.21\%$. The average stock return was significantly different from the Nifty return ($t = -6.905$, $P = 0.000$). In the year 2007 the Nifty return was positive and average stock return ($M = -8.75\%$) was negative Nifty return ($M = 9.4\%$). Standard deviation was 23.27% . The average stock return was significantly different from the Nifty return ($t = -3.900$, $P = 0.001$). In the year 2008 both the Nifty and average stock returns were negative. Standard deviation was 26.03% . In this year

the average stock return was significantly different from Nifty return ($t = -3.439$, $P = 0.002$). In the year 2009 the average stock return ($M = 44.26\%$) was more than Nifty return Nifty return ($M = 42.6\%$) and S.D =

Table 4.26: Comparison of Returns of 52-Week Low Stocks with Returns of S&P CNX NIFTY for Period 3 (180 days)

Year	Nifty Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	5	-29.82	25.21	-6.905	0.000
2007	9.4	-8.75	23.27	-3.900	0.001
2008	-20.1	-38	26.03	-3.439	0.002
2009	42.6	44.26	56.88	0.146	0.885
2010	12.5	13.10	42.91	0.070	0.945

56.88%. The average stock return was not significantly different from the Nifty return ($t = 0.146$, $P = 0.885$). In the year 2010 standard deviation was 42.91%. In the year 2010 Nifty return ($M = 12.5\%$) was more than average stock return ($M = 13.10\%$). In this year the average stock return was not significantly different from Nifty returns ($t = 0.070$, $P = 0.945$).

Table 4.27: Comparison of Returns of 52-Week Low Stocks with Returns of CNX NIFTY JUNIOR for Period 3 (180 days)

Year	Nifty Jr. Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	-8.5	-29.82	25.21	-4.228	0.000
2007	23.3	-8.75	23.27	-6.886	0.000
2008	-36.2	-38	26.03	-0.347	0.732
2009	65.5	44.26	56.88	-1.867	0.074
2010	16.5	13.10	42.91	-0.396	0.695

Table 4.27 shows CNX NIFTY JUNIOR 500 returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week low stocks for period 3 of the year 2006, 2007, 2008, 2009 and 2010. In the year 2006 both the Nifty Jr. ($M = -29.82\%$) and average stock returns were negative Nifty Jr. return ($M = -8.5\%$) and S.D = 25.21%. The average stock return was significantly different from the Nifty Jr. return ($t = -4.228$, $P = 0.000$). In the year 2007 Nifty Jr. return ($M = 23.3\%$) was positive and the average stock return ($M = -8.75\%$) was negative. Standard deviation was 23.27%. The average stock return was significantly different from the Nifty Jr. return ($t = -6.886$, $P = 0.000$). In the year 2008 both the Nifty Jr. and average stock returns were negative. Standard deviation was 26.03%. In this year the average stock return was not significantly different from Nifty Jr.

return ($t = -0.347$, $P = 0.732$). In the year 2009 the average stock return ($M = 44.26\%$) was less than Nifty Jr. return ($M = 65.5\%$) and $S.D = 56.88\%$. The average stock return was not significantly different from the Nifty Jr. return ($t = -1.867$, $P = 0.074$). In the year 2010 standard deviation was 42.91% . In the same year Nifty Jr. return ($M = 16.5\%$) was more than average stock return ($M = 13.10\%$). In this year the average stock return was not significantly different from Nifty Jr. return ($t = -0.396$, $P = 0.695$).

Table 4.28: Comparison of Returns of 52-Week Low Stocks with Returns of S&P CNX 500 for Period 3 (180 days)

Year	CNX 500 Return in %	Average Stock Return in %	S.D in % (stock returns)	t value	P Value
2006	-0.5	-29.82	25.21	-5.814	0.000
2007	10.6	-8.75	23.27	-4.158	0.000
2008	-25.7	-38	26.03	-2.363	0.027
2009	48.5	44.26	56.88	-0.373	0.713
2010	9.3	13.10	42.91	0.443	0.662

Table 4.28 shows S&P CNX 500 returns, average stock returns, standard deviation, t-statistic and P value of the portfolio created from 52-week low stocks for period 3 of the year 2006, 2007, 2008, 2009 and 2010. In the year 2006 both the average stock ($M = -29.82\%$) and CNX 500 returns ($M = -0.5\%$) were negative and $S.D = 25.21\%$. The average stock return was significantly different from the CNX 500 return ($t = -5.814$, $P = 0.000$). In the year 2007 CNX 500 return ($M = 10.6\%$) was positive and average stock return ($M = -8.75\%$) was negative and $S.D = 23.27\%$. The average stock return was significantly different from the CNX 500 return ($t = -4.158$, $P = 0.000$). In the year 2008 both the CNX 500 and average stock returns were negative. Standard deviation was 26.03% . In this year the average stock return was significantly different from CNX 500 return ($t = -2.363$, $P = 0.027$). In the year 2009 the average stock return ($M = 48.5\%$) was less than CNX 500 return ($M = 44.26\%$) and $S.D = 56.88\%$. The average stock return was not significantly different from the CNX 500 return ($t = -0.373$, $P = 0.713$). In the year 2010 standard deviation was 42.91% . In the same year CNX 500 return ($M = 9.3\%$) was less than average stock return ($M = 13.10\%$). In this year the average stock return was not significantly different from CNX 500 returns ($t = 0.443$, $P = 0.662$).

4.3 Discussion

This section briefly discusses the inferences from the above sections. There were certain studies which were in favour of use of momentum investing to get good returns, like Jegadeesh and Titman (1993) demonstrated that over an investment period of three to twelve

months past “winners”, on an average, continued to perform better and past “losers” continued to perform worse, but such a phenomenon remained in existence for 2 years. Grinblatt *et al* (1995) studied the extent to which mutual funds purchase stocks based on their past returns as well as their tendency to exhibit “herding” behavior. The evidence indicated that mutual funds had tendency to buy stocks based on their past returns. During the period of study the tendency to buy past winners as well as to herd was shown to be highly correlated with fund performance over period of study. On an average the funds following momentum strategies realized significant excess performance while contrarian funds realized virtually no performance. George and Hwang (2004) compared momentum investment strategies and concluded that nearness to 52-week high dominated and was better predictor of future returns than past returns (for both individual and industry). It was also concluded that long term reversals did not occur when past performance was measured and the long term reversals and short-term momentum were not part of the same phenomena. Kido (2009) studied that finance researchers had established a strict timeline in the relationship between previous returns and future returns. Over a short-term period-generally defined as shorter than three months-there existed a reversal effect by which stocks that exhibited positive (negative) returns in the past experience negative (positive) returns in the near future. Over an intermediate-term period-generally defined as between three and twelve months-there existed a momentum effect whereby stocks that exhibited positive (negative) returns in the past experience positive (negative) returns in the future.

Section 4.1 analyzed the raw and relative performance of the portfolio created from 52-week high stocks of NSE for 5 years i.e. from 2006 to 2010 with S&P CNX NIFTY, CNX NIFTY JUNIOR and S&P CNX 500. In the year 2006, while doing the raw comparison it was found that only in period 2 average return of the portfolio was positive and significant at 5% level of significance. In period 3, average return was negative and insignificant. So this showed that momentum investing did work only in intermediate period. While comparing the average return with return of S&P CNX NIFTY index during 2006, it was found that average returns for period 1 and period 2 were positive but insignificant. For period 3, return was significant at 5% level of significance but was negative (= -8.54%) which showed reversal from momentum investing. After comparing the average returns with CNX NIFTY JUNIOR’s return, it was found that the results were insignificant for all the three periods but for period 3 return was negative (= -29.82%). While comparing average return with CNX NIFTY 500, it was found that in period 3 the average return was significant but negative (= -8.54%) which showed reversal from momentum investing. So this clearly proved that in all the three indices momentum investing did not work, rather it reversed in long period. While doing raw comparison in the year 2007 the average returns were insignificant in period 1 and

period 2 but in period 3 it was positive (= 23.15%) and significant at 5% level of significance. So this showed that momentum investing worked in long period. When average returns were compared with returns of S&P CNX NIFTY, CNX NIFTY JUNIOR and S&P CNX 500 indices in the year 2006, it was found that results were insignificant for all the three periods but in period 2 returns was negative and insignificant. This showed that momentum investing did not work at all in this year. In the raw comparison, in year 2008 it was found that average returns of all the three periods were negative and significant at 5% level of significance. This showed that momentum investing was not effective. Negative returns during period 1, period 2 and period 3 were increasing with time. Similarly where relative comparison of average returns were done in all the three periods results were found to be significantly negative i.e. momentum investing was ineffective and reversal occurred. When average returns were compared with return of CNX NIFTY JUNIOR, results were found to be negative and significant at 5% level of significance in period 1 and period 2 (i.e. reversals in short and intermediate period) but return was negative but insignificant for period 3. In the raw comparison in year 2009 it was found that average returns were positive and significant in all the three periods. So it showed that momentum investing was effective during this year. Average returns when compared with return of S&P CNX NIFTY, the results were found to be positive but insignificant at 5% level of significance. So it showed that momentum investing was ineffective. Average returns when compared with return of CNX NIFTY JUNIOR index, results were found to be positive and significant i.e. momentum investing worked during this year in the context of this index. Average returns when compared with return of S&P CNX 500, the results were found to be significant and positive for period 1 but insignificant for period 2 and period 3. It showed that momentum investing worked only in short period. In the year 2010 while doing raw and relative comparison with returns of S&P CNX NIFTY, CNX NIFTY JUNIOR and S&P CNX 500 indices, the results were found to be positive and insignificant. It clearly indicated that momentum investing was not at all effective in 2010.

Section 4.2 analyzed the raw performance and relative performance of the portfolio created from 52-week low stocks of NSE for 5 years i.e. from 2006 to 2010 with S&P CNX NIFTY, CNX NIFTY JUNIOR and S&P CNX 500. In the year 2006, while doing the raw comparison it was found that the average return was insignificant at 5% level of significance for period 1. The result for period 2 was insignificant but positive. Average return for period 3 was found to be negative and significant at 5% level of significance. This showed that momentum investing worked during long period but was ineffective during short and intermediate period. While comparing average returns with returns of S&P CNX NIFTY, CNX NIFTY JUNIOR and S&P CNX 500 indices, the results found were significant and

negative for period 1 and period 3 but for period 2 results were positive and significant at 5% level of significance i.e. during intermediate period momentum investing was ineffective and rather it showed reversal. But in short and long period momentum investing was found to be effective. After performing the raw comparison in the year 2007, it was found that average returns were significant at 5% level of significance and negative for period 1 and period 2 but for period 3 result was insignificant i.e. momentum investing worked in short and intermediate period but not in long period. Average returns when compared with returns of S&P CNX NIFTY, CNX NIFTY JUNIOR and S&P CNX 500 indices, it was found that for all the periods results were negative and significant except in period 1 (when average returns were compared with return of CNX NIFTY JUNIOR) i.e. in that period result was insignificant. Therefore, it showed that momentum investing was effective in all the periods except in relative comparison of short period's return with return of CNX NIFTY JUNIOR index. In the raw comparison in the year 2008 it was found that average returns were negative and these negative returns were increasing period by period. The results were significant at 5% level of significance. This indicated that the momentum investing worked during 2008. Average returns were compared with the returns of S&P CNX NIFTY and S&P CNX 500 indices and the results were found to be negative and significant in all the three periods. This showed that momentum investing was effective. But when average returns were compared with return of CNX NIFTY JUNIOR, the results were found to be significant in period 1 but were insignificant for period 2 and period 3. So momentum investing was not effective in intermediate and long period. In the raw comparison in the year 2009, it was found that momentum investing was effective in period 1 (i.e. in short period) but was insignificant for period 2 and period 3 (i.e. in intermediate and long period). Average returns when compared with returns of S&P CNX NIFTY, CNX NIFTY JUNIOR and S&P CNX 500 indices, it was found that results were significant and average returns were negative for period 1 and period 2 but the returns were positive and insignificant at 5% level of significance for period 3. It showed that momentum investing worked for short and intermediate period but not for long period. When raw and relative comparison with returns of S&P CNX NIFTY, CNX NIFTY JUNIOR and S&P CNX 500 indices were done for the year 2010, it was found that average returns were negative for period 1 and positive for period 2 and period 3 but the results were insignificant for all the periods. Therefore, it indicated that momentum investing was ineffective for the year 2010.

In case of raw comparison of 52-week high stocks there was no clear trend for short period i.e. period 1 (30 days) but momentum investing worked from intermediate to long period. In case of relative performance of 52-week high stocks momentum investing was not effective in any period rather trend reversal was seen in some cases. In case of raw

comparison of 52-week low stocks momentum investing worked in 60% of the cases in case of period 1 (30 days). Momentum investing was not effective in case of period 2 (90 days) and period 3 (180 days) respectively in case of raw comparison. Momentum investing worked in short period in case of 52-week low stocks. In case of relative performance of 52-week low stocks momentum investing worked very well in short period (effective when compared with returns of all the indices). In intermediate period (i.e. period 2) momentum investing worked in most of the cases but trend reversal was seen in the year 2006. In long period (i.e. period 3) momentum investing worked in case of comparison with S&P CNX NIFTY and S&P CNX 500, but it was not very much effective in case of CNX NIFTY JUNIOR and trend reversal was seen to some extent.

Chapter V

SUMMARY

In this chapter a brief summary and conclusions of the study have been presented, so as to understand the implications of the findings. The focus of this study was on studying and analyzing the performance of momentum investing in 52-week high stocks and 52-week low stocks. Momentum investing is an investment strategy that aims to capitalize on existing trends in the market. To participate in momentum investing, a trader takes a long position in an asset, which has shown an upward trend in price, or short sell a security that has been in a downtrend. 52-week high/low means the highest and lowest price at which a stock has traded in the past 12 months, or 52 weeks. Long position means buying of a security such as a stock, commodity, or currency, with the expectation that the asset will rise in value. Similarly short position means the sale of a borrowed security, commodity, or currency with the expectation that the asset will fall in value.

The study had objective of studying and analyzing the performance of momentum investing in 52-week high stocks and 52-week low stocks. A list of 52-week high and 52-week low stocks was prepared repeatedly from “The Economic Times”. For every year, 50 stocks were studied and thus the total sample was of 250 stocks (i.e. 25 stocks every year were selected for creating portfolio from 52-week high stocks and similarly 25 stocks were selected from 52-week low stocks). Long portfolio was created for 52-week high stocks with and short portfolio was created for 52-week low stocks. The performance of each portfolio was analyzed after period 1 (i.e. short period of 30 days), period 2 (i.e. intermediate period of 90 days) and period 3 (i.e. long period of 180 days) from the date of selection of last stock in each set. Closing prices of stocks were obtained for the period 1, period 2 and period 3 respectively. Opening prices of these stocks for the day next to period 0 were taken. Closing prices were adjusted to stocks specific events or corporate actions like right issue, split, bonus. Both the raw performance and relative performance with S&P CNX NIFTY, CNX NIFTY JUNIOR and S& P CNX 500 was studied. For the purpose of analysis even closing prices of S&P CNX NIFTY, CNX NIFTY JUNIOR and S& P CNX 500 for period 0, period 1, period 2 and period 3 respectively were obtained. For the purpose of analysis average returns (i.e. mean) and standard deviations of the portfolio were calculated. One sample t-test was also applied to check the performance and effectiveness of momentum investing.

5.1 Main findings of the study

The main findings of the study are given below:

- In the year 2006 in case of 52-week high portfolio, momentum investing was effective (in case of raw comparison) for period 2 with significant higher return (average return = 17.55%). In the relative comparison result with S&P CNX NIFTY and S&P CNX 500 for Period 3 the stock return was found to be significantly lower.
- In the year 2006 in case of 52-week low portfolio, momentum investing was found to be effective only in period 3 with average return of -29.82% (in case of raw comparison). In case of relative comparison the results were significant in all the periods but in case of comparison of average return with return of CNX NIFTY JUNIOR for period 2, the result was significant but momentum investing worked in reverse direction i.e. reversals occurred.
- In the year 2007 in case of 52-week high portfolio, the results were significant only for period 3 (in case of raw comparison) with mean return of 23.15%.
- In the year 2007 in case of 52-week low portfolio, the results were insignificant only for period 3 (in case of raw comparison). In case of relative comparison results were significant at 5% level of significance except for period 1 when average return was compared with return of CNX NIFTY JUNIOR.
- In the year 2008 in case of 52-week high portfolio, results were significant (in case of raw comparison) for all the three periods but returns were negative. In case of relative comparison results were significant (but returns were negative and much less than the returns of all three indices) for period 1, period 2 and period 3 for all the indices and except for period 2 and period 3 of CNX NIFTY JUNIOR and period 3 of S&P CNX 500.
- In the year 2008 in case of 52-week low portfolio, the results were significant and momentum investing was effective except in case of relative comparison with CNX NIFTY JUNIOR's returns for period 2 and period 3.
- In the year 2009 in case of 52-week high portfolio, results were significant and average returns were positive (in case of raw comparison) for all the three periods. In case of relative comparison results were significant (except in case of S&P CNX NIFTY for period 1, CNX NIFTY JUNIOR and S&P CNX 500 both for period 2 and period 3) and the returns were positive but much less than indices return.
- In the year 2009 in case of 52-week low portfolio, the results were significant only for period 1 (in case of raw comparison). In case of relative comparison momentum investing was effective only for period 1 and period 2.

- In the year 2010 in case of 52-week high portfolio, results were insignificant at 5% level of significance for all the periods in both the cases (i.e. in both raw and relative comparison).
- In the year 2010 in case of 52-week low portfolio, the results insignificant at 5% level of significance for all the periods in both the cases (i.e. in both raw and relative comparison).

5.2 Conclusion

The study investigated the performance of momentum investing in 52-week high and 52-week low stocks. The findings of the result confirmed the presence of momentum investing to certain extent in Indian stock market. Momentum investing did not work in short period for 52-week high portfolio. Rather reversals occurred in the year 2008 and 2009, as the results were significant but returns much were less than indices returns in short period. Momentum investing was ineffective for intermediate period (except for year 2006, 2008 and 2009, in case of raw comparison). The results (in case of relative comparison) which were significant gave returns that were negative or less than indices returns for this period. Momentum investing in long period was effective only in case of raw comparison (except in the year 2010). For 52-week low portfolio, momentum investing was effective to great extent in short, intermediate and long period except in the year 2010. So momentum investing didn't work at all in the year 2010.

Thus, this study clearly, provided the evidence of presence of momentum investing in case of 52-week low portfolio but momentum investing was not effective in case of 52-week high portfolio.

5.3 Scope for the future study

The study can be further researched upon. It can be extended to explore a number of issues. Few suggestions in this regard have been listed below:

- The present study was conducted on selected stock indices. Further research can be carried on other stock indices.
- The study has been conducted on stocks for 5 year period only. It may be done for 10 years or more to get a clear picture about momentum investing.
- The area of study was Indian stock market. Further research can be done on other international markets.

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