MOMENTUM STRATEGY IN INDIAN STOCK FUTURES MARKET: A CASE OF BANKING SECTOR

K. Srinivasan (Corresponding Author)
ksrinivasan1979@gmail.com
D. Litt Scholar in Commerce
BERHAMPUR UNIVERSITY, BHANJA BIHAR
BERHAMPUR, ODISA – 760 007
Tel: +91-96860-59109; +91-99420-99696

Justin Babu
justin.babu@res.christuniversity.in
M. Phil Scholar in Management
CHRIST UNIVERSITY, BANGALORE,
KARNATAKA, INDIA - 560 029

RudraPrasannaMahapatra
rudra.mahapatra18@gmail.com

Professor in Commerce
BERHAMPUR UNIVERSITY, BHANJA BIHAR
BERHAMPUR, ODISA – 760 007

Abstract

The purpose of the article is to examine the momentum strategy can help the investors to lay down any systematic patterns in Indian stock futures market by considering 16 banks ranked on ascending order based on their average returns for the period from July 1, 2007 to June 30 2013 by using Multifactor Asset Pricing Model (Fama and French Model). The ranked securities are then used to form five equal portfolios. The portfolio P1, contains the bottom 20 per cent securities and is called "losers' portfolio", portfolio P5 contains the top 20 per cent securities and is termed as "winners' portfolio". The Fama-French model involves the use of three factors for explaining common stock returns: the market factor proposed by the CAPM, and factors relating to size and value. Our finding reveals that there is a continuation pattern in short term returns and therefore momentum strategy based on it provides significantly positive payoffs for all the three factors namely market, value and size effect. Apart from that, the market factor plays effective role followed by size effect and the value effect. Overall, the study indicate that the Multifactor Asset Pricing Model is better than one CAPM model, because the three-factor model captures much of the cross-sectional variations in stock returns that are missed by one-factor CAPM.

Keywords: Momentum, Banking, Stock Futures, Value Effect, Fama - French Model.
JEL Classification: C12, C22, E43, G11

INTRODUCTION

The growth of securities market is playing a significant role in the Indian stock market due to desire to buy stocks that performed well in the past. The evidence of return predictability constitutes a controversial aspect of the debate of market efficiency. Although the efficient market hypothesis generally assumes that investors cannot achieve abnormal returns, numerous empirical results indicate that in reality investors obtain abnormal returns because of market inefficiencies. Over an intermediate horizon, past winners on average continue to outperform past losers, concluding that there is momentum in stock prices Jegadeesh and Titman (1993). Momentum investment strategy utilizes market information and provides abnormal profits to investors based on several time intervals of different lengths. The length of time interval is usually unknown which acts as a gap to the study and does not fulfill the requirement of all investors. The habitually performed momentum effect over the transitional horizons is that winners continue to perform well and losers continue to perform poorly, which is the most studied stock market anomalies. The magnitude and persistence of momentum profits over a long term assists us to understand the momentum return pattern which will generate extraordinary profits to the investor. These momentum strategies may not subsist in low turnover stocks, but persist in high turnover stocks and grant with unusual profits Hameed and Yuanto (2001).

The objective of this study is to identify that the Momentum strategy in Indian banking sector plays a significant role for the investors and yield significantprofits by adopting a momentum strategy to invest in banking stocks. It applies fundamentally sound trading strategy on stocks in order to better understand how the availability of optionsimpacts the information flow. Financial analysts tend to revise their earnings forecasts gradually after announcements made by the firms. It analyzes how investors choose which of the past returns to use as a basis for their trading strategies and whether this choice depends on their investment horizon.Due to difference in the horizon it becomes difficult to identify the exact period on which investors choose to base their trading strategies and to investigate which period is unique. However, the other variables like the trading volume are used to prognosticate future stock prices which would predict approximately the strategy for investors with different time length and objectives. The momentum approach can be used to realize the strength of the individual stock in the market, to develop a more robust indicator that assist in reducing the instances of whipsaws. The structure of the article is as follows; we present a brief review of antecedent literature in the next section. Section 3 introduces the data and methodology.Section 4 describes brief discussion about Econometric methodological issues concerning to the in Indian futures market, while Section 5summarizes and concludes.

ANTECEDENT LITERATURE REVIEW

The present study investigates whether the momentum strategies and trading rules which are mostly seen in spot market are equally applicable to stock futures or

not. The Multifactor Asset pricing model (Fama and French Three Factor Model) has not been considered for the study of momentum and contrarian strategies for Future stock market in Indian context which captures much of the cross-sectional variations in stock returns that are missed by one-factor CAPM. Levis and Liodakis (2001) conducted a study which conveyed the various strategies along with investor expectations and behavior play a very important role in determining the returns of the investor, a study conducted in London stock exchange which provides evidence that positive earnings have a disproportionate and large impact on low priced stocks whereas, negative earnings relatively have a gentle effect on such stocks. Contrarian strategies in intraday limit hit stocks leading to superior returns relative to the benchmark index return, the study revealed by Lin and Swanson (2010) investigated the investment performance of firm characteristics and reaction of the investors on. Susana Yu (2012) exploredthemomentum strategies for stock based on the five different points and concludes that 52 week high momentum strategy provides the highest excess and risk adjusted returns. Li, Brooks and Miffre (2008) conducted a study on the trading costs impact on the profitability of momentum strategies, the study is with relation to United Kingdom market.Hill (2010) identified the various concepts of momentum and contrarian stock market indices with relation to their performance, risk and other characteristics.

Many studies have been conducted with reference to a particular economy to find out the existence of momentum effect, one such study was byAsness (2011) studied the momentum effect may not be a success everywhere and one such study conducted is an exception to it in case of Japan. Chern, Yu andTandon (2012) suggested that price and earnings momentum strategy is more successful with non-optioned stocks as it is associated with wider spread of earnings. Agathee (2012) assessed the presence of momentum effect on the stock exchange of Mauritius and its implication on investors.Khoroshilov (2010) studies the momentum trading strategies, which do not provide insight on the time horizon chosen by the investors. Jiun Lin Chen (2012), the study reveals that high turnover stocks have strong momentum, similarly when controlled by parameters like firm size, firms with more institutional ownership tend to show higher momentum specifically in small firms. Assogbavi, Giguere and Sedzro (2011) studied for Canadian stock market and observed the impact of trading volume on price momentum based on past data and suggest that investors who follow past trading volume while constructing their portfolio have more possibility of earning profit.Stork (2011) examines the relationship between a stock market's index returns and subsequent firm level momentum profits in the European stock market and observed the market with bullish or bearish in nature. Julia and Henker (2012) examined the profitability of momentum strategies in various sub periods and specific market to understand the relationship between strategy and overall market conditions, the Portfolios created one week prior to the end of the month generate economically significant returns in excess of month end strategy for small firms.Despite this plethora of research studies attempted in Indian markets, but only a handful of studies have come out to examine the casual nexus between futures

market variables at the national level Sehgal and Jain (2011) and Vipul (2012). The research work in Indian market is still remains like muddy water.

DATA AND METHODOLOGY

The dataset consists of selected banking stocks for near month contracts from July 2007 to June 2013. The sample companies account for a major portion of market capitalization of the banking sector as well as average trading volume for the Indian stock futures market. The adjusted share price series has been converted into return series using arithmetic returns. The implied yield on the month-end auction of 91-day Treasury bills has been used as a risk-free proxy. The data source for 91-day T-bills is the Report of Currency and Finance, an annual publication of the Reserve Bank of India and Bloomberg. It is observed that prior to 1993, 91-day T-bills were regulated in India to have a constant yield of 4.6% per annum, and banks were detrimental to hold them through government-regulated reserve requirements. This fixed yield was an underestimation of the nominal yields required by investors in this era of high inflation. Since 1993, the 91-day T-bill yield has been extensively determined on an auction basis. The accounting information has been obtained for the sample companies for the financial years 2007 to 2013. The financial year in India is from April of year t to March of calendar year t+1. The data source is CMIE Prowees which is a provider of financial statement related information in details for Indian companies.

The Portfolios Related Performance

In July 2007, the sample securities are ranked in an ascending order on the basis of their average returns. The ranked securities are then used to form four equal portfolios. While portfolio P1 contains the bottom 20 per cent securities and is called "losers' portfolio," portfolio P4 contains the top 20 per cent securities and is termed as "winners' portfolio." The equally-weighted monthly returns are then estimated for the four portfolios from July of year t to June of t+1, and the portfolios are reformed in July of t+1 based on new ranking.

The Size and Value Sorted Portfolios

The dataset from 2007 to 2013, were ranked on the basis of size (price time's shares). The median sample size is then used to split the sample companies into two groups: Small and Big. Book equity to market equity for year t is calculated by dividing book equity at the end of financial year t by market equity at the end of financial year t. It may be noted that the financial year closing in India is March for all companies every year. The sample stocks are broken into three BE/ME groups based on the breakpoints for the bottom Low, Medium and High of the ranked values of BE/ME for the sample stocks. We construct six portfolios (SL, SM, SH, BL, BM, BH) from the intersection of the two size and three BE/ME groups. The SL portfolio contains stocks that are in the small size group and also in the low BE/ME group while BH consists of big size stocks that also have high BE/ME ratios. Monthly equally- weighted returns on the six portfolios are calculated from the July of year t to June of year t+1, and the

portfolios are re-formed in July of year t+1. The returns are calculated from July of year t to ensure that book equity for year t-1.

The Factor Portfolios with defined Variables

The FF model involves the use of three factors for explaining common stock returns: the market factor proposed by CAPM and factors relating to size effect and value effect. The SMB (Small minus Big) is meant to represent the risk factor in returns related to size. SMB is the difference each month between the simple average of the returns of the three small stock portfolios and the average of the returns on the three big portfolios.The difference between the returns on small and big stock portfolios with about the same weighted-average BE/ME. Hence,the SMB is largely clear of BE/ME effects and explained below.

SMB = Small Minus Big
= Average Returns of Small Size minus Big Size
= 1/3 (SH + SM + SL) - 1/3 (BH + BM + BL)

The HML (High minus Low) is meant to represent the risk factor in returns related to value (that is book-to-market ratios). HML is the difference each month between the simple average of the returns on two high BE/ME portfolios (SH and BH) and the average returns on two low BE/ME portfolios (SL and BL); it is constructed to be relatively free of the size effect.

HML = High Minus Low
= Average Returns of High BE/ME Ratio minus Low BE/ME ratio
= 1/2 (SH + BH) – 1/2 (SL + BL)

The Portfolios Related to Long Term, Short Term and by Skipping One Year

The long-term past returns represent long-term investment strategy where the portfolio period is 36 months in the present case. Fama and French (1996), however, show that long-term returns may spuriously exhibit a continuation pattern of the momentum effect in short-term returns which more than offsets the reversal effect in long-term returns. Considering this aspect, skipping of one year between portfolio periods is created to avoid the impact of momentum effect, if any, in the short-term returns. The skipping one year portfolio is based on long-term past returns where the portfolio period is 36 months in the present case. But in these case we are Skipping one year between the portfolio periods. In short-term past returns represent short term investment strategy where the portfolio period is 12 months in the present case.

Model Testing Method

The appropriate testing of Fama and French Three Factors Model with set of use Standard Multivariate Regression Framework method. We estimate the multivariate regression system

$$R_t = \alpha + \beta_t(R_m - R_f) + \gamma_t(SMB) + \lambda_t(HML) + \varepsilon_t$$

Where, R_t denote the excess return of any asset t, R_f is the risk free rate, R_m the return to the market portfolio, SMB the return to the size factor portfolio, and HML the return to the value factor portfolio and ε_i is the residual term of any asset t.

RESULTS & DISCUSSION

Short Term Past Returns

The results of Table 1 explain the three factor time series regression for the Short Term Portfolio Returns Regressed on Returns for Size (SMB) and book to market equity (HML) Factors. As stated in the case of long term portfolio regression, if the three factor model describes expected returns, the regression intercepts should be close to 0.0. The Alpha intercepts is close to 0.0 and in ascending order from the losers' portfolio to winners' portfolio in all the cases of long term past returns of Panel A,B,C, D, E and F. The results of the three futures stock market factors namely market premium, SMB and HML capture strong common variation in futures stock returns. Firstly, the observations based on the coefficients of market factor, SMB and HML suggests that among the three factors, coefficient of SMB for the short term 2008 to 2012 are positive but for the year 2010 P1 and P2 is negative and in the year 2012 P1 is negative. On the Contrary Coefficients of HML has different results. For instance, in the year 2008 P2, P3 and P4 is negative, in the year 2009 all are positive, in the year 2010 P4 is negative, in the year 2011 all are negative, in the year 2012 P3 and P4 is positive and 2013 P1, P2 and P3 is negative. Secondly, the observations based on t-statistics of market factor, SMB and HML suggests that among the three factors, values of t-statistics for all market factors is at significance level. The t-statistics value for SMB suggests that for the year 2008 P2 and P3 , for the year 2009 P3, for the year 2010 none, for the year 2011 P2 and P3, for the year 2012 P4 and for the year 2013 P1 and P3 is at significance level. Values of t-statistics for SMB suggests that for the year 2008 none , for the year 2009 P1, for the year 2010 none, for the year 2011 P3, for the year 2012 P1 and P4 and for the year 2013 P1 is at significance level.The average of R^2 for the entire portfolio in the Panel A, B, C, D, E and F is 0.89, so small intercepts are distinguishable from zero. The F statistics in regression analysis gives a satisfactory result suggests significance forFama and French model. The Log Likelihood test values which measures the maximum likelihood value for beta parameters are also observed to be fair as they are higher and positive in all analysis.

Table 1
Short Term Portfolio Returns Regressed on Returns for Size (SMB) and book to Market Equity (HML) Factors

Panel A: Short Term Portfolio Returns for the year 2008

Variables	P1	P2	P3	P4
α	0.0286	0.0485	0.0695	0.0620
	$(2.350)^b$	$(4.066)^a$	$(5.903)^a$	$(3.968)^a$
λ_t	0.7033	-0.525	-0.7429	-0.305
	(1.627)	(-1.23)	(-1.77)	(-0.54)
β_t	0.7630	0.8195	0.9720	0.7126

	(6.755)^a	(7.395)^a	(8.890)^a	(4.910)^a
γ_t	0.6368	1.2882	1.5221	0.6913
	(1.105)	(2.279)^b	(2.729)^a	(0.933)
R^2	0.9092	0.9276	0.9276	0.8318
LL Test	26.107	26.338	26.499	23.098
F-Statistics	26.730	34.213	49.357	13.195

Note:a & b indicate statistically significant at 1 per cent and 5 per cent level, respectively.

Panel B: Short Term Portfolio Returns for the year 2009

Variables	P1	P2	P3	P4
α	0.0121	0.0283	0.0525	0.0486
	(0.851)	(1.878)	(2.681)^a	(2.575)^a
λ_t	2.9414	1.7484	1.1592	1.1403
	(3.139)^a	(1.764)	(0.901)	(0.919)
β_t	0.0704	-0.1743	0.0292	-0.033
	(0.425)	(-0.995)	(0.128)	(-0.15)
γ_t	0.3029	1.5041	3.0628	1.7365
	(0.320)	(1.504)	(2.360)^b	(1.387)
R^2 0.8500		0.8291	0.8297	0.7052
LL Test	23.092	22.422	19.297	19.729
F-Statistics	15.119	12.941	12.997	6.3810

Note:a & b indicate statistically significant at 1 per cent and 5 per cent level, respectively.

Panel C: Short Term Portfolio Returns for the year 2010

Variables	P1	P2	P3	P4
α	0.0504	0.0563	0.0746	0.0740
	(2.759)^a	(4.600)^a	(5.202)^a	(5.434)^a
λ_t	1.2125	1.1818	1.2663	-1.363
	(0.926)	(1.348)	(1.232)	(-1.39)
β_t	0.8222	0.8029	0.9098	0.8346
	(7.400)^a	(10.79)^a	(10.43)^a	(10.08)^a
γ_t	-0.061	-0.209	0.4149	1.0331
	(-0.037)	(-0.192)	(0.325)	(0.853)
R^2	0.9026	0.9502	0.9520	0.9272
LL Test	20.808	25.623	23.715	24.343
F-Statistics	24.728	50.966	52.969	33.989

Note:a & b indicate statistically significant at 1 per cent and 5 per cent level, respectively.

Panel D: Short Term Portfolio Returns for the year 2011

Variables	P1	P2	P3	P4
α	0.0527`	0.0467	0.0526	0.0767
	(3.490)^a	(4.153)^a	(3.372)^a	(4.369)^a
λ_t	-0.0054	-0.7172	-1.8083	-1.037
	(-0.007)	(-1.412)	(-2.567)^a	(-1.30)
β_t	0.9611	0.8893	0.9357	1.0087
	(7.709)^a	(9.571)^a	(7.261)^a	(6.957)^a
γ_t	0.8473	2.4379	1.7654	0.5028
	(1.139)	(4.398)^a	(2.296)^b	(0.581)

R^2	0.9483	0.9681	0.9074	0.9070
LL Test	20.985	24.513	20.588	19.172
F-Statistics	48.940	80.942	26.133	26.017

Note:a & b indicate statistically significant at 1 per cent and 5 per cent level, respectively.

Panel E: Short Term Portfolio Returns for the year 2012

Variables	P1	P2	P3	P4
α	0.0440`	0.0482	0.0404	0.0550
	$(5.521)^a$	$(5.100)^a$	$(5.063)^a$	$(6.116)^a$
λ_t	1.0667	0.2046	-0.4120	-2.002
	$(2.570)^a$	(0.416)	(-0.992)	$(4.27)^a$
β_t	1.0791	1.0888	0.3197	0.7649
	$(7.728)^a$	$(6.582)^a$	$(2.289)^b$	$(4.859)^a$
γ_t	-0.921	1.0116	0.8108	4.1705
	(-1.475)	(1.367)	(1.297)	$(5.922)^a$
R^2	0.9452	0.9421	0.6451	0.9375
LL Test	30.837	28.803	30.834	29.398
F-Statistics	46.018	43.398	4.8478	40.035

Note:a & b indicate statistically significant at 1 per cent and 5 per cent level, respectively.

Panel F: Short Term Portfolio Returns for the year 2013

Variables	P1	P2	P3	P4
α	0.0515`	0.0668	0.0777	0.0664
	$(7.242)^a$	$(3.428)^a$	$(8.522)^a$	$(7.013)^a$
λ_t	-2.180	-0.861	-0.9983	0.0684
	$(-4.501)^a$	(-0.648)	(-1.605)	(0.106)
β_t	0.7663	0.9581	1.0161	0.7542
	$(9.629)^a$	$(4.387)^a$	$(9.947)^a$	$(7.118)^a$
γ_t	2.5514	2.8796	2.3048	1.1844
	$(4.540)^a$	(1.867)	$(3.195)^a$	(1.583)
R^2	0.9257	0.8195	0.9457	0.9180
LL Test	34.133	22.020	31.137	30.698
F-Statistics	33.228	12.110	46.476	29.867

Note: a & b indicate statistically significant at 1 per cent and 5 per cent level, respectively.

Short-term Returns and Investment Strategies

In Table 2 shows the effect of Short-term Past Returns and the Investment Strategies to be made using the information evolved from this table. The portfolios P1, P2, P3 and P4 where in P1 is the portfolio with the lowest long-term past returns and P4 is the portfolio with the highest long-term past returns represent long-term i month/j month investment strategy where i is the portfolio formation period (12 months in the present case) and j is the portfolio holding period (12 months in our case). The mean returns for the four portfolios based on Short-term past returns are shown in Table 6 (Panel A). The Short-term returns do seem to follow a continuation pattern. The simple annualized mean returns for the losers' portfolio (P1) and the winners' portfolio (P4) are -0.4 per cent and 3.2 per cent respectively.

The Alpha is expected to be close to zero. However, a significantly positive alpha implies superior (inferior) performance. The market model results are shown in Table 6 (Panel B). The alpha differential between P4 (winners' portfolio) and P1, (losers' portfolio) for the year 2007 - 10, 2008 - 11, 2009 - 12 and 2010 -2013 is 0.04, 0.03, 0.02 and 0.02 respectively for given t values, which is statistically significant at 5 percent level, providing support for the momentum strategy in the short run. The findings for Short-term past returns are at par with those for the US market. The market model results (Panel B) support a momentum investment strategy for the Indian futures stock market involving Short-term returns. The momentum investment strategy based on short term past return provides moderately positive returns and the standard error being more or less than its coefficient to check whether it is probably different from 0 or not. Furthermore, it is observed that most of the coefficients are greater than standard error for β_1 thereby we obtain negative values which suggest that market factor as an independent variable is having a greater effect on the dependent variable with the exception only for the year 2009. Most of the SMB result also suggests the same as most values of coefficients are greater than standard error for β_2 thereby we obtain negative values which suggest that independent variables with few exceptions like for the year 2008 and one of the four portfolios for the year 2008, 2009, 2011 and 2012 that SMB as independent variable when alone have some effect on the dependent variable. The HML reports some alternate results as values of

coefficients are lesser than standard error for λ thereby we obtain positive values which suggest the HML with exceptionally negative.

The t-statistics in the table used to determine the significance of the correlation coefficient. In our case we calculate the percentage of t-statistics being more or less than its coefficient to check whether it is probably different from 0 or not. The Table suggests that all the values of coefficients are lesser than t-statistics for alpha thereby we obtain positive values which suggest that independent variables are having a genuine effect on the dependent variable. Further, it is observed that most of the coefficients are lesser than t-statistics for β_1 thereby we obtain positive values which suggest that market factor as an independent variable is having a genuine effect on the dependent variable except the values of P2 and P4 for the year 2009. Most of the SMB result also suggests the same with few exceptions like in P3 and P4 for the year 2009 and 2010, in P1 for the year 2012 and P2 for the year 2013 which is negative but we obtain positive values in all other case suggesting that SMB as independent variable when alone have an effect on the dependent variable. The HML reports some alternate results where most of the values are negative with some exception that has positive value suggests that coefficient of λ is greater than the t-statistics suggests HML as an independent variable is having a very minimum effect on the dependent variable.

Table: 2 Results for Portfolios Based on Short-term Past Returns

Panel A: Mean Returns on Portfolio Based on Short-term Past Returns

Portfolio	P1	P2	P3	P4
Mean Return	-0.004	0.008	0.018	0.032

Panel B: Market Model Results for Portfolio Based on Short-term Past Returns

Year	Portfolio	α	SE-α	t-α	β1	SE-β1	t-β1	β2	SE-β2	t-β2	β3	SE-β3	t-β3	R^2
2008	P1	0.02	-0.01	2.32	0.76	-0.65	5.99	0.63	-0.06	0.46	0.70	-0.27	0.92	0.90
	P2	0.04	-0.03	4.01	0.81	-0.70	6.57	1.28	-0.72	0.99	-0.52	0.94	-0.71	0.92
	P3	0.06	-0.05	5.83	0.97	-0.86	7.91	1.52	-0.96	1.20	-0.74	1.16	-1.03	0.94
	P4	0.06	-0.04	3.90	0.71	-0.56	4.19	0.69	0.04	0.24	-0.30	0.86	-0.24	0.83
2009	P1	0.01	.002	0.83	0.07	0.09	0.35	0.30	0.64	0.01	2.94	-2.00	0.19	0.85
	P2	0.02	-0.01	1.85	-0.17	0.34	-0.82	1.50	-0.50	0.00	1.74	-0.75	0.01	0.82
	P3	0.05	-0.03	2.62	0.02	0.19	0.09	3.06	-1.76	-0.70	1.15	0.12	-0.25	0.82
	P4	0.04	-0.02	2.52	-0.03	0.25	-0.11	1.73	-0.48	-0.34	1.14	0.09	-0.22	0.70
2010	P1	0.05	-0.03	2.70	0.82	-0.71	6.57	-0.06	1.68	0.02	1.21	0.09	-0.28	0.90
	P2	0.05	-0.04	4.54	0.80	-0.72	9.99	-0.20	1.29	0.01	1.18	-0.30	0.16	0.95
	P3	0.07	-0.06	5.12	0.90	-0.82	9.52	0.41	0.85	-0.08	1.26	-0.23	-0.03	0.95
	P4	0.07	-0.06	5.36	0.83	-0.75	9.25	1.03	0.17	-0.17	-1.36	2.33	-0.03	0.92
2011	P1	0.05	-0.03	3.43	0.96	-0.83	6.74	0.84	-0.10	0.29	-0.01	0.68	-0.01	0.94
	P2	0.04	-0.03	4.10	0.88	-0.79	8.68	2.43	-1.88	1.96	-0.71	1.22	-0.69	0.96
	P3	0.05	-0.03	3.31	0.93	-0.80	6.32	1.76	-0.99	0.53	-1.80	2.51	-0.75	0.90
	P4	0.07	-0.05	4.29	1.00	-0.86	5.94	0.50	0.36	0.07	-1.30	1.83	-0.27	0.90
2012	P1	0.04	-0.03	5.47	1.07	-0.93	6.64	-0.92	1.54	-0.55	1.06	-0.65	1.50	0.94

	P2	0.04	-0.03	5.05	1.08	-0.92	5.49	1.01	-0.27
		0.35	0.20	0.28	0.21	0.94			
	P3	0.04	-0.03	5.02	0.31	-0.18	1.96	0.81	-0.18
		0.48	-0.41	0.82	-0.58	0.64			
	P4	0.05	-0.04	6.06	0.76	-0.60	4.09	4.17	-3.46
		1.75	-2.00	2.47	-2.27	0.93			
2013	P1	0.05	-0.04	7.19	0.76	-0.68	8.86	2.55	-1.98
		1.98	-2.18	2.66	-2.32	0.92			
	P2	0.06	-0.04	3.36	0.95	-0.73	3.42	2.87	-1.33
		-1.01	-0.86	2.19	0.21	0.81			
	P3	0.07	-0.06	8.44	1.01	-0.91	8.93	2.30	-1.58
		0.89	-0.99	1.62	-0.60	0.94			
	P4	0.06	-0.05	6.94	0.75	-0.64	6.36	1.18	-0.43
		0.39	0.06	0.57	0.03	0.91			

CONCLUSION

The findings shall be of special interest to mutual fund managers, investment companies, and practitioners who are persistently endeavoring to device strategies that generate extra-normal returns. For instance, the fund managers and investment analysts can form portfolios based on short-term past returns and then invest in the winners' portfolio. They can rebalance the portfolio at the end of each year. The resultant investment strategy would provide a return that is higher than a passive strategy that could be formed by combining the market index with the risk free proxy to construct a portfolio, for an equivalent risk level. Such a strategy will not require any special stock selection skills or market timing abilities. Instead, a simple trading rule based on short-term pattern in stock returns shall result in superior performance. Our findings suggest that the momentum strategy does exist in the Indian futures market particularly in the banking sector and therefore one should consider these strategies for their investment decision. The empirical findings suggest a weak reversal pattern in long-term returns and a strong continuation pattern in short-term returns for the Indian market. The results are in conformity with those for the developed markets such as the US.

REFERENCE:

Agathee, U. S. (2012). Momentum Strategies on the Stock Exchange of Mauritius. *African Journal of Economic and Management Studies*, 227-239.

Anchor Y Lin and Peggy E Swanson (2010). Contrarian Strategies and Investor Overreaction Under Price Limits. *Journal of Economics and Finance*, 430-454.

Asness, C. (2011). Momentum in Japan: The Exception that Proves the Rule. *Journal of Portfolio Management*, 67-76.

Assogbavi. T, Giguere. M and Sedzro.K (2011). The Impact of Trading Volume on Portfolio's Effective Time Formation/Holding Periods Based on Momentum Investment Strategies. *The International Business & Economics Research Journal*, 1-12.

Chan, L.K.C., Jegadeesh, N., Lakonishok, J., (1996). Momentum Strategies.*The Journal of Finance*, Vol 51, 1681–1713.

Chen, J. L. (2012). Stock Liquidity and Price Momentum. Journal of Accounting, *Finance & Management Strategy*, 15-26.

Chern.K.Y, Susana Yu.S and Tandon.K (2012).Momentum Strategies on Optioned and Non-Optioned Stocks.*The Journal of American Business Review*, 267-273.

Fama, E. F., and K. R. French (1993).Common Risk Factors in the Returns on Stocks and Bonds.*Journal of Financial Economics*, Vol 33, 3-56.

Fama, E F., and K R. French.(1996). Multifactor Explanations of Asset Pricing Anomalies.*Journal of Finance*, Vol 51, 55-84.

Hill, J. E. (2010). Momentum and Contrarian Stock - Market Indices.*Journal of Applied Finance,* 78-94.

Hong, H., Stein, J., (1999). A Unified theory of Underreaction, Momentum trading and Overreaction in Asset Markets.*Journal of Finance*, Vol 54, 2143–2184.

Jegadeesh, N., Titman, S., (1993).Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency.*Journal of Finance*, Vol 48,65–91.

Julia Henker, T. H. (2012). The Vanishing Abnormal Returns of Momentum Strategies and 'Front-Running' Momentum Strategies. *Journal of Accounting and Finance*, 86-100.

Khoroshilov, Y. (2010). Momentum Trading Strategy and Investment Horizon: An Experimental Study. *Journal of Economic Studies*, 4-12.

Liodakis, M. L. (2001). Contrarian Strategies and Investor Expectations: The UK Evidence. *Financial Analysts Journal*, 43-56.

Sehgal and Jain (2011). Short-Term Momentum Patterns in Stock and Sectoral Returns: Evidence from India. *Journal of Advances in Management Research*, 99-122.

Vipul. (2012). Return Percentile: A Momentum-Contrarian approach to Technical Analysis. *The IUP Journal of Applied Finance*, 60-67.

Wang, C., Yu, M., (2004).Trading Activity and Price Reversals in Futures Markets.*Journal of Banking and Finance*, Vol28, 1337–1361.

Xiafei Li, Chris Brooks and Joelle Miffre (2008).Low-Cost Momentum Strategies.*Journal of Asset Management*, 366-379.