

Momentum Effect: Empirical Evidence from Karachi Stock Exchange

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1. INTRODUCTION

Capital market efficiency and the prediction of future stock prices are the most thought-provoking and ferociously debated areas in finance. The followers of traditional financial theory strongly believe that the markets are efficient in pricing the financial instruments. This view became popular after Fama's work on the Efficient Market Hypothesis. But before 1990s, wide-ranging financial literature documented that stock prices, to some extent, are predictable. Many psychologists, economist and the journalists are of the view that general tendency of individuals is to overreact to the information. De Bondt and Thaler (1985) studies this view of experimental psychology that whether such behaviour matters at the market level or not. They found out that stock prices will overreact to information, and suggested that contrarian strategies buy the past losers and sell the past winners, earn abnormal returns. They extended the holding period from 3 to 5 years and provide the evidence of long term returns reversal. Jegadeesh (1990) and Lehmann (1990) supported the evidence of return reversal in short term, i.e. from one week to one month. They suggested that the contrarian strategies having holding period of one week to one month earned the significant abnormal return. Lo and Mac Kinalay (1990) objected on the ground that a major portion of this abnormal return, reported by Jegadeesh (1990) and Lehmann (1990), is due to the delayed reaction of stock prices to common factors rather than to overreaction. Some other researchers pointed out some other reasons of this abnormal stock returns i.e. short-term pressure on stock prices and absence of liquidity in the market rather than overreaction.

Despite of this literature on contrarian strategies, the early literature on market efficiency emphasised on the relative strength strategy, buy past winner and sell past loser. Levy (1967) worked on relative strength strategy and reported that the stock with its current price substantially higher than average prices of last twenty seven weeks will earn abnormal returns. As concern to the practice, a large number of practitioners still apply relative strength rule for stock trading. Grinblat (1989) and Titman (1991) analysed the sample of mutual fund and found that mutual funds have a tendency to buy the stock that has shown an increase in its price over last quarter. Copeland and Mayers

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(1982) and Stikle (1985) also suggested the abnormal returns realised by the relative strength strategy. Jegadeesh and Titman (1993) analysed this contradiction between practitioners and academic literature and pointed out some possibilities. One possibility is that the abnormal returns earned by practitioners are fake or un-correlated to their tendency towards the buying past winners. Second possibility is the difference of time period used in both analyses. Contrarian strategies used the trading strategies either based on very long holding period, 3 to 5 years, or very short period, one week to one month. However, time period used in the case of abnormal return realised by practitioners is three months to twelve months. Then Jegadeesh and Titman (1993) documented this strategy and found momentum effect in American Financial Markets by considering 16 medium temporal horizons. As this was a very serious question on the market efficiency hypothesis. Some researchers objected this empirical statement of momentum effect and refer it to snooping data. Schwert (2002) reported the momentum effect as temporary phenomena and it should disappear as it becomes visible to the investor's community.

As I tested the momentum effect on the stock returns of companies listed on Karachi Stock Exchange, cultural and institutional differences were expected to affect the results as compared to the western countries. Hofstede (1999) analysed that Asians tend to score low in "individualism" test as compared to the western countries test takers. Individualism hasn't any direct relationship with the momentum effect but it relates to "overconfidence" and "conservatism". Danial and Subrahmanyam (1998) and Barbris, Shlifer, and Vishny (1998) suggested that the "overconfidence" and "conservatism" are the determinants of relative strength/momentum strategies.

In 2000, Chui, Titman, and Wei were the first to analyse the momentum effect on the Eight Asian Stock market's return from 1976 to 2000. They constructed 6-6 months value weighted strategy, in which winners and losers stocks were ranked as top and bottom 30 percent respectively. They reported very low momentum effect in Asian markets (Sig only in Hong Kong), except Indonesia and Korea. I expected no momentum effect or very low, if and statistically insignificant.

2. LITERATURE REVIEW

Jegadeesh and Titman (1993) conducted the study by analysing the AMEX and NYSE stocks from 1965 to 1989. They formed 32 strategies with the formation and holding period from 3 months to 12 months (with and without one week gap in formation and holding periods). They reported the positive returns against each 32 zero-cost momentum portfolio. All of these returns were statistically significant except 3/3 months strategy (the strategy with 3 months formation period as well as 3 months holding period). They reported the momentum effect in American Stock's markets with average monthly return of 1 percent. Further, they reported that these average returns of these portfolios are not due to their idiosyncratic risk or delayed reaction of stock prices to common factors. They reported average monthly returns of 0.095 (t-statistics .0307) in 6/6 strategy.

Conrad and Kaul (1998) changed the time period and investigated the momentum effect in American Stock's markets from 1962 to 1989. Further, they decreased the strategies from 3-12 months to 1-36 weeks (where one week is the formation period and 36 weeks were the holding period). They reported the positive returns of zero-cost

momentum portfolio with statistical significance, except 1-1 week. So, they confirmed the momentum effect documented by Jegadeesh and Titman (1993).

Chan, Jegadeesh, and Lakonishok (1996) used the primarily listed stock on the NYSE, NASDAQ, and AMEX but they used only 6-month/6-months strategy, the most representative strategy. They reported the zero-cost momentum return of 0.088 over the first two quarters and the return was not less than 0.154 over the first four quarters. But, these returns were -0.06 and 0.012 respectively in the year two and three, following the date of formation. These results are consistent with the above discussion by JT (1993) on the contradiction between practitioners and the proponents of contrarian strategy.

Lee and Swaminathan (2000) objected on the study conducted by Chan, Jegadeesh, and Lakonishok (1996, 1999) keeping in view the Fama and French three factor model. They were of the view that NASDAQ should be excluded from the analysis because NASDAQ firm are smaller and it is more difficult to involve in the trading of relative strength strategies. Then, they conducted the study on the data from 1965 to 1995 using all listed firms of NYSE and AMEX. They constructed 16 different strategies, i.e. 3-3, 3-6, 3-9, 3-12; 6-3, 6-6, 6-9, 6-12; 9-3, 9-6, 9-9, 9-12; 12-3, 12-6, 12-9, 12-12; and reported positive and statistically significant returns for all of the constructed strategies. Korajczyk and Sadka (2004) also reported the momentum effect after incorporating the risk and transaction cost.

Rouwenhorst objected that all of the studies to support the momentum effect were conducted on the same data set and this effect may be due to the snoopy data. Then Rouwenhorst (1998) decided to conduct the study in an international context. He selected 2190 European companies and used the sample data ranging 1980-1995. He constructed 32 different strategies; 16 strategies without one month gap between formation period and holding period and 16 strategies with one month gap between formation period and holding period, and reported the positive and statistically significant returns from momentum portfolio. One interesting aspect of their study was that the worst and best performing portfolios were same as reported by Jegadeesh and Titman (1993). Results of remaining 16 strategies, with a gap of one month after formation period were also same as reported by the Jegadeesh and Titman (1993) in their original study on American Stock Market's returns. Further, he extended the analysis on individual countries and found a strong momentum effect in Holland, Denmark, Belgium and Spain. At the end, he also analysed the momentum effect even after incorporating the firm's size. He also reported the reversal in second year as by JT (1993). De Bondt and Weber (1998) reported the momentum effect in Frankfurt Stock Exchange (FSE) with the sample from 1961 to 1991, but they used a different methodology. They supported momentum effect by reporting the cumulative excess returns of all zero-cost momentum portfolios, where the excess return is the difference between zero-cost momentum portfolio and the index return. Dijk and Huibers (2002) examined 15 European countries by taking the sample from 1987 to 1999. They changed the formation and holding periods; formation period was fixed by 12 months and holding period was of 1, 3, 6 and 12 months. They observed the momentum in all of the constructed strategies by reporting the positive and statistically significant results of all zero-cost momentum portfolios. Risk adjusted returns, reported by Dijk and Huibers (2002) were also positive. Rouwenhorst (1999) was against the first to investigate the

emerging markets with respect to momentum effect. He examined the sample of 1705 companies from 20 emerging countries from 1982 to 1997. He reported the momentum effect in 17 out of 20 countries with a slightly change in methodology, i.e. ranking the stock portfolios; top 30 percent, middle 40 percent, and bottom 30 percent. The momentum was lower in emerging markets as compared to developed markets [Rouwenhorst (1999); Jigadeesh and Titmann (1993)].

Momentum effect was studied in American Stock Market's returns, European Stock Market's returns and in the Emerging Stock Market's returns, as discussed in above mentioned literature. Then, in 2000, Chui, Titman, and Wei were the first to analyse the momentum effect on the Eight Asian Stock market's return from 1976 to 2000. They constructed 6-6 months value weighted strategy, in which winners and losers stocks were ranked as top and bottom 30 percent respectively. They reported very low momentum effect in Asian markets (Sig only in Hong Kong), except Indonesia and Korea. However, a strong reversal effect was observed in the Asian Stock Market's returns. Griffin, Ji, and Martin (2003) analysed the worldwide momentum effect by constructing 6-6 strategy and collected the data from following regions: Africa, Asia, Europe, and the United States. They found momentum effect in almost all of the studied countries of the world except the Asian countries having the weakest momentum effect. Faten (2011) studies almost 100 companies listed on the Tunisian stock markets. He constructed 16 relative strength strategies and reported the average monthly return of 0.0243 in zero-cost momentum portfolio. Further he reported the effect of size and market factors on momentum profits.

As Asian markets were studied with only one strategy and the sample was upto 2000 [Chui, Titman, and Wei (2000)], I intended to focus on Karachi Stock Exchange. So, I will take a sample from Karachi Stock Exchange from 1999 to 2008. Rest of the paper is as follows; Section 3 represents the methodology, Section 4 presents the data analysis and discussion, and Section 5 will show the conclusion of the study.

3. METHODOLOGY

In the first section, I constructed the momentum strategies and for the selection of momentum strategies, I analysed the following techniques;

- (1) Weighted Relative Strength Strategy versus Decile,
- (2) Full versus Partial Rebalancing,
- (3) Equally-Weighted versus Value-Weighted Portfolio.

Further, I will discuss about the formation and holding periods, and the methods of calculating average monthly returns in all of the constructed strategies for our analysis, in last part of this section.

3.1. Momentum Effect Strategies Construction

To test the momentum effect in Pakistani Stock Market's returns, 16 momentum strategies (3-3, 3-6, 3-9, 3-12; 6-3, 6-6, 6-9, 6-12; 9-3, 9-6, 9-9, 9-12; 12-3, 12-6, 12-9, 12-12) were constructed with some special following considerations;

3.1.1. Weighted Relative Strength Strategy versus Decile

For ranking stock in each portfolio (winner’s portfolio, losers’ portfolio and momentum portfolio), literature suggested two methods i.e. WRSS and Decile Strategy. In WRSS, stock is ranked by comparing its performance with average sample performance. Momentum Portfolio is constructed by;

Momentum Portfolio
<ul style="list-style-type: none"> • Long position in the stock that has performed above sample average; • Short position in the stock that has performed below sample average;

Weight of asset *i* is calculated as;

$$W_i = \pm \frac{1}{N} (R_i - AR)$$

Where: AR = the average (arithmetic mean) of returns of all of the sample,
 R_{*i*} = Return of the evaluated asset,
 N = the number of stock in entire sample.

While in Decile strategy, stocks are ranked on the basis of their historical performance as follows;

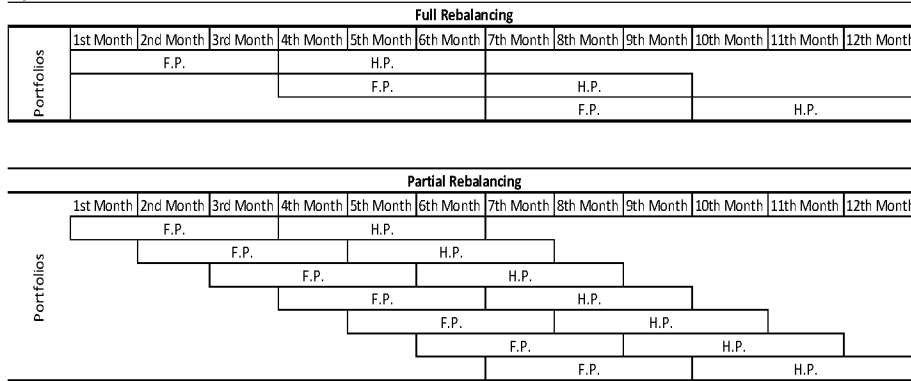
Momentum Portfolio
<ul style="list-style-type: none"> • Long position in top portfolio (in descending order of all portfolios); • Short position in bottom portfolio (in descending order of all portfolios);

I selected the “Decile Strategy” due to one severe problem in WRSS, i.e. weighting scheme.

3.1.2. Full versus Partial Rebalancing

Second important consideration is to decide about rebalancing technique. In full rebalancing, each portfolio is reshaped at end of each formation/period, while partial rebalancing technique rebalances each portfolio at beginning of each months as follows;

Figure #1



F.P. (For Formation/Period) and H. P. (For Holding/Period)

We used full rebalancing method because this method is more viable to private investor because he does not follow the market on monthly basis.

3.1.3. Equally-Weighted versus Value-Weighted Portfolio

The Next important consideration is regarding the weights assigned to each portfolio. In equally-weighted method, portfolios are constructed irrespective of the market capitalisation. On the other hand, portfolios are weighted on the basis of market capitalisation in value-weighted portfolio. By using the value-weighted portfolio method, it becomes very difficult to conclude that either effect is in entire sample or only in stock having large capitalisation. So, we selected equally-weighted portfolio for our study.

3.2. Calculating the Average Monthly Returns

On the basis of these considerations, we collected monthly stock prices of the selected companies listed on Karachi Stock Exchange. We calculated the stock returns from stock prices by using continuous compounding returns;

$$R_t = 100\% \times \ln\left(\frac{P_t}{P_{t-1}}\right)$$

We arranged the selected companies in descending order and selected top 10 and bottom 10 companies for calculating the average monthly returns. First portfolio with the stock having highest returns and last portfolio with the lowest stock return are known as Winner's stock and loser's stock in the literature as well as in our study. Next step is to construct the momentum portfolio; that is constructed on the basis of long position in winner's stock portfolio and short position in the loser's stock portfolio. Momentum effect is evaluated by calculating the average monthly returns in holding period (period starting immediately after formation period). The following 16 strategies were constructed;

Fig.2. Strategy-wise Formation and Holding Periods

Momentum Strategy	Respective Formation and Holding Periods
Strategy 1 (3/3)	Where: Formation Period=3 months and Holding Period=3 months
Strategy 2 (3/6)	Where: Formation Period=3 months and Holding Period=6 months
Strategy 3 (3/9)	Where: Formation Period=3 months and Holding Period=9 months
Strategy 4 (3/12)	Where: Formation Period=3 months and Holding Period=12 months
Strategy 5 (6/3)	Where: Formation Period=6 months and Holding Period=3 months
Strategy 6 (6/6)	Where: Formation Period=6 months and Holding Period=6 months
Strategy 7 (6/9)	Where: Formation Period=6 months and Holding Period=9 months
Strategy 8 (6/12)	Where: Formation Period=6 months and Holding Period=12 months
Strategy 9 (9/3)	Where: Formation Period=9 months and Holding Period=3 months
Strategy 10 (9/6)	Where: Formation Period=9 months and Holding Period=6 months
Strategy 11 (9/9)	Where: Formation Period=9 months and Holding Period=9 months
Strategy 12 (9/12)	Where: Formation Period=9 months and Holding Period=12 months
Strategy 13 (12/3)	Where: Formation Period=12 months and Holding Period=3 months
Strategy 14 (12/6)	Where: Formation Period=12 months and Holding Period=6 months
Strategy 15 (12/9)	Where: Formation Period=12 months and Holding Period=9 months
Strategy 16 (12/12)	Where: Formation Period=12 months and Holding Period=12 months

3.3. Other Issues in Strategies Construction

In order to find the momentum effect in Pakistani markets, we collected the monthly stock prices of 300 companies listed on Karachi Stock Exchange from Jan 1999 to December 2007. We found negative returns of zero-cost portfolio in 15 out of 16 strategies. There was a decreasing trend in momentum losses reported from zero-cost portfolio. This was a good indicator towards a very small momentum effect as reported by Griffin, Ji, and Martin (2003). They analysed the worldwide momentum effect by constructing 6-6 strategy and collected the data from following regions: Africa, Asia, Europe, and the United States. They found momentum effect in almost all of the studied countries of the world except the Asian countries having the weakest momentum effect; aligned with Chui, Titman, and Wei (2000).

By evaluating the decreasing trend and reported results of Griffin, Ji, and Martin (2003), the study extended to “Long Period Analysis”. Finally we subdivided the sample in two groups to check the momentum effect. We changed the sample after finding small evidence of momentum. Another sample of monthly stock prices of 50 companies listed on Karachi Stock Exchange was taken and analysed the effect by taking eight most representative strategies, i.e. 6/3, 6/6, 6/9, 6/12 and 12/3, 12/6, 12/9, and 12/12.

3.4. Robustness Test

The momentum effect may be associated with the specific type of stocks on the basis of market capitalisation, book to market value and trading volume. We ranked the stock with respect to market capitalisation, book to market value and trading volume in case of strong momentum effect reported in Karachi Stock Exchange.

3.5. Risk Identification

The risk and return are associated with each other and we should identify the risk factors if momentum strategies reported the reasonable abnormal profit by having long position in past winners and short position in past losers in Karachi Stock Exchange. We have used CAPM and Fama and French 3 factor model to identify these risk factors.

4. DATA ANALYSIS AND DISCUSSION

This section presents the results of all 16 momentum strategies calculated from the monthly stock prices of 300 companies from 1999 to 2007. Strategies were constructed on the basis of equal weights and full re-balancing strategies. Stocks were ranked on the basis of average monthly returns of formation period and then ten companies from the top and ten from the bottom were selected as winners and losers stocks respectively. Table 1 presents the results of the momentum strategies; where no momentum effect was supported except 12/9 strategy that allowed an average monthly return of 1.25 percent, statistically significant but I can observe a decreasing trend in losses reported in zero-cost momentum portfolios (Figure 3).

Table 1
Momentum Strategies

		Holding Period				
		J/K	3	6	9	12
Formation Period	3	Returns-Winner's Stock	-0.1020	-0.0025	0.0004	0.0027
			*-0.8977	*-0.3818	*0.07809	*0.5547
		Returns-Loser's Stock	0.5861	0.0409	0.0297	0.0253
			3.9824	4.5245	5.1255	5.3666
	6	Returns-Momentum Portfolio	-0.6881	-0.0435	-0.0293	-0.0226
			-4.9578	-5.3333	-4.5974	-4.1337
		Returns-Winner's Stock	-0.0097	-0.0049	0.0007	0.0008
			*-1.0123	*-0.8268	*0.1379	*0.1689
	9	Returns-Loser's Stock	0.0540	0.0347	0.0201	0.0249
			3.4178	3.8584	4.0892	5.3828
		Returns-Momentum Portfolio	-0.0637	-0.0396	-0.0196	-0.0234
			-4.2193	-4.7817	-3.8900	-4.7719
12	Returns-Winner's Stock	-0.0121	-0.0127	-0.0094	0.0214	
		*-1.7845	*-1.6698	*-1.0758	2.785444	
	Returns-Loser's Stock	0.0838	-0.0073	0.0248	0.0399	
		4.6154	*-0.7221	2.1135	4.1553	
	Returns-Momentum Portfolio	-0.0959	-0.0054	-0.0342	-0.0184	
		-4.8441	*-0.4212	-3.7094	-2.0648	
	Returns-Winner's Stock	0.0140	0.0068	0.0046	-0.0080	
		1.1503	*0.6581	*0.6308	*-1.0083	
	Returns-Loser's Stock	0.0862	0.0209	-0.0079	0.0125	
		4.6791	*1.81026	*-1.4481	*1.4741	
	Returns-Momentum Portfolio	-0.0722	-0.0141	0.0125	-0.0205	
		-3.6203	-1.9947	*1.1687	-2.8684	

Fig. 3. Momentum Strategies

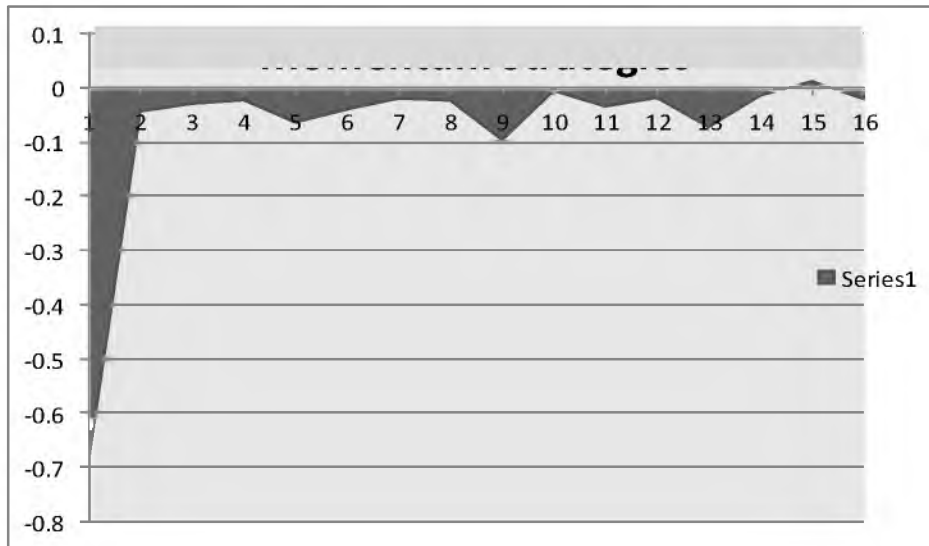


Figure 3 documented a decreasing trend except one 3/3 strategy. Very short formation with very short holding period strategies have documented abnormal results in momentum literature, i.e. one of the possibilities explained by Jegadeesh and Titman (1993) for the contrarian strategies suggested and supported by De Bondt and Thaler (1985).

This was a strong indicator towards a very slight momentum effect as reported by Griffin, Ji, and Martin (2003). They analysed the worldwide momentum effect by constructing 6-6 strategy and collected the data from following regions: Africa, Asia, Europe, and the United States. They found momentum effect in almost all of the studied countries of the world except the Asian countries having the weakest momentum effect; aligned with Chui, Titman, and Wei (2000). So, I extended our analysis to “Long Period Holding Analysis” after observing this trend where returns tendency toward profits with long holding period.

4.1. Long Holding Period Analysis

By considering contrarian strategies [De Bondt and Thaler (1985) and Chui, Titman, and Wei (2000)], I extended our analysis by increasing the holding period by 24, 36 and 48 months with the formation period of 6 and 12 months as momentum was reported only in 1 out of 16 momentum strategies, i.e. 12/9. Table 2 presents the results of long in winners' stock, short in loser's stock and zero cost portfolio returns respectively.

Table 2
Momentum Strategies

		Holding Period			
		J/K	24	36	48
Formation Period	6	Returns-Winner's Stock	0.0037	0.0091	0.0120
		Returns-Loser's Stock	*1.1911	3.5645	8.7187
		Returns-Momentum Portfolio	0.0186	0.0156	0.0199
	12	Returns-Winner's Stock	5.1525	3.9694	9.6452
		Returns-Loser's Stock	-0.0149	-0.0065	-0.0079
		Returns-Momentum Portfolio	-4.6374	*-1.4275	-7.0539
		Returns-Winner's Stock	0.0054	0.0082	0.0112
		Returns-Loser's Stock	2.0605	3.8387	9.5768
		Returns-Momentum Portfolio	0.0178	0.0213	0.0258
			4.0147	5.3252	11.2489
			-0.0124	-0.0131	-0.0146
			-3.4328	-4.6501	-6.8034

Again all of the zero-cost momentum portfolio returns were negative and statistically insignificant (except one where negative returns were statistically significant in formation period of 6 months with holding period of 36 months). By increasing holding period there is decreasing trend in losses observed in zero-cost momentum portfolios, so it is serviceable to compare the returns in short term and long term holding periods.

4.2. Short Term vs. Long-term Holding Period Analysis

I analysed zero-cost portfolio return differences between short term and long term horizon among the following strategies;

- (1) 6/24 vs 6/3,
- (2) 6/36 vs 6/6,
- (3) 6/48 vs 6/9,
- (4) 12/24 vs 12/3,
- (5) 12/36 vs 12/6,
- (6) 12/48 vs 12/9,

Table 3 shows the positive differences in all of the 6 selected strategies, which shows decreasing trends in losses as I increased the holding period but yet no evidence of momentum effect has been reported from Karachi Stock Exchange.

Table 3

<i>Short-term vs. Long-term Holding Period Analysis</i>					
		Holding Period			
		J/K	24-3	36-6	48-9
Formation Period	6	Returns-Momentum Portfolio	0.0488	0.0331	0.0117
	12	Returns-Momentum Portfolio	0.0598	0.0010	-0.0271

4.3. Sub Sample Period Analysis

During our analysis of stock prices of 300 companies listed on Karachi Stock Exchange, I have yet analysed momentum effect in only 1 out 16 strategies. This may be due to long sample period and literature suggests to sub divide the sample period in such a scenario to properly evaluate the momentum effect. So, I sub divided the sample period into two group based on the time horizon. I analysed the data from Jan 1999 to June 2003 in the 1st sub sample period and then from July 2003 to Dec 2007 in 2nd sub sample period as follows;

Returns of zero-cost portfolios are negative in all of 8 constructed strategies from -0.03159 to -1.03755 (Table 4). So, there is no evidence of momentum from the period of 1999 to 2003 in Karachi Stock Exchange.

Table 4

Momentum Strategies (Sub Period Analysis, 1999-2003)

		Holding Period				
		J/K	3	6	9	12
Formation Period	3	Returns-Winner's Stock	-0.1267	-0.0019	-0.0024	-0.0001
			*-0.6963	*-0.1822	*-0.2879	*-0.0097
		Returns-Loser's Stock	0.9108	0.0606	0.0439	0.0376
	9	Returns-Momentum Portfolio	4.0703	4.4581	5.2492	6.6525
			-1.0376	-0.0624	-0.0462	-0.0376
		Returns-Winner's Stock	-4.3984	-4.6230	-4.2629	-4.1535
Formation Period	3	Returns-Loser's Stock	-0.0053	-0.0018	0.0021	0.0006
			*-0.4069	*-0.2216	*0.2644	*0.0920
		Returns-Momentum Portfolio	0.0810	0.0543	0.0331	0.0398
	9		3.3449	4.4518	5.9182	7.1006
		Returns-Winner's Stock	-0.0863	-0.0561	-0.0316	-0.0392
		Returns-Loser's Stock	-3.3057	-4.6817	-4.0579	-4.9265

Table 5 also shows the negative returns of zero-cost portfolios in all of the 8 constructed strategies ranging from -0.00646 to -0.31532. Consistency in decreasing trend is obvious from both sub sample periods (Tables 4 and 5).

Table 5

Momentum Strategies (Sub Period Analysis, 2003-2007)

		Holding Period				
		J/K	3	6	9	12
Formation Period	3	Returns-Winner's Stock	-0.1010	-0.0027	-0.0005	0.0012
			*-0.6295	*-0.2720	*-0.0740	*0.1901
		Returns-Loser's Stock	0.2143	0.0204	0.0122	0.0087
	9	Returns-Momentum Portfolio	*1.1670	*1.7936	*1.6034	*1.4912
			-0.3153	-0.0230	-0.0127	-0.0075
		Returns-Winner's Stock	-2.6440	-2.9796	-2.0326	-1.4697
Formation Period	3	Returns-Loser's Stock	-0.0074	-0.0046	-0.0018	-0.0062
			*-0.5246	*-0.4635	*-0.2517	*-0.9747
		Returns-Momentum Portfolio	0.0283	0.0122	0.0051	0.0061
	9		1.3612	*0.8737	*0.6650	*1.005
		Returns-Winner's Stock	-0.0357	-0.0168	-0.0065	-0.0123
		Returns-Loser's Stock	-2.4019	*-1.4779	*-1.04156	-2.3854

Then I changed the sample and selected another 50 companies listed on the Karachi Stock Exchange. Here, I limited our analysis by taking eight most representative strategies, i.e. 6/3, 6/6, 6/9, 6/12 and 12/3, 12/6, 12/9, and 12/12.

Table 6 presents that monthly average return of zero-cost momentum portfolios are (0.0523, -0.0085, 0.0064, 0.0059, 0.0289, 0.0200, 0.0102, and 0.0012). These returns are positive in 7 out of 8 strategies. To find out the average momentum effect value in Karachi Stock Exchange on the basis of these 8 constructed strategies, 3/3 should not be included in average value with reference to the discussion on the contradiction between

practitioners and the proponents of contrarian strategy by Jegadeesh and Titman (1993) and 6/6 should also be excluded due to Jan effect. So, I calculated the average monthly return from 6 out of 8 strategies as 0.012 and significant only in 12/3, 12/6 and 12/9 strategy. I conclude our analysis as there is very low momentum effect in Karachi Stock Exchange and these results are aligned with Griffin, Ji, and Martin (2003), Chui, Titman, and Wei (2000) and Rouwenhorst (1999).

Table 6

		<i>Momentum Strategies</i>				
		Holding Period				
J/K		3	6	9	12	
Formation Period	9	Returns-Winner's Stock	0.0445	0.0063	0.0157	0.0198
			5.2500	*0.7755	2.1159	*1.7907
		Returns-Loser's Stock	-0.0133	0.0148	0.0086	0.0129
	12	Returns-Momentum Portfolio	*-1.6769	*1.4598	*1.0179	*0.9876
			<i>0.0523</i>	<i>-0.0085</i>	<i>0.0064</i>	<i>0.0059</i>
		Returns-Winner's Stock	6.4559	*-1.1432	*0.6006	0.5231
12	Returns-Loser's Stock	0.0489	0.0463	0.0296	0.0162	
		6.4381	4.4918	2.5752	*1.609	
	Returns-Momentum Portfolio	-0.0185	-0.0003	0.0059	0.0142	
		-3.8817	*-0.0348	*0.6220	*1.0993	
		<i>0.0289</i>	<i>0.0200</i>	<i>0.0102</i>	<i>0.0012</i>	
		3.6678	3.3368	2.5315	*0.3218	

Italic values indicates the momentum effect.

5. CONCLUSION

Objective of this paper is to analyse the momentum effect in Karachi Stock Exchange. I constructed 16 momentum strategies (3-3, 3-6, 3-9, 3-12; 6-3, 6-6, 6-9, 6-12; 9-3, 9-6, 9-9, 9-12; 12-3, 12-6, 12-9, and 12-12) by following equal weighted, full rebalancing and Decile techniques. I collected the data of 300 companies listed on Karachi Stock Exchange from 1999 to 2007. Stocks were ranked on the basis of average monthly stock returns and top ten stocks were selected as winner's stock and bottom ten were selected as loser's stock. Zero-cost momentum portfolio was constructed as long position in winner's stock portfolio and short position in loser's stock portfolio. Returns of zero-cost momentum portfolio were positive only in 1 out of 16 strategies. And a decreasing trend in losses reported in 15 strategies was observed, so I extend our analysis on "Long Period Analysis", "Short term and Long term Holding Period Analysis" and at the end I sub divide the sample in two groups and check the momentum effect. Here I find very slight evidence of momentum and I consider it better to change the sample. So, I took another sample of monthly stock prices of 50 companies listed on Karachi Stock Exchange and analysed the effect by taking eight most representative strategies, i.e. 6/3, 6/6, 6/9, 6/12 and 12/3, 12/6, 12/9, and 12/12. These strategies were also constructed on the basis of equal weighted, full rebalancing and Decile techniques. I calculated the average monthly return from 6 out of 8 strategies as 0.012 and significant only in 12/3, 12/6 and 12/9 strategy. I conclude our analysis as there is very low momentum effect in Karachi Stock Exchange and these results are aligned with Griffin, Ji, and Martin (2003), Chui, Titman, and Wei (2000) and Rouwenhorst (1999).

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