Journal of Poverty, Investment and Development
ISSN 2422-846X An International Peer-reviewed Journal
Vol.26, 2016

Momentum Strategies and Karachi Stock Exchange

Sher Khan[1] Fahad Saddiqui[2] Haidar Ali[3] Shakir Ullah Khan[4]
1.MS Scholar at Institute of Business and Management Sciences at the University of Agriculture, Peshawar-Pakistan
2.Ph.D. Scholar at Institute Management Sciences Peshawar-Pakistan
3.Ph.D. Scholar at Institute of Development Studies, Faculty of rural social Sciences, The University of Agriculture, Peshawar-Pakistan
4.MS Scholar at Institute of Business and Management Sciences at the University of Agriculture, Peshawar-Pakistan

Abstract
The objectives of this study is to investigate the momentum effect in Karachi stock exchange by taking the CAPM model as an assumption of investor's momentum hypothesis. This study analyzed 16 momentum strategies based on partial rebalancing, Docile, and equal weighted techniques. The data of 83 companies listed at KSE-100 Index from 2007 to 2014 has used for analysis. The returns of winner portfolio were positive only in 1 out of 16 strategies while the returns of zero cost portfolios were positive in four out of 16 strategies. Moreover a diminishing trend in losses stated in 14 strategies has observed. Our analysis confirmed that loser portfolio is solitarily producing profit of our zero cost portfolios. We have also examined that weather returns have been earned due to Manager Performance or Systematic Risk. In all momentum strategies the value of beta and alpha confirmed that Return can be boosted by taking short position in loser's portfolio with respect to winner portfolio and it also confirmed that there is no need to take more excessive risk. This study concluded that Winner and winner minus loser's portfolio firms of KSE do not follow the momentum effect while loser's portfolio firms of KSE follow the momentum effect. This study concluded and found low and significant momentum effect at Karachi stock exchange and these results are aligned with Mohsin (2012), Ji, Griffin and Martin (2003), Chui, and Rouwenhorst (1999). A further possibility of momentum shall exist in KSE if the sample increases and uses the daily data of listed company at KSE-100 index.
Keywords: Karachi Stock Exchange, Momentum strategies, Momentum portfolio, Winner portfolio, Loser's Portfolio, Zero cost portfolios, Systematic Risk.

INTRODUCTION

Though known to financial academics for many years, momentum is for most investors "undiscovered style" a valuable tool in building differentiated portfolios with investors normal return .Momentum is the tendency of investment to exhibit persistence in their relative performance. Investment that have performed relatively well, continue to perform relatively well; Investment that have performed relatively poorly, continue to perform relatively poorly. Momentum is a well-ordered and systematic styles of investment in stock prices, bond, currencies and commodities prices, (Berger *et al*, 2009). Those investment which are recently perform well, it means that this performance is due to some unique risk linked with momentum higher return, but up to yet no such risk factors has been strongly recognized. If it is not efficient market hypothesis compensating for risk, the presence of momentum appears to be a challenged to the efficient market hypothesis. According to Berger *et al.,*(2009), momentum is the inefficiency in the capital markets due to investor behavior like bandwagon effects, slow reaction to new information and the disposition effects. Few investor behavior explanations have been put ahead. The first investor behavior is the slow respond to new information. According to EMH assumptions if the information is released it should be promptly available to all market investors freely on the same time and the stock prices adjusted immediately the information's, (Fama, 1970). Much evidence support the slow responding to new information theories, several firm responding to earnings and dividend announcement to analyze and some reluctance to update their forecast. Secondly the social economist and the investigational psychologist say to this effects as a disposition effect because these are depend on the human temperament and investor as human beings susceptible and they take the investment according to their temperament. The reasons of momentum is due to investor behavior is the overreaction or it is called bandwagon effects. The great example of the bandwagon effects are the technology bubble of the late 1990 and the energy rally from 2007 t0 2008. Still the causes of momentum is being debate in literature continuously. The same discussion is going for value momentum. The large proof from the markets we can say momentum is not random incidents nor an effect that vanishes once the effect of transaction cost is combined, (Titman and Jeegadesh, 1990, 93). There are many different types of momentum strategies that private and institutional investor can be used for their investment purpose. The famous tested strategies are industry momentum, earning momentum and price momentum, Titmanand Jegadeesh.,(1993) and Jegadeesh., and J. Lakonishok,, (1996). This is discussed several time in literature that whether capital markets are efficient or not. This phenomena is arises to peaks when Fama in 1970, in an articles wrote about efficient market hypothesis.

Fama was the first author who formally developed the efficient capital market phenomenon and came with the term efficient market hypothesis (EMH). (Fama. 1970, and (Fama, and French.2004) developed three conditions for capital market efficiency. These conditions are not likely to be present in capital markets, and though these conditions are sufficient for market efficiency they are not necessary; they are just potential sources of market inefficiency (E. F. Fame, 1970). He divided the efficient market hypothesis into three form i.e. weak, Strong form and Semi strong of efficient market (Fama, 1970).

The proponents of EMH believe that those investor who have internal information will earn abnormal profit than those who have not. Earlier this issues rose in the various papers of the researchers. The future return can be predicated on the basis of past return information given by Opponent of EMH and they had challenged EMH in their papers. This issue by various researchers had mentioned in their own literature as an anomalies. Few well known anomalies are short term momentum, long term reversals, post earnings announcement drifts etc. However, the study for discussion is here short term momentum effects. A lot of empirical evidence in the literature of the behavior and empirical finance has determined the presence of momentum effect in capital market.

Problem statement

It is cleared from the above evidences that the momentum effect exist around the world capital markets. A Little work is reported on capital market of Pakistan while much bigger work has been reported in India because India as emerging stock exchange markets. The study conducted during 2001-2007 found only one type of study which relate to the nature of developing stock market and low momentum effect while this study conducted during 2007-2014 relate to the emerging nature of stock market (en.wikipedia.org/wiki/KSE_100_Index). The momentum effect has reported around the world in emerging and developed capital market (Titman and Jeegadesh, 1993). The researcher inspired by a unique type of study carry out in Pakistan on capital market that "whether momentum is exist in capital market of Karachi or not". It is also fascinating to see the investment momentum hypothesis base on CAPM model. Similarly the study will also be compare with Similarity and difference of, (Mohsin and Rehman, and Petr and Abdullah, 2012). Above mention reason create a Gap to carry out this study.

Objective of the study

The objectives of this study are following

I. To analyze the momentum effect on Karachi Stock Exchange.
II. To check the investment momentum hypothesis based on CAPM model.

Research Hypothesis

H_0: Winner firms of KSE do not follow the momentum effect.
H_1: Winner firms of KSE do follow the momentum effect.
H_0: Losers firms of KSE do not follow the momentum effect.
H_1: Losers firms of KSE do follow the momentum effect.
H_0: Winner minus losers' firms of KSE do not follow the momentum effect
H_1: Winner minus losers firm of KSE do follow the momentum effect

Significance of the Study

The importance of the study is to know, that there will be any abnormal return due to inefficiency because of investors behaviors or systematic risk in Karachi Stock Exchange. This is also significant how to find out momentum effect and also to see that there is momentum effect in Karachi stock exchange or not. This study will give the understanding how to apply the rational asset pricing model on momentum return and how they will know that the return is due to systematic risk or manager performance to take short position in loser portfolio. It is also contended that a study of this type enhances understanding of the Pakistani capital markets and provides useful insights to those investing in Pakistan capital markets. This study is significant for those scholar who are interested to check the momentum effect of pricing, earning and value as well as the long and short term effects in Karachi stock Exchange. Similarly, this is also helpful for that investor who wants to invest in capital market of Pakistan.

Literature Review

This literature is presents strategies of the momentum and momentum effect that are being applied in capitals markets of globe. Main concentration of this literature on commonly used 16 momentum strategies weather it exist in Karachi stock exchange or not, on the other hand the momentum of price in stock is in association with the strategies of earning momentum will be measured. Another focus has taken risk factors analysis based on rational models. This literature examines momentum puzzles for the stocks market of Africa, Asia, Australia, Middle, Europe, East and US.

Titman and Jeegadeesh (1993) investigate the impact of momentum effect for medium period on share markets. They take the return from the two American stocks market. They collected return of the stock for the

period from 1965 to 1989. They applied the strategies of winner and loser stocks, in other words buy those stock that have performed well in the past and sell those stocks that perform worse in the past. They concluded that such a stocks that to be held for the tenure of 3 to 12 month would be provided positive return. Moreover, they had also found that that due to systematic risk, the return is not boosted by relative strength strategies. This study stated that negative return of relative suggest is due to overreaction and overreaction is due to overly simplistic. They persisted that good model for investor behavior were required to clarify the arrangement of return. They had stated in this paper that investor that sell past losers and buy past winner, temporarily moves prices from there long run values and became the reasons of over react. They had concluded that the hypothesis they made would not explain the investor behavior. Moreover, they had given other clarification for the obtaining results. Further this study suggested that investor expectation was thoroughly unbiased

Ji, Griffin and Martin (2003) conducted a study on practical issues of earning and price momentum in international capital markets. They had found that momentum profit was generated by the long not a short position, secondly they were also found that earning and price momentum produce more profit in the multiple markets. Thirdly they were found that earning and price momentum income are correlated. They had also applied the US momentum strategies with others countries strategies and were found that US strategies are less correlated with overseas momentum strategies and the stocks index were correlated with the America Index. They had also suggested that strategies of market index were given less benefit than momentum strategies and the momentum strategies advantage due to diversification, and momentum income were not correlated country to country in down markets. They had also found out that momentum is exist when the market goes down or up and when the economy is contracting or growing. At last they had found that regional or market indices were less unstable than momentum profit but the momentum strategies were volatile and were irregularly related with high negative return. They had mentioned in their study that negative return, mostly found in January and even on 3 to 5-year momentum strategies could earn negative income. They had suggested in their study that for portfolio manager, momentum was value serious concern, but keep in eye that price impact cost and execution might diverge considerably markets to markets and were not measured here. They had suggested that future scholars should insist on understanding predictors that might impact the differences of time series in momentum income because their study were on univariate strategies that had not measured value and growth. Finally, they had discovered many firm features were related to universe momentum income. They had given many suggestions for future study and for the Finding of momentum in universe capital markets. While the use of more complicated strategies has the potential to boost momentum profits, it can also eliminate these profits if applied incorrectly.

Rahman and Mohsin (2008) examine the existence of momentum effect in Karachi Stock exchange from 1999 to 2007. They have used the monthly stocks prices of the 300 companies listed on Karachi stock exchanges. The have 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) base were on equal weighted, non-overlapping and docile techniques. They found that zero cost momentum portfolio had positive only in 1 and the remaining 15 were negatives and a decreasing trend in losses. They extend their evaluation to long period analysis, and they were found some evidence of momentum effect in Karachi Stock Exchange. They had concluded that there were low but significant momentum effect on Karachi stock exchange in the given data sample period and their results was aligned with (Griffin, Ji and Martin, 2003).

Polak and Abdullah (2012) examine whether hypothesis of efficient market short contest with short or medium period momentum or not. For this purpose, they have chosen the Bombay stock exchange and chose monthly stocks prices of Bombay stock exchange top hundred company's index for the sample period of five years. They find out that momentum effect is strongly exist and the price momentum strategies gives abnormal returns. From the finding they explain the average monthly returns is much higher than the American and other European stock exchange. they also proves that that winner are outperform the losers. Their finding is with line with existence literature. They also applied the momentum strategies in trading volume and they give suggestion that it work when low and high volume used jointly. They also compared the Karachi Stock Exchange with Bombay stock exchange market for returns purpose and found the BSE grant more returns than KSE.

Joseph (2012) Inspect that whether momentum strategies formed on past performance of international share market produce returns. For this purpose he had selected the emerging stock exchange around the world. Firstly he had stressed on the emerging markets, secondly he focused on the dispute about the significant of momentum returns in emerging capital markets, and thirdly he had examined the momentum return from momentum strategies which is exaggerated by markets reforms for liberalization. Around the world he had taken weekly 48 market index return from emerging stock exchange while 20 from developed index. Similarly the sample period were taken from 1987 to December 2001. He decomposed the profit from momentum strategies in four apparatuses; currency exchange components, equity apparatuses, and two collaboration apparatuses. He had firstly applied the momentum strategies on entire sample on universe portfolio and then he was tested the various strategies on emerging stock exchange around the globe respectively and some from developed countries. He had also splatted the sample in sub-period for the purpose to examine the impact of liberalization reform of markets

by momentum strategies. He found out that momentum strategies produce economically and statistically abnormal profit on one to four weeks on regional and global portfolio. He had also documented that momentum profit increased by rates of exchange and larger than developed markets. He had also found a week momentum profit in post liberalization period than in the premarket liberalization period. He was also mentioned that momentum profit is not important for individual's countries for longer horizon greater than four weeks rather than important for short horizon. They had concluded that abnormal return was generated by emerging markets were moderately because of markets liberalization reforms and market isolation, lean towards lessen the gains from momentum strategies.

Vas and Absalonsen (2014) examine the momentum effect on the Oslo stock exchange. They have taken nine-year stock data from OSEX and gathered information on turnover volume, market to book ration, market value and shares on shares price, all the shares comprised on OSLO capital market. They applied the sixteen momentum strategies and found a strong momentum effect. they also found that that most successful strategies having formation period of longer and holding period Shorter. This study had also based how momentum profit are determined by the loser's portfolio. They had excluded the return outliers and increased the portfolio size but were found low momentum return by momentum strategies, however they also mentioned that short sale limit questions the possibility of the strategies of momentum. They also found that transaction cost decreases the whole momentum returns as well as determined the evidence in Oslo capital markets. They have also applied rational model for risk factors and concluded that that Fame and French 3-factor and Capital pricing model does not explain the effect of momentum which were consistent with previous studies around the world stock exchange.

In a Conclusion Jegadeesh and Titman (1993) have confirmed momentum anomaly in NYSE and AMEX in USA. Ji, Griffin and Martin (2003) had found that momentum profit were generated by the long not a short position. Similarly earning and price momentum produce more profit in the multiple markets and earning and price momentum income are correlated. Martin, Griffin, Ji, (2002 also found the momentum effect around the world stock exchange. Petr and Abdul Ulla (2012) also confirmed short term momentum effect in BSA in India. Mohsen and Rahman (2012) also confirmed a weak momentum effect in KSE in one out of 16 sixteen momentum strategies, but found a strong momentum effect in long run after divided the sample into sub-group. Joseph, (2012) Inspect that whether momentum strategies formed on past performance of international share market produce returns. This paper had concluded that abnormal return was generated by emerging markets were moderately because of markets liberalization reforms and market isolation, lean towards lessen the gains from momentum strategies. Gosalia (2013) examine the momentum effect empirically in the Canadian markets and found that there is only one-week evidence of a short term momentum effect in Canadian and consistent with the similar finding in international markets. Vas and Absalonsen (2014) examine the momentum effect on the Oslo stock exchange. They have taken nine-year stock data from OSEX and found that transaction cost decreases the whole momentum returns as well as determined the evidence in Oslo capital markets. In short momentum effect has found strong all over the world, specifically in America, Europe, Africa and some emerging stock like India. Before 2011 KSE was considered as developing stock exchange, but in August when KSE Basis point reached to 16000 thousand was included in emerging stock. Before 2011, two to three study have been conducted on momentum effect but they had found weak effect. After 2011, no one has conducted the research on the recent data on KSE-100 index as well as this study methodology is quite differed from the past study. So this study will be carried out on recent data on Karachi stock exchange.

Materials and Methods

Our total population for the study is all listed companies of Karachi Stock Market. Whereas our target population is "100" companies which are included in KSE-100 Index (based on 2014 data).As target population is KSE-100 index which consist of hundred firms. These 100 firms represent the 80% of market capitalization of the whole Karachi Stock Exchange. Out of 100 companies at KSE-100 index at Karachi Stock Exchange, randomly 83 were chosen based upon the availability of data for the period of 01-01-2007 to 30-03-2014. The reason for this selections were due to non-availability of data and some of the companies have been delisted from 2007 to 2014. Each firm is analyzed on the basis of their closing price.

The Data used for the momentum strategies analysis are the monthly closing prices of Karachi stocks exchange 100 index as well as the firms. In this study Panel data have been taken.

Techniques for selecting momentum strategies

These techniques will be used for ranking each stock in portfolio, full versus partial rebalancing and which weight will be apply on all portfolio. Firstly we formed momentum strategies and then we chose the strategies on the basis of below given techniques.

1. Docile Strategies
2. Partial Rebalancing and full rebalancing
3. Value-Weighted Portfolio versus Equally-Weighted

We have placed the discussion about testing and ranking period and the return calculation in last parts of this chapter.

Docile strategies

Two method are using, when we ranking the stock in all portfolio. In the Docile strategies, stocks are ranked on the basis of their historical performance as follows:

Momentum Portfolio
• Long position in top portfolio (in descending order of all portfolios)
• Short position in bottom portfolio (in descending order of all portfolios)

In method of WRSS there is one severe problem of weight, that why we were chosen the Docile strategies.

Full versus Partial Rebalancing (Overlapping and non-overlapping period)

Secondly we decided about non-overlapping and over lapping period. In non over lapping period each portfolio is constructed after the end of each formation period while in partial rebalancing each portfolio is reshaped at the starting of each months as follows.

Table 1

Example of Non-Overlapping and Overlapping Holding Periods (3x3)

Months	Non-Overlapping					Overlapping						
January	Formation					Formation						
February							Formation					
March								Formation				
April	Holding	Formation				Holding			Formation			
May							Holding	Formation		Formation		
June								Holding	Formation		Formation	
July		Holding	Formation						Holding	Formation		Formation
August										Holding	Formation	
September											Holding	
October			Holding	Formation								Holding
November												
December												

We have used Partial rebalancing (Overlapping-Overlapping) method because this method is increase the number of observation .This will also be good to compare our results to previous studies. Past studies such as such Rouwenhorst (1998) and Jegadeesh & Titman (1993, 2001) used overlapping holding periods.

Equally-Weighted versus Value-Weighted Portfolio

There are two well-known method is used when we construct the portfolio. In the first method (Equally weighted method) we constructed the portfolio irrespective of the capitalization of the market while in second (Value weighting) method we constructed the portfolio taking market capitalization in consideration .When we using the second method (value weighted portfolio) it is difficult to interpret that either effect is in those stock who have higher market capitalization or entire sample. So in this study we have chosen the First method (Equal weighted portfolio).

Formation and Testing period

Here we decided the size of the formation and testing period .The most commonly mentioned strategies in the literature have a formation period of 3/3, 3/6, 3/9 and 3/12 (Titman and jeegadesh, 1990, 93) and Habib-Ur-Rahman and Mohsin, 2012). Each strategies is further divided into four strategies, which is become the total of 16 strategies. In chapter four I will find out all 16 strategies and present the return in a table .For risk factors analysis we have applied the 3/3 strategies , having formation period of three moment and holding period as well

the same. After the end of formation period of three months, the losers and winning portfolio are formed. The loser's portfolio is formed by taking the short position in the worst performing stocks while the winner portfolio is constructed by taking long position in best performing stocks. These portfolios are then held for 3 months. This strategies process is given below.

Table 2 ***Overview of our Momentum Strategies (3/3)***

		Formation Period (F)			
		3	6	9	12
Holding Period (H)	3	3x3	3x6	3x9	3x12
	6	6x3	6x6	6x9	6x12
	9	9x3	9x6	9x9	9x12
	12	12x3	12x6	12x9	12x12

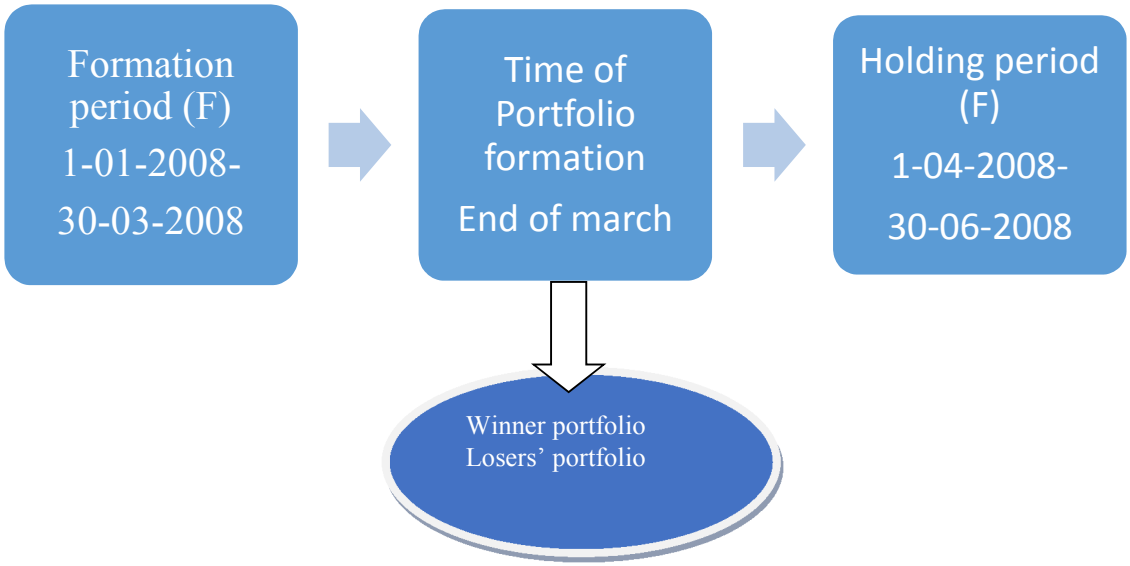

Figure 1.Example of the Momentum Investment Process (3/3)

Variables and Econometric Model

In this study our variables are KSE-100 index monthly return, monthly stock return of listed of selected companies, winner and loser's portfolios (Top and bottom best and worst performer stock), zero cost portfolio (W-L), and for CAPM model the variables are monthly return of the portfolio (Rp-Rf), risk premium (Rm-Rf). The following are the econometric model for these variables.

Calculation process for the monthly, winners, losers and zero cost portfolios strategies.

This is the step by steps stocks return calculation from monthly return to the zero cost portfolio return.

In order to calculate the return of the stock in our data and for selected sample period, there are two methods to do so, continues and discrete compounded returns. Both methods are same but they do have different properties and give some difference in return values. The difference in return is usually minor (Raahauge, 2008). In order to calculate the returns of the stocks for the multiple momentum strategies we decided to used continuous compound return as this it is common to use continuously compounded returns when studying the behavior of stock returns (Campbell et al., 1997)..

$$\mathbf{ri,t=ln}\left(\frac{\mathbf{Pi,t}}{\mathbf{Pi,t-1}}\right)\text{……..……(i)}$$

Where the Pt and Pt-1 are the prices of stocks of each stock of a first of the current month and first of the previous month respectively.

In data, single period returns show the monthly returns. Depending on momentum strategies the compounded return for given number of period K as denoted as Cr and is defined is:

$$\mathbf{Cri,t\ (k)} = \sum_{\mathbf{t=1}}^{\mathbf{k}} \mathbf{ri,t}\text{……..…….... (ii)}$$

Where$Cri,t\ (k)$ is the compound return and ri, t is the continue return for single period in time t, and k for a given number of period.

The stocked are then ranked based on their compounded return Cri,t(k) and the Winner and the loser portfolio

comprised the 10 percent best and worst sock return performance respectively. The return of the portfolio consisting of equally weighted stock N is then calculated

$$\mathbf{Crp,t(k) = 1/N \sum_{t=1}^{N} Cri,t(k)} \text{..... (iii)}$$

The return of the zero cost portfolio momentum strategies M is calculated by taken the return of the winner portfolio minus the return of the loser portfolio:

$$\mathbf{Cr_{M,t}(k) = Cr_{w,t}(k) - Cr_{i,t}(k)} \text{.....(iv)}$$

Where CrM,t(k) is the zero cost portfolio and Crw,t(k) is the return of winner portfolio and Cri,t(k) is the return of loser portfolio.

The monthly averages return of the momentum strategy is calculated by taking the average of all the momentum portfolio formed throughout the sample period from 2007 to 2014 and divided by the length of the holding period H. The monthly average return is denoted as MR and define as:

$$MR = I/H \sum_{t=1}^{T} \mathbf{CrM,t(k)} \quad \text{..... (v)}$$

This computation is completed for all momentum strategies and will be carried out on ASM Coding through STATA software.

Risk Identification

If the momentum strategies reported the abnormal profit, we will identify the factors that abnormal return is driven by which factors.

For this purpose, CAPM model will be used to examine whether return of a zero cost momentum strategies (Winner – losers) are due to winner portfolio having high systematic risk than loser portfolio or because of the manager performance by taking long position in winner portfolio and short position in loser portfolio (Petr and Abdullah,2012). In order to examine the above mention relationship CAPM is run in Stata through the following regression equation.

$$\boldsymbol{Rp - Rf = \alpha + \beta\ (Rm - Rf) + \varepsilon}$$

Where

Rp – Monthly return of portfolio

Rf – risk free rate. (Three month)

Rm – return of stock index or market return

(Rm - Rf) – Risk premium.

In order to conduct this analysis, risk free rate is taken from website site http://www.sbp.org.pk/ecodata/tb.pdf and the market return have been downloaded from www.yahoofinance.com for the period starting from 1st April 2007 to 30th march 2014. Market rate is taken is a return of KSE 100 Index .Rf is a 3 month T-Bill. Alpha and Betas of portfolio are obtained by using Stata.

Statistical Significance test

To check weather momentum return (profit) in holding period statistically different from that in the formation period we will use paired sample t-test. In this study if the evidence of momentum returns is existing in the stock market then the winner – loser's portfolio will generate significantly abnormal profit (Titman et al., 1990, 91, 93, 99) and (De Bondt, and Thaler, 1985).

Results and Discussion

Momentum Returns

This is an overview of 16 different investment strategies with overlapping holding periods. The momentum portfolios are formed immediately after the formation period

Table 3
Returns Results from 16 Momentum Strategies, Overlapping Holding Periods

Returns Results from 16 Momentum Strategies						
		Holding Period(K)				
Formation period(J)						
		3	6	9	12	
Winner	3	-0.0004	-0.0077	-0.0062	-0.0051	
Loser		-0.0057	-0.0009	-0.0165	-0.0034	
Winner-Loser		0.0054	-0.0068	.01035	-.00826	**0.00429**
t-stat		**0.42**	**-0.58**	**0.91**	**-0.73**	
Winner	6	-0.0154	-0.0097	0.0016	-0.0047	
Loser		-0.0038	-0.0034	0.0109	-0.0053	
Winner-Loser		-0.0116	-0.0064	0.0093	-0.0005	**-0.00230**
t-stat		**-0.73**	**0.46**	**1.06**	**0.04**	
Winner	9	-0.0047	-0.1144	-0.0061	-0.0061	
Loser		-0.0051	-0.0111	-0.0079	-0.0050	
Winner-Loser		.00465	-0.0005	-0.014	-0.0102	**-0.00110**
t-stat		**0.37**	**-0.42**	**0.20**	**-0.63**	
Winner	12	-0.0077	-0.0188	-0.0076	-0.0071	
Loser		-0.0089	-0.0012	-0.0114	-0.0046	
Winner-Loser		-0.0012	-0.0073	-0.0037	-0.0024	**-0.00365**
t-stat		**0.10**	**-0.50**	**0.31**	**-0.18**	

The results presented in Table three are monthly return data for the 16 different momentum strategies using overlapping holding period. In this data the portfolio are formed at the begging of each month after the ranking period. We will discuss these result to our base study. We used the overlapping holding period as compared with the non-overlapping period, because we increased the observation considerably for the purpose to increase the power of our test.

Looking at the winner portfolio on the Table 3, we get that 15 out of 16 momentum strategies produce a negative return, (Petr and Abdullah, 2012). Before our investigation we predictable that the winner portfolio would produce positive returns. There are one strategies that yield positive results among the winner portfolio, however not statistically significant at a 5, 10 percent level and all have a formation period of three months. Only one of the winner and zero cost portfolio have statistically significant results, which are: 6x9 and 6x12 respectively. Only one significant strategies provide positive return while the other provide negative return, whereas the worst performing winner portfolio has a ranking and testing period of three months, providing a monthly return of -0.0004 while the best performing winner portfolio has a ranking period of six months and testing period is nine months generate a monthly return of .0016. The average return of the three month formation period with testing period of 3, 6, 9 and 12 are 0.00429 which is positive. On the bases of winner portfolio we interpreted that shorter and longer testing period for a giver ranking period produced poorer results. However, on the bases of overall results of three-month formation period with multiple holding period produce a strong result. This is an interesting finding that as we take short formation period with testing period it will produce average positive return.

If we only see the results that are statistically significant we notice that decreasing the ranking period for a given testing period produces a strong result. For our sample period it does not appear to be lucrative to buy the winner portfolio, but it indicate that we have to invest in a portfolio that have longer holding period as compare with shorter holding period ,because it seem to be lucrative, but for losers portfolio it seems lucrative because 14 portfolio generated negative return. At first glimpse our results might show that Karachi stock exchange efficiently incorporates new information and this is not possible to get irregular returns by investing in the winner portfolio.

Now if we look at the loser portfolio on the Table 3, we noticed that 14 out of 16 sixteen momentum strategies produce a negative return and statistically different from zero at a 1, 5 and 10 percent level. The most profitable momentum strategies are 3x3, 3x12 and 6x6. The most profitable portfolios are the strategies with a 3 month ranking period and 6 month holding period. We see that if we decrease or a little increase in the length of the ranking and testing period generate high return. If we short the looser portfolio with shorter or moderate formation period then all loser portfolio is beneficial and generate higher return.

Looking at Table 3, the zero cost portfolio the return from the four strategies out of 16 is positive and statistically significant. The most best two successful strategies select stocks based on their return over the 3 month and then hold the portfolio for 3 and 9 months produce a return of 0.0054 and .01035 per month. Similarly the strategy with six and nine month formation period and then hold for six and three month produce a return of 0.0093 and .00465 respectively It also interesting to note that Petr and Abdullah (2012) and Habib-Ur-Rahman and Mohsin (2012) also get the best results with a 3x3 strategy.

Explanation of a CAPM for all portfolios

The relationship between investment momentum portfolios with systematic risk, a zero cost portfolio is the minus of losers and winner portfolio while systematic risk is measured through beta. To find out that whether the return of portfolio is due to systematic risk or loser's portfolio (Manager Performance). I have chosen the CAPM model for risk factors analysis, because this model had used many researcher (Ellis and Thomas, 2004: Abdullah and Petr, 2012) in their study for risk factors. This is for the first time that CAPM has been applied on stocks price listed on Karachi stock exchange. As I mentioned in methodology, the below given Regression has been run with the help of Stata.

$Ri - Rf = \alpha + \beta (Rm - Rf) + \acute{\varepsilon}$

Table 4

CAPM Model; Momentum Strategy J3K3; Formation period J: 3

K: 3	Independent Variable	Coefficients	Standard Error	T-value	P-value
*WT3 Dependent Variable	Constant	-.0708	.0149	-4.76	.000
	Rm – RF	-0.6678	0.1096	-6.09	.000
**LT3 Dependent Variable	Contestant	-.0829	.0204	-4.07	.000
	Rm – RF	-0.7371	0.1507	-4.89	.000
***WLT3 Dependent Variable	Constant	.0816	.02018	4.04	.010
	Rm – RF	.0592	0.14870	0.40	0.690

***R-squared:** 0.0024**, F-value:** 0.19**, P-value:** 0.0000

In the given Table 4, The Alpha represent the intercept of the regression or it measure the performance of the manager. Similarly the Alpha value represents all the return from the momentum portfolio that could be explained by the market risk factors. Beta measures the undiversified risk and it describe the risk connected with the portfolio comparative to the market collection that is KSE 100 index. Beta does not measures the total risk, but only the amount of systematic risk the momentum portfolio has.

Here in the given table 4, the test-statistic value is used to check the significant of coefficient betas individually and will decide on the basis of p value. If the p value is less than 0.05 then the null hypothesis will be reject and alternative hypothesis will be accept and we will concludes that coefficient is statistically significant, Whereas R^2 would tell us whether return of a portfolio has been explained by KSE 100 index or not . Beta describes the volatility of a share with respect to the market.

In Table 4, the winner portfolio beta is negative that is -0.6678, with respect to theoretical beta that is 1, which, indicate, that if winner portfolio perform worst the market portfolio will perform well. The t-statistic p value is statistically significant for winner portfolio. The beta of looser portfolio is -0.7371 which is negative and not even close to zero but statistically significant because the t-statistic p value is 0.000. The beta of zero cost portfolio is positive that is 0.0592 and less than theoretical beta that is one but statistically insignificant the R2 is 0.002 which is very low. The same results were found by (Petr and Abdullah ,2012), It mean that looser and winner minus looser portfolio are not instable and won't respond immediately, if of increased or decreased in profit of a market. This finding confirms that return of the portfolio which is 0.0829 is not boosted by the taking long position in winner and taking excessive systematic risk. This enhancement in return as a consequence of going short in looser (Petr and Abdullah,2012 and Mohsin, 2012).

Similarly the alpha of winner and loser is also negative that is -0.0708 and - 0.0829, but the value of W-L is 0.0816 which is positive, slightly high and statistically significant because the p-value is 0.000. This finding confirms that return of the portfolio which is 0.0829 is not boosted by the taking long position in winner and taking excessive systematic risk. This enhancement in return as a consequence of going short in looser. This outcome is in favor of that fact that high return could be earned due to take short position in loser's portfolio with respect to undiversified risk. The same results were create by Petr and Abudllah (2012) and Muhsin and Rahman (2012).

The given clarification should be carrying out on KSE for momentum portfolio. When the alpha of winner and winner minus losers are negative it means that there is no need to take undiversified high risk while if the betas of winner minus loser's and winners, losers portfolio is less than the theoretical beta e.g. 1, as well as negative or statistically insignificant which show there is no need to take undiversified risk. Here the R2 value is so small which indicate that KSE-100 index is not explaining the return. The betas and alpha values in all momentum strategies confirm return cannot have boosted by taking undiversified risk. All these Return can be enhance by take short position in loser portfolio. One interpretation of the finding is that that when we increases the formation and ranking period betas become negatives because stock in the portfolio do not keep an eye on the market collection somewhat they go in the contradictory direction against the market.

Similarly when the alphas value decrease at a slight rate and the ranking period increase manager role become significant in the performance of a portfolio. The uniformity in the all portfolio consequence confirms that returns can be earned without taking high risk but it does not mean that beta factors or undiversified risk involved with the stock become unrelated. The betas has its own importance as manger will also need this value for making

decision of taking short position in losers portfolio and vice versa.

Conclusion and Recommendations

Momentum strategies are generally accepted strategies around the world for measuring the momentum effect in international capitals markets. The objective of this study is to investigate the momentum effect at Karachi stock exchange by taking the CAPM model as an assumption of investor's momentum hypothesis. This study analyzed 16 momentum strategies (3x3,3x6,3x9,3x12, 6x3,6x6, 6x9,6x12,9x3,9x6, 9x9,9x12,12,x3,12x6,12x9,12x12) on the basis of Docile , equal weighted and partial rebalancing techniques. The data of 83 companies at KSE-100 Index from 2007 to 2014 has been used for analysis. The stock were ranked on the basis of monthly stock return and top 20 and bottom 20 were selected as winner stock and bottom 20 were selected as losers stock. All portfolios were built as short position in loser's and long positions in winner portfolio. The returns of winner portfolio were positive only in 1 out of 16 strategies while in loser's portfolio 14 out of 16 were analyzed and found a decline trend in most portfolios. Moreover in zero cost portfolios there was only two portfolio positive out of 16 and found low momentum. We also found that over 6 to 12 month horizon, all momentum strategies produce significant and abnormal return in Karachi stock exchange.During our sample period 2007-2014, Our most successful zero cost strategy chose stocks based on 3 month return and holds them for 3 and 9 month, accordingly realizing a positive return. This analysis confirmed that the profit of zero cost portfolios has solitarily produced by the loser's portfolio.

We have also examined that whether returns have been earned due to manager performance or excessive systematic risk. In all momentum strategies the value of beta and alpha confirmed that Return can be boosted by taking short position in loser's portfolio with respect to winner portfolio and it have also confirmed that there is no need to take more systematic risk. However one best outcome is that as the alpha decreases at a very slow rate but the beta become negative as we increased the ranking period.

This study concluded that Winner and winner minus loser's portfolio firms of KSE do not follow the momentum effect while the second hypothesis confirmed that loser's portfolio firms of KSE follow the momentum effect. We found low but significant momentum effect in Karachi stock exchange. Same results were found by Mohsin (2012), Ji, Martin and Griffin (2003), Rouwenhorst (1998).

Following are the recommendation on the basis study findings

- Due to the negative return in the Winner portfolio, it is recommended that the Investor should not invest in the winner portfolio or going long position rather it should invest in loser's portfolio or going short position in my data sample period in KSE-100 index.
- Here we found out that capital asset pricing model is not able to explain the momentum effect strongly. So it is recommended that one should use the Fama-French 3-factore model for risk identification if they go for further study but it does not mean that capital asset pricing model is not good model for momentum effect
- Finance has become important contributions in trying to explain the momentum effect. In all momentum strategies the value of beta and alpha confirmed that Return could be boosted by taking short position in loser's portfolio with respect to winner portfolio. It has also confirmed that there is no need to take more excessive risk. It is recommended that the investor and firm should not be take more systematic risk , Return can be boosted if they take short in loser portfolio, but one thing should be keep in mind that it will good in situation when there is short formation and holding period.
- An interesting topic would be to examine momentum on those capital markets of the world which is less efficient preferably emerging capitals markets.
- Some capital markets now has been Included to emerging stock exchange and There is no pre and post study have been done between developing and emerging stock exchange on momentum.
- Another interesting area would be if someone replicate this study by testing the bond, commodities prices and currencies
- Increase the sample Period and use the daily data for increasing the number of observation, thus this might give a strong momentum results and may be more possibilities for strong momentum effects in KSE-100 index. Similarly one should use the most recent data on kse-100 index.

REFRENCES

1. Berger, A. L., Israel, R., & Moskowitz, T. J. (2009). The case for momentum investing. *AQR capital management*.
2. Campbell, J. Y., Lo, A. W. C., & MacKinlay, A. C. (1997). *The econometrics of financial markets* (Vol. 2, pp. 149-180). Princeton, NJ: princeton University press.
3. Petr, P., & Abdullah, E. (2012). Momentum strategy and Bombay stock exchange. *Современная экономика: проблемы, тенденции, перспективы Sovremennaa ekonomika: problem tendenc, perspektivy*, (3), 1-21.

4. Griffin, J. M., Ji, X., & Martin, J. S. (2003). Momentum investing and business cycle risk: Evidence from pole to pole. *The Journal of Finance*, *58*(6), 2515-2547.
5. Chan, L. K., Nb. Jegadeesh, & J. Lakonishok. (1999). The profitability of momentum strategies. Financial Analysts Journal, 55(6), 80-90.
6. Vas, P., and k. Absalonsen. Master Thesis. Copenhagen Business School, 2014.
7. Chan, L. K., N. Jegadeesh., & J. Lakonishok, (1996). Momentum strategies. The Journal of Finance, 51(5), 1681-1713.
8. Raahauge, Kirsten Marie. "Magical Landscapes and Designed Cities." *Knowledge, Technology & Policy,* 21.4 (2008), 175-180.
9. De Bondt, W. F. M., and R. Thaler, (1985). Does the Stock Market Overreact? The
Journal of Finance, 40(3), 793–805.
10. Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. The Journal of Finance. 25(2), 383–417.
11. Fama, E. F., and K. R. French. (1993). Common risk factors in the returns on stocks and bonds. Journal of Financial Economics. 33(1), 3–56.
12. Fama, E. F., and K. R. French. (2004). The Capital Asset Pricing Model: Theory and Evidence. Journal of Economic Perspectives, 18(3), 25–46.
13. Griffin, J. M., Ji, X.AndSpencer. J.M. (2002). Momentum investing and business Cycle risk: Evidence from pole to pole. Working paper, Arizona State University.
14. Griffin, J. M., X. Ji, and J. S. Martin. (2003). Momentum investing and business cycle risk: Evidence from pole to pole. The Journal of Finance. LVIII (6), 2515–2547.
15. Griffin, J., X. Ji, and Spencer J. Martin. (2005). Global Momentum Strategies: A Portfolio Perspective. The Journal of Portfolio Management. 31(2), 23–39.
16. Jegadeesh, N., & Titman, S. (1993). Returns to buying winners and selling losers. Implications for stock market efficiency. *The Journal of finance*, *48*(1), 65-91.
17. Jegadeesh, N., and S. Titman. 2001. Profitability of Momentum Strategies: An Evaluation of Alternative Explanations. The Journal of Finance. LVI (2): 699–720.
18. Kloster-jensen, C. 2006. Markeds effisiensteorienog momentum på Oslo børs. Norwegian School of Economics and Business Administration.
19. Habib-Ur-Rahman, & Mohsin, H. M. (2012). Momentum effect: empirical evidence from Karachi stock exchange. *The Pakistan Development Review*, 449-461.
20. Mohsin, H. M. 2012. Momentum Effect: Empirical Evidence from Karachi Stock Exchange. The Pakistan Development Review. 51(4): 449-461.
21. Naughton, T., Truong, C., and M. Veeraraghavan, 2008. Momentum strategies and stock returns: Chinese evidence. Pacific-Basin Finance Journal, 16(4): 476-492.
22. Rouwenhorst, K. G. (1998). International momentum strategies. *The Journal of Finance*, *53*(1), 267-284.
23. Onstad, Jon Berg. *GRA19003 Master Thesis*. Diss. BI Norwegian Business School, 2013
24. https://en.wikipedia.org/wiki/KSE_100_Index Dated 14.2.2016 timing 2 PM
25. http://www.opendoors.pk/Home-Page2/data/karachi-stock-exchange-kse-dataDated 15.2.2016 timing 3;21 PM
26. https://finance.yahoo.com/q?s=^kse&ql=1-Dated 15.2.2016 timing 3;21 PM
27. http://www.sbp.org.pk/ecodata/tb.pdf. -Dated 15.2.2016 timing 3;22 PM
28. https://www.google.com.pk/search?hl=en&q=Vas,+P.,+and+k.+Absalonsen.++Master%E2%80%99s+Thesis.+Empirical+Study+of+the+Oslo+Stock+2014.