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Long-Term Overreaction and Winner Losers Effect: Evidence from Pakistan Stock Exchange

Muhammad Shahid Rasheed[1], Haroon Hussain[2], Shahzad Akhtar [3]
Noon Business School, University of Sargodha Sargodha, Pakistan[1,2], School of Business, Institute of Management Sciences, Bahauddin Zakariya University, Multan, Pakistan[3]
Corresponding author: shahid.rasheed@uos.edu.pk

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Investors often overreact to new set information which in turns takes the prices away from their fundamental value. As a result of this overreaction, the prices come back towards their fundamental value. Thus, strategies can be formed based on these price movements which can yield abnormal returns to investors. This study investigates the success of momentum or long-term contrarian strategies for different holding periods. Using monthly prices data from the Pakistan Stock Exchange (PSX) we form two portfolios of winners and losers depending on their performance information period. The subsequent performance of both winners and losers is compared to view the success of contrarian or momentum strategies. We find no evidence of overreaction in the Pakistan Stock Exchange (PSX). Portfolios for winners and losers showed continuation (Momentum) patterns. We provide evidence that short-term contrarian strategies are not profitable in PSX. However, buying losers of the past 5 years can earn abnormal returns for the long-term holding period (5 years). This gives a little support to long-term contrarian strategies.

Key Words: Portfolio management, Contrarian Strategies, Momentum strategies, Pakistan Stock Exchange

INTRODUCTION

Since its presentation, "Efficient Market Hypothesis (EMH)" is among the most debated areas in financial literature. A large volume of literature is there which discuss, whether the stock markets are efficient? It means whether or not we can predict the stock prices. Since then, market efficiency has become an essential base for capital market research. A famous mathematician Bachelier (1900) seems to be the first one who uses this term in his doctoral dissertation. Kendall (1953) provides further evidence and in the 1960s and 1970's the idea gets tremendous attention and a large volume of literature investigated this issue[1]. The notion means that all available information is incorporated immediately in share prices. Market efficiency also means that strategies based on all available information do not generate abnormal returns. In an efficient market, all market participants behave rationally and securities are correctly priced.

There are several studies advocating market efficiency and evidence exists against EMH. Since Fama (1970) proposed the Efficient Market Hypothesis (EMH), a number of events are observed which contradict the idea of market efficiency. Some anomalies such as overreaction, size effect, January effect, week effect, are challenging the basic theme of market efficiency. DeBondt and Thaler (1985, 1987) first proposed that markets tend to be mean revert. The explanation for this mean reversion offered is the overreaction hypothesis which states that investors sometimes overreact to some news which takes away the prices from their equilibrium level.

When an investor overreacts to information there will be subsequent adjustment in the price which can be predictable. Thus, there can be possible market strategies that outperform the market (Jegadeesh and Titman 1993, Lo and Mack inlay 1990). The strategies can be 'momentum strategy' or 'contrarian strategy'. Jegadeesh and Titman (1993), for instance, identify the momentum strategy which says that strategy which is based on and selling losers and buying winners performs better than the market. This strategy is profitable only when share prices move in the direction of initial price change. The opposite of this strategy is the contrarian strategy. Investor's optimism and pessimism take the prices away from their fundamental value, this overreaction is adjusted in subsequent periods. Based on this activity of the market, investors can formulate a trading strategy by selling winners and buying losers. Such a trading strategy is referred to as a 'contrarian strategy' in finance literature. This strategy is based on the overreaction hypothesis which says that buying losers and selling winners earn significantly positive abnormal returns (Lo and Mackinlay 1990).

A large volume of literature presented on the investigation of overreaction across the equity markets of the world. Researchers from different markets particularly, developed markets and few emerging markets investigate short-term reversal or price momentum phenomenon. Individual security returns and market indices are also extensively examined in different markets.

The remainder of the paper is arranged as follows. Section 2 briefly discusses relevant literature. Section 3 covers the data and methodology of the paper. Section 4 presents results and discussions about findings. Section 5 concludes the paper followed by recommendations.

LITERATURE REVIEW

Long-term price reversals or momentum have been mostly observed forming two separate portfolios of winners and losers based on their past returns in the formation period and then evaluating their performance in a subsequent period. Much of the initial evidence provided in early literature addresses long-term market movements. The behavior of stock prices is examined for a long period (3 to 4 years) following the portfolio formation period. DeBondt and Thaler (1985) probably for the first time observe a new market anomaly which they called as "overreaction hypothesis". Using monthly returns data, they form two portfolios of winners and losers. Their findings show that the past loser's portfolio significantly outperforms the past winner's portfolio by 24.6%. DeBondt and Thaler (1987) find

[1] See Fama (1965, 1969, 1970), Sharpe (1964), Samuelson (1965),Scholes (1972).

further evidence which supports the "overreaction hypothesis". They find that the portfolio of losers earns on average 31.9% more return than the winners' portfolio.

The premise of contrarian strategies is that the market tends to over-react to information, which means investors can profit from purchasing recent losers and selling recent winners. Chan (1988) finds that winners and losers have not constant risk over time, but that small contrarian returns are still found even after controlling for changes in risk. Conrad and Kaul (1993) show that long-term contrarian strategy returns are generally upwardly biased because of the methodology used to cumulate multi-period returns. Similarly, Baytas and Cakici (1999) find no support for the "overreaction hypothesis" in the US market, but long-term contrarian strategies perform significantly better in other countries. Contrary to previous studies, Jagadeesh and Titman (1995) find that share prices react to some firm-specific reaction, but react slowly to some general factors, arguing that the contrarian profit is mostly due to market overreaction and a very small portion to the profit can be due to the presence of the lead-lag effect.

Statman, Thorley, and Vorkink (2006) argue that behavioral finance theories may be used to explain the effectiveness of contrarian strategies. Contrarian strategies often are successful because of the overconfidence of both traders and shareholders. Gervais and Odean (2001) argue that an investor's level of overconfidence increases usually in the early stages of his career, which impacts share volume, expected profitability, and volatility in prices. Statman, Thorley, and Vorkink (2006) find that investors are overconfident as well and that share turnover, which is higher for overconfident investors, is positively related to lagged returns. Griffin and Martin (2003) explore the effectiveness of contrarian strategies based on the business cycle and whether the macroeconomic risk can explain momentum profits internationally. Lo and MacKinlay (1990) investigate the lead and lag relationships of stocks and find that such relationships may explain contrarian profits. They also find that the returns of large stocks are better than those of smaller stocks. Antoniou, Galariotis, and Spyrou (2006) find that in the UK stock market short-term contrarian strategies are more profitable and more observable for large market capitalized stocks. The results are robust to market frictions, risk, seasonality, and portfolio weighting schemes employed. The most significant factor of all that drives contrarian profits is investor overreaction to firm-specific information.

Most of the individual investors and portfolio practitioners make their stock selection based on price movements in the recent past. Carefully examining these movements investors can formulate future trading strategies. Jagadeesh & Titman (1993) find strategies based on buying winners and selling losers (momentum strategy) to earn abnormal returns in the sample period (1965-1989). They find that stocks based on their past 6 months' performance and holding for 6 months earn significant positive returns. On the contrary, Clare & Thomas(1995) find that losers continue to lose for 1st year after the formation period. However, in the longer run (2 to3 years) losers perform better than winners. The results show that losers are mostly smaller firms and reversal patterns may be due to the small size effect. Recently, Malin & Bornholt (2013) report evidence of long-term return reversal across 44 international developed and emerging markets. Late-stage contrarian strategies earn significant abnormal returns in both types of markets. Yao (2012) investigates the success of long-term contrarian and intermediate-term momentum strategies. Their evidence shows that long-term contrarian profits are almost entirely due to the presence of the January effect and size effect. The contrarian strategies formed in January are highly profitable, whereas the contrarian strategies except January are economically unprofitable.

The opposite of contrarian strategies is"momentum strategies" which are based on buying past winners and selling past losers. Siganos and Chelly-Steely (2006) investigate the profitability of momentum strategies following bullish and bearish markets. They discover that investors can realize high momentum profits by using the momentum strategy after poor lagged market returns. Chui, Titman, and Wei (2010) investigate how cultural invariants influence the returns of continuation strategies. Their findings support momentum strategies that are directly related to transaction costs, analyst forecast, and the foreigner's information, but inversely related to the size of the firm and price volatility.

Our main purpose is to investigate the behavior of stock prices after the formation of two portfolios of winners and losers. The study also highlights the useful potential strategies for both winners and losers. Further, we examine the size effect on market reversals. Finally, we explain how these strategies affect the returns to investors and fund managers as well.

DATA AND METHODOLOGY

This study uses data from Pakistan Stock Exchange (PSX) which is an emerging market, smaller in size, volatile and opaque. Another important fact about PSX is that due to political instability and a decade-long war against terrorism, it has become quite unpredictable.

We use the monthly stock return of PSX listed firms from 2001 to 2016. The firms are then arranged into two separate portfolios based on two quartiles. The upper quartiles having a larger return in the formation period are taken as winners and lower quartiles are treated as losers. Both portfolios were compared in post-formation. The formation period covers 12, 24, 36, and 60 overlapping monthly returns. In each overlapping period, there are two portfolios of losers and winners.

(1) $AR_i = R_i - R_m$

Where AR_i is the abnormal return that is the difference between security return R_i and market returnR_m. We used KSE 100 Index return as a proxy for market return. We also used 12, 24, 36, and 60 subsequent months to observe the performance of losers versus winners after the formation period.

(2) $R_p^L - R_p^W = \alpha_1 + \gamma_t$

We use a simple *t-test* approach to see the significance of the constant $\alpha_1$which tells us if the difference in losers minus winner portfolio is significant or not? If the value of alpha became positive and significant this will confirm the presence of overreaction which means losers perform better than winners and vice versa.

RESULTS AND ANALYSIS

Portfolio Formation;

Table 1 presents the characteristics of winners and losers using 12, 24, 36, and 60-month formation periods. We calculated excess return using KSE 100 index return as a market return and taking its difference from stock returns. The excess returns thus arranged are divided into two quartiles. The upper quartile gives

us winners while lower quartile stocks are treated as losers. Table shows for winners that average Abnormal Returns (AR) for winners are higher short-term i.e. 12 months while it shows decreasing in long run. While for losers remains almost the same throughout the formation period.

Table 1. Winners' and Losers' Portfolio in Formation Period

Winners' Portfolio				
	T=12	T=24	T=36	T=60
AR	.019	0.008	.009	.006
N	47	47	47	47
Minimum	0.002	.0002	.003	.001
Maximum	0.056	.025	.019	.014
Losers' Portfolio				
AR	-0.014	-0.016	-0.014	-0.013
N	47	47	47	47
Minimum	-0.039	-.034	-0.035	-0.046
Maximum	-0.006	-0.010	-0.009	-0.009

Notes: Table one represents Average Abnormal Return (AR) for winners and losers in the formation period of 12, 24, 36, and 60 months. N represents the number of securities in each portfolio. Minimum and maximum show the highest and lowest values of ARs during the formation period, respectively.

Portfolios' Performance Following Formation Period:

Portfolio performance for both winners and losers is compared over 4 different holding periods. We use four different overlapping holding periods for both winners and losers. First, two holding periods (12 and 24) represent short-term investments while 36 months and 60 months holding periods show medium to long-term investment strategies. Our1st portfolios of the winner, losers, and loser minus winners are based on a 12-month formation period which is relatively short. For winners, the average AR remains almost the same for 12 month holding period while it decreased in 24 months formation period to .001 which shows some reversal. For 36 months period winners remain winners with a return of 0.002 and in the long run, they became losers. Thus 12-month formation portfolios of winners show price continuation up to 36 months and in the long-term, it shows reversal. Similar results can be seen for all formation periods except for 36 months formation period for which all afterward ARs are negative. For all other formation periods, there is price continuation in the short-term and for the long-term, there is very little reversal. This shows the absence of overreaction in the Pakistan Stock Exchange.

Similarly, losers continue to give negative ARs for all formation periods except 12 months. The results are a little opposite to losers in the short-term formation period. For the 12-month formation period, losers show a positive return in 24 and 36 months that shows a reversal but then again becomes a loser in a longer holding period. While for all other formation periods losers remain losers for all holding period that shows the absence of overreaction. These findings are consistent with earlier findings of Yao (2012) who finds similar behavior of stock returns showing that long-term contrarian strategies are no more profitable. Our findings of losers are very interesting because in the case of short formation and shorter holding period of 12 months there is a small reversal but when we increase both formation and holding period i.e. moving to long-term this reversal turns into momentum and loser start losing again. Here is an important implication for losers is to hold losers very short term and then sell to avoid loss and never buy the losers in the long run.

Table 2. Portfolios' Performance Following Formation Period

	Holding Period			
Formation Period	T=12	T=24	T=36	T=60
12 Months	0.019	0.001	0.002	-0.002
24 Months	0.002	-0.003	-0.003	-0.001
36 Months	-0.005	-0.004	-0.002	-0.004
60 Months	0.003	0.004	-0.004	-0.007
Losers' Portfolio				
12 Months	-0.014	0.001	0.0001	-0.002
24 Months	-0.002	-0.007	-0.007	-0.0001
36 Months	-0.013	-0.010	-0.008	-0.005
60 Months	-0.004	0.010984	-0.002	-0.004
Losers - Winners Portfolio				
12 Months	-0.033	-0.0004	-0.001	-0.0001
24 Months	-0.004	-0.004	-0.003	0.0008
36 Months	-0.008	-0.006	-0.006	-0.001
60 Months	-0.007	0.007	0.002	0.003

Notes: This table gives a complete picture of all portfolios' performance after the formation period. The first column shows the formation periods for which table 1 provides all information. The horizontal is the holding period for each portfolio in a formation period. In total, we have 48 portfolios for winners, losers, and losers minus winners (Contrarian).

The last part of the table represents the loser minus winner portfolio after the formation period. We observe that for all short holding period contrarian strategies the loser minus winner returns are negative. Losers remain losers in a shorter formation period even we hold them for a longer period of time. Interestingly, for 60 months formation period loser minus winner portfolio shows positive returns thus reporting some success for long-term contrarian strategies. These findings are constant with Clare and Thomas (1995) who also reported that contrarian strategies are not profitable for the short term but perform well in the long run. However, the reasons for this still require further investigation. These reasons may be behavioral, economic, or sometimes firm-specific like size effect.

CONCLUSION

We investigate the success of traditional contrarian strategies based on selling winners and buying losers. The historical "overreaction hypothesis" presented by Debondt and Thaler (1985) was also tested. We use monthly price data from Pakistan Stock Exchange from January 2001 to December 2016. We use the KSE 100 Index which serves as a proxy of the market return. The monthly excess returns for all securities are separated into 1st and 3rd quartiles. The lower quartile securities are treated as losers while upper quartile securities are treated as winners. We use short medium and long-term formation periods to see the differences in returns following the formation period. The findings of this study show no support for the "overreaction hypothesis". Losers remain losers while winners continue to perform better in subsequent periods. However, for a longer formation period of 60 months and holding the same loser minus winner portfolio generate positive ARs. This shows little support for long-term overreaction and contrarian profits. Investors can formulate short and medium-term momentum strategies while long-term contrarian strategies can be helpful to make profitable investments.

Research Implications

This study provides important implications for stock market investment and provides some insight into strategies related to

equity investment. We focus on the listed firm of PSX so that full market representation is assured. PSX is considered highly volatile, opaque, and risky thus lacking local investor's trust. It is dominated by large institutional investors and big foreign investors who have all the resources to filter the information and use it up for profitable purposes. This study gives investment guidelines to both individual investors and portfolio managers to form superior investment strategies. This study has special importance for fund managers who have the availability of funds for a longer period of time. They can use momentum strategies by selling the losers in the formation period and buying past winners to earn higher returns.

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