Contrarian Strategy after Testing Overreaction Hypothesis in Cement Sector Companies Listed in Karachi Stock Exchange

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Abstract—The proposition that stock markets are efficient is expected to prevail in every stock exchange. It means that existing stock prices are determined with the help of complete information available. The unnatural changes in stock prices are basically due to biasness in human nature. Investors tend to overreact strongly to extreme news. Stock prices in the beginning of extremely bad news fall below their justified equilibrium price in the market and extremely good news has the reversal impact on the stock prices. This study investigates the overreaction hypothesis in the listed companies of Cement sector of KSE listed companies. Data for this empirical work is collected from the period January 2001 to December 2012. The data relates to the unadjusted stock prices of five cement companies. The secondary data is collected from AKD securities portfolios. The stocks selected for the study are those which have the complete data of the prices. This study assumes that current stock prices of the cement sector of the company are efficient. The study found evidence of existence of overreaction in stocks of cement sector as it is the case for all developing and developed countries stocks markets. However almost all the stated all the overreactions were statistically insignificant without eleventh and twelfth months. According to study the contrarian strategy may be adopted by the investors in the eleventh month. It is recommended that such studies may be conducted on the overall stocks of KSE 100 Index to give us the idea of the existence of the overreaction in the Market.

Index Terms—overreaction hypothesis, winner stocks, loser stocks, Karachi stock exchange, contrarian strategy, cement sector

I. INTRODUCTION

The proposition that stock markets are efficient is expected to prevail in every stock exchange. It means that existing stock prices are determined with the help of complete information available. Stock prices are also capable of adjusting new information therefore if any event happens in any economy it should not have an impact on the stock prices. This will help in determining true value of the firm prices of the stock containing full information. This situation will not allow investor to gain any abnormal profit in the market. Efficient Market Hypothesis (EMH) means the prices of the stocks are efficient. It has been also identified in the literature that the markets are efficient when prices of financial assets adjust quickly to relevant information [1]. EMH has three forms as found in literature namely; weak form efficient markets, semi strong form efficient markets and strong form efficient markets. In its weak efficient form the current stock prices are the result of its past period's prices. So every investor knows past price of the stock they can estimate the current price of the stock which are basically the reflection of past. The semi strong form of efficient markets means the current years prices are basically the result of publically available information. The publically available information is a broader term which includes the information about the past prices of the stock and company's annual reports. The information provided in the annual reports are basically for the outsiders of the firm who may be the investors, any expectations of the investor regarding political, economic, social and technological variables are also considered for the purpose of the stock prices. Third form of EMH is strong efficient form which states the stock prices should include all the available information both public as well as private. The information provided by the personal sources which is going to affect the stock prices should be included in the stock prices. Inside information means that if a person is employee of the company and he has some hidden information that can affect the current price of the stocks and he disclosures his information to his relative or friend who is in fact the investor the company therefore even if such thing happens it should also not have an impact on the prices of the stock. The ideal

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market is one in which prices fully reflect all available information [2], although it is very difficult for the markets to contain third form of EMH.

In contradiction to EMH is the market hypothesis stating that investors react unevenly to the new information about a given stock. The contrarian strategy is to be followed in case overreaction exists in stock prices. The winner stocks of one period become the losers in the subsequent period and vice versa. There exists a degree of predictability in future stock prices and investors take advantage of it by selling previous winner stocks and buying previous loser stocks to net in consistent abnormal profit is called a contrarian strategy. One study done by N. Ali, Nassir, Sazali, and Abidin states that the unnatural changes in stock prices are basically due to biasness in human nature. Investors tend to overreact strongly to extreme news and have their own interpretation of the stock prices or likes and dislikes about certain stocks. Stock prices in the beginning of extremely bad news fall below their justified equilibrium price. And extremely good news has the reversal impact on the stock prices. But as investors realize they reacted too strongly to the news, price movements begin to move towards the equilibrium price [3]. Thus the EMH completely fails in all its three forms. Since the investors do not have any information therefore the prices of the stock change dramatically because of some event that has occurred. So at that point of time the prices of the stock do not reflect its true value straight away rather its takes some time to readjust to its true value. In this way the overreaction in the stock prices occurs. It is important to find out if any overreaction occurs in each stock exchange in general sectors in particular. In Pakistan no proper research has been undertaken on the overreaction in Pakistan. This study hypothesis that the significant overreaction does exists in the cement sector of Karachi Stock Exchange (KSE) over the period of 2000 to 2012. The remaining part of this research paper consists of literature on overreaction hypothesis, Data and methodology, Data Analysis and Findings finally Conclusion and Recommendations.

II. LITERATURE REVIEW

Ample of literature is available on the overreaction hypothesis. The first prominent work in this area was done by the Bondt and Thaler in which they tested the hypothesis that whether there is a significant impact of dramatic news events on the stock prices of the firm. It was concluded that the dramatic news have the significant impact on the prices of the firm. This study is famous in literature because it was for the first time that proper empirical research work was done on this theory[2]. Although the work done by Professor Kendall is also extremely important in a sense that it is considered as basis for the study of random walk. In which he studied the weekly data of 22 prices series related to cotton and wheat were studied. According to him it is difficult to predict prices a week ahead without any information available because of the fact that the changes in the stock prices are wandering means random pattern arise in the series. In this study he also identified a serial correlation and a lags of the time series which made this study unique at that time [4]. Cootner edited a book in which he collected series of papers on the random characteristics of stock prices after that lot of studies have been undertaken in the same area [5] [6] [7]. The study conducted by A. Tversky and D. Kahneman proves that initially it is the human nature the people tend to overreact when they faced with good news or bad news [8]. Coming back to the work done by Bondt, and R. Thaler [2], they introduced two terms. First, the winner stocks means stocks had positive returns with respect to the market returns and second, the loser stocks meaning stocks which were losing their returns with respect to market returns. The results obtained from this study were interesting in a sense looser stocks became winners stocks and winner stocks became loser stocks. This confirmed the notion of the study that market over reaction does exist in long run also.

The study of contrarian and momentum strategies in the China stock market was about the overreaction hypothesis. In their study overreaction was reported in weekly data for up to twenty six weeks, however those reported overreactions were statistically insignificant [9]. One other study was done by the J. Wang, B.M. Burton, and D.M. Power in which they reported that for that overreaction existed for the particular set of the shares and the stocks were reported as insignificant [10].

While identifying the sources of contrarian strategy P. H. Chou, K.C.J. Wei, and H. Chung found that results were significant for holding periods up to twenty four months [11]. Yet another study done by the J.M. Griffin, P.J. Kelly, and F. Nardari was unique in nature that it was cross-sectional study on Pakistan Zimbabwe, Argentina and Canada. The study was on the developed as well as developing markets. They reported that almost approximately 80% of the stock reported as significant in case of developed market where as approximately 82% of the stocks were reported as significant; as for as overreaction in the stocks is concerned [12].

In recent studies the work done by Ali, Nassir, Hassan and Abidin is also important. In this study the specific events were identified in Malaysia and overreaction was checked. They foud overreaction for the political events and no overreaction was reported for the other events.

One similar type of study was done in Malaysia in 2011 by R. Ali, Z. Ahmad, and S. Anusakumar. They distinguished their study from the perspective of trading volumes while working on the data weekly data from January 2000 to October 2010. They used the same terminology winners and losers as defined by the Bondt, and R. Thaler [2]. They found negative returns in case of winner stocks and positive returns in case of loser stocks. Statistically significant returns for the loser portfolios were reported in this study suggesting that contrarian strategy should be focused on the low volume stocks because of the high overreaction existing in these stocks. Further it was also found that there was negative relationship between overreaction and trading volumes [13].

III. DATA AND METHODOLOGY

This study investigates the overreaction hypothesis in the listed companies of KSE in particular to the cement sector of Pakistan. Data for this empirical work is collected from the month January 2001 to December 2012. Eleven years monthly data is collected related to the prices of five cement companies, namely Maple Cement, Lucky Cement, Pioneer Cement, Dadabhoy Cement and Fauji Cement. The secondary data is collected from AKD securities portfolios. The stocks selected for the study are those which have the complete data of the prices. This study assumes that current stock prices of the cement sector of the company are efficient. Only those monthly periods are considered whose monthly prices were available. The winner and loser stocks are constructed according to the same method as discussed by the Ali et. al. [13]. First of all ranking of the stocks is done according to the previous month's returns performance. Average monthly Price of the Stock (AMP) is taken with the formula.

$$AMP_{it} = \frac{\Sigma P_{it}}{N_d}$$

where ΣP_{it} show the sum of the prices of the stock and N_d shows the total number of the days.

Monthly Returns of the Stocks Computed with the Formula:

$$MR_{it} = \frac{(AMP_{it} - AMP_{it-1})}{AMP_{it-1}}$$

where AMP_{it} shows the average current month price of the stock i over time period t and AMP_{it-1} shows the average previous months price of the stock i over t time period.

The top forty percent stocks are considered as winner stock and last forty percent stocks are considered as looser stocks for constructing returns. The portfolios are held for the periods of first, second, third, fourth, eighth, eleventh, twelfth, twenty fourth, thirty sixth, thirty seven, thirty eight, seventy, seventy one and seventy second, ninety nine, hundred, one hundred one, one hundred thirty, one hundred thirty one, one hundred thirty eight month.

The overreaction in the cement sector of KSE is assessed through the formula given by the Bondt, and Thaler [2]. For that purpose that Abnormal Returns $A_b R_{it}$ are computed by constructed by subtracting Market Returns MR_{it} of the stock i over t months from Stocks Returns SR_{it} of the stock i over t months.

So to show this statement mathematically, assuming that any pricing model is not misspecified, the difference can be reported as:

$$A_b R_{it} = R_{it} - M R_{it}$$

The market returns are computed on the basis of the available five stocks cement sector data. Where the market return is computed as:

$$MR_{it} = E(R_{mt})$$

Under the Overreaction, the average abnormal return of the stock is computed AA_bR_{it} is computed with the help of formula:

$$AA_bR_{it} = \frac{\Sigma A_bR_{it}}{N_s}$$

where $\Sigma A_b R_{it}$ is the sum of abnormal returns over t months and N_s is the total number of the stocks selected in a portfolio.

The difference between AA_bR_{it} of loser stocks shown as ALA_bR_{it} and A_bR_{it} of winner stocks shown as WA_bR_{it} should be greater than zero. So if such thing happens then it means that loser stocks are outperforming the winner stocks. It will confirm our hypothesis that overreaction exists in the market. Mathematically stated as:

$$ALA_bR_{it} - AWA_bR_{it} > 0$$

And if the markets are efficient as per formula of the EMH this difference should be equal to zero. Mathematically stated as:

$$ALA_bR_{it} - AWA_bR_{it} = 0$$

Further when to adopt a contrarian strategy would be decided in the next section of this study.

IV. DATA ANALYSIS AND FINDINGS

The market returns for all five stocks of the cement sector showed a positive returns of 1.53% which with standard deviation of 12.42%. Depicting that there was overall market did not behave consistently rather the wandering in the series of returns was prominent for all periods of time. As shown in the Table below:

TABLE I.	DESCRIPTIVE STATISTICS OF THE MONTHLY MARKET
	RETURNS OF THE CEMENT SECTOR

MARKET RETURN						
Mean	0.0154					
Standard Error	0.0105					
Median	0.0030					
Standard Deviation	0.1243					
Sample Variance	0.0154					
Kurtosis	0.7776					
Skewness	0.8092					
Range	0.6078					
Minimum	-0.2167					
Maximum	0.3912					
Sum	2.1401					
Count	139					
Confidence Level (95.0%)	0.0208					

The Descriptive statistics of Average Abnormal Returns of the winner stocks as well as looser stocks are reported simultaneously in Table II. These statistics were very interesting in a sense that abnormal mean returns of the winner stocks was negative for all 138 observations as

compare to the abnormal mean returns of loser stocks. This also suggests the stocks which were winners in the beginning of the period i.e. first month must have performed poorly for the next months and vice-versa would be the case for the loser stocks. These descriptive statistics also give hint for the existence of the overreaction of the stocks in the Market. The maximum abnormal returns of the loser stocks 31% where as for the winner stocks has been 18% and minimum average abnormal return for the loser stocks has been -0.17% where as for the winner stocks it has been -23% for the winner stocks.

TABLE II. DESCRIPTIVE STATISTICS OF AVERAGE ABNORMAL RETURNS OF WINNER STOCKS AND LOSER STOCKS

	WINNER STOCK	LOSER STOCK	
Mean	-0.0015	0.0023	
Standard Error	0.0047	0.0048	
Median	0.0014	-0.0027	
Standard Deviation	0.0552	0.0561	
Sample Variance	0.0030	0.0031	
Kurtosis	3.6255	8.0568	
Skewness	-0.9097	1.4772	
Range	0.4147	0.4886	
Minimum	-0.2334	-0.1707	
Maximum	0.1813	0.3179	
Sum	-0.2127	0.3227	
Count	138	138.0000	
Confidence Level(95.0%)	0.0093	0.0094	

The descriptive statistics suggest that loser stocks have outperformed the winner stocks and our hypothesis seems to be proved at initial stage. Overreactions computed as per the formula discussed in the methodology and the is shown in Table III.

Hence our null hypothesis of existence of the overreaction in the Cement Sector of KSE is proved however, as per table in the eleventh months significant overreaction is reported. It is interesting to note that there is an evidence of the overreaction present in the market but almost all the results reported were statistically insignificant without eleventh and twelfth months. As per data the contrarian strategy must be adopted in the eleventh month as the loser significantly outperformed winners in the eleventh month.

V. CONCLUSION

The stock markets should be efficient it means stocks prices should reflect complete information. The study found the existence of overreaction in stocks of cement sector as it is the case for all developing and developed countries stocks markets. However without eleventh and twelfth months all the statistics reported were statistically insignificant. It further recommended that such studies may be conducted on the overall stocks of KSE 100 Index to give us the idea of the existence of the overreaction in the Market.

TABLE III.	AVERAGE LOSER ABNORMAL RETURN, AVERAGE WINNER
Abno	DRMAL RETURN AND OVERREACTION RESULTS WITH THEIR
	T- STAT

HOLD ING PERI OD	WINN ERS(W)	t-stat	LOSE RS	t-stat	Winne rs - Losers	t-stat
1	0.03	0.83	-0.02	0.32	0.05	0.55
2	0.03	0.83	-0.01	0.32	0.04	0.51
3	0.01	0.71	-0.02	0.35	0.03	0.27
4	0.04	0.71	-0.02	0.35	0.06	-0.41
8	-0.05	0.46	0.05	0.26	-0.10	-0.41
11	-0.02	2.99	0.07	3.56	-0.09	-3.44
12	-0.22	2.99	0.21	3.56	-0.42	-1.82
34	-0.02	0.65	0.06	1.41	-0.09	-0.81
36	0.02	0.57	0.00	0.42	0.02	-0.55
37	-0.05	0.57	0.03	1.14	-0.08	-1.12
38	-0.03	0.94	0.06	1.14	-0.09	0.98
70	0.02	0.54	-0.06	0.86	0.08	0.69
71	0.03	0.09	-0.04	0.13	0.07	0.07
72	-0.03	0.09	0.02	0.13	-0.05	0.50
99	0.07	0.32	-0.01	0.56	0.08	2.61
100	-0.05	0.32	0.05	0.56	-0.10	-0.17
101	-0.01	0.08	0.01	-0.02	-0.02	-0.09
130	0.00	0.50	0.01	0.32	-0.01	-0.13
131	0.03	0.19	-0.01	0.64	0.03	-0.43

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