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Company Financial Reports and Efficiency of Stock Exchange

[1]Faisal Mahmood, [2]Nazakat Ali, [3]Irfan Khadim, [4]Tayyaba Amina

[1]*Asst. Professor, Institute of Management Sciences, Islamabad.*
[2]*Asst. Professor, Institute of Management Sciences, Islamabad.*
[3]*Lecturer, Punjab college of commerce, Islamabad.*
[4]*Asst. Professor, College of Commerce, Islamabad (PAKISTAN).*

ABSTRACT

This study is conducted with the objective of evaluating opportunities regarding abnormal returns for investors. As abnormal returns are closely related with efficiency of stock exchange so efficiency is measured first to reach the conclusion. Karachi stock exchange is considered for this study. Companies which are included in the KSE 100 index are considered and their share price values are compared with KSE 100 index. As event study approach is used so mean of companies' share prices and KSE 100 index are compared before and after the even. Event study in this case is announcement of financial reports. Only negative reports are selected for the study as focus is for investors who want to sell out their shares. Statistical tools Jarque-beraue, mean, standard deviation, correlation and paired sample t-test are used. Results proved Karachi stock exchange to be inefficient at semi strong level. These results guide the investors that Karachi stock exchange has the opportunities for them to have abnormal returns on their investments.

Keywords: abnormal returns, Karachi Stock Exchange (KSE), KSE 100 index, negative Reports.

INTRODUCTION

Investors are highly dependent on every information to manage their sale and purchase of shares activities. How much this information is useful for them depends upon the extent of information and timing of information (Seagot & Lucey, 2012). Among many sources of information, one is the companies' quarterly and annual financial statements. These reports have plenty of information like fixed assets, current assets, equity, long term liabilities, long term contracts, profits, dividends etc. Investors evaluate this information by them selves or by experts to manage their decision for purchasing and selling of shares to approach abnormal returns.

It is always very attract full for investors to get abnormal returns on their investments which depends upon the response of stock exchange against influencing factors. Stock exchange response is measured by its indicators called indices. Indices categorically reflect the response of stock exchange against different stimuli. In case of Karachi stock exchange, there are three main indices i-e KSE 100 index, KSE 30 index and KMI index. Among all these, KSE 100 index is the prominent one because it's long historical life and formulation. It uses the share prices of top 100 companies in the Karachi stock exchange. In this study efficiency of Karachi stock exchange, using KSE 100 index, is measured against selected companies' quarterly and annual financial reports.

It is burning issue of current time in Pakistan as government is going aggressively to boot up economically and taking every possible measure to attract foreign investments. Recent example for which is the huge investment from china and construction of economic corridor. So from investors' point of view it is very important to know whether there are any opportunities of abnormal returns for them or not? Karachi stock exchange has been analysed numerously by researchers considering different variables. However this study is relevant to a investors who are seeking for abnormal returns and is for the latest time period of four years i-e 2011-14. Here only negative reports are considered because we focused over here on the investors who are willing to sell out their shares. So positive reports for such investors are irrelevant.

Address for correspondence:

faisal_mahmood217@yahoo.com

LITERATURE REVIEW

As KSE 100 index performance is directly linked with Karachi stock exchange efficiency and abnormal returns for investors thats why efficiency of Karachi stock exchange always remained one of the more interesting topic for researchers.Hameed and Ashraf (2006) took Karachi stock exchange as an emerging market and tried to find evidences of Market volatility and weak form of efficiency. KSE 100 index was used as an indicator of Karachi stock exchange performance. Data was used ranging from 1998 to 2006. Statistical tests like Jarque-Berau were used for finding useful information from the raw form of data. Based on results weak form hypothesis was rejected. Irfan and Awais (2010) investigated the weak form of efficiency in Karachi stock exchange. They used daily and monthly closing prices of KSE 100 index values. Data was collected between 1999 to 2009. Jarque-Berau tests were used and concluded, based on results, that Karachi stock exchange is not efficient in semi strong level. Iqbal and Brooks (2007) tested CAPM on Karachi stock exchange. He used data from 1992 to 2006 relevant to daily, weekly and monthly closing prices for 101 stocks and KSE 100 index. They used kurtosis and skewness tests for analysis. They declared absence of CAPM based on their findings.

Efficiency has also been evaluated throughout the world time to time by researchers. Another emergent market i-e India stock market was analyzed by pant and Bishnoi in 2012 with respect to random walk analysis. Here five Indian market indices were studies for the objective. Data from 2005 to 2010 was selected and various statistical tests like Dickey-Fuller test, Q-statistics and autocorrelation were used. Results concluded that Indian stock market is not efficient in the semi strong level. Daniel and Vergil (2014) tested the efficient market hypothesis against the stimulus of decomposition of stock return. Stock was split out as stochastic and white noise components. The selected the Romanian capital market for their work. Statistical tools like time series of (Bucharest Exchange trade) index were used. They could not reject the presence of efficient market hypothesis in the said capital market. Chetty, Saez and Rozen berg (2005) analysed united states corporations with respect to abnormal returns when dividend is announced and the change of tax rate on the excessive amount of dividend. He used the data from 2002-04. Regression was used to analyse the data. Market efficiency against abnormal dividend and tax rates was measured. He ended his work with the conclusion that dividend and abnormal returns have a positive relation while tax rate has negative relation with the abnormal returns. Akintoye (2008) tried to correlate the efficient market hypothesis with the behavioral finance and took the previous work as base of his own work. Here he focused on the behavior of stock prices with respect to available information. The information he considered as mutual funds performance, stock splits, issuance of new shares and block transactions. He finally concluded mostly stock markets as inefficient market in the weak form.

There are also many studies which expanded their population from one country and simultaneously studied the stock exchanges of different countries. Elroy Dimson and Massoud Mussavian (1998) summarized more than two dozen articles of last century written of market efficiency and correlate all the discussion with the history of finance. He compared all these papers to explore clearer concept of market efficiency. Andrew and Helen (2004) worked out to find presence of weak form of efficiency for equity markets of Europe. Statistical tests like correlation coefficient, runs tests, multiple variance ratio (MVR) test, Schmidt and shin (KPSS), Philip test, unit root tests, kwaitkowski test, Philips-Person (PP), Dickey-Fuller (ADF) were used to analyse the data. Results highlighted that, among the emergent markets, Hungry is the only stock exchange which proved itself to be efficient in the short run. On the other hand, among the developed countries, UK, Sweden, Portugal, Ireland and Germany showed the same behaviour of weak form of efficiency.

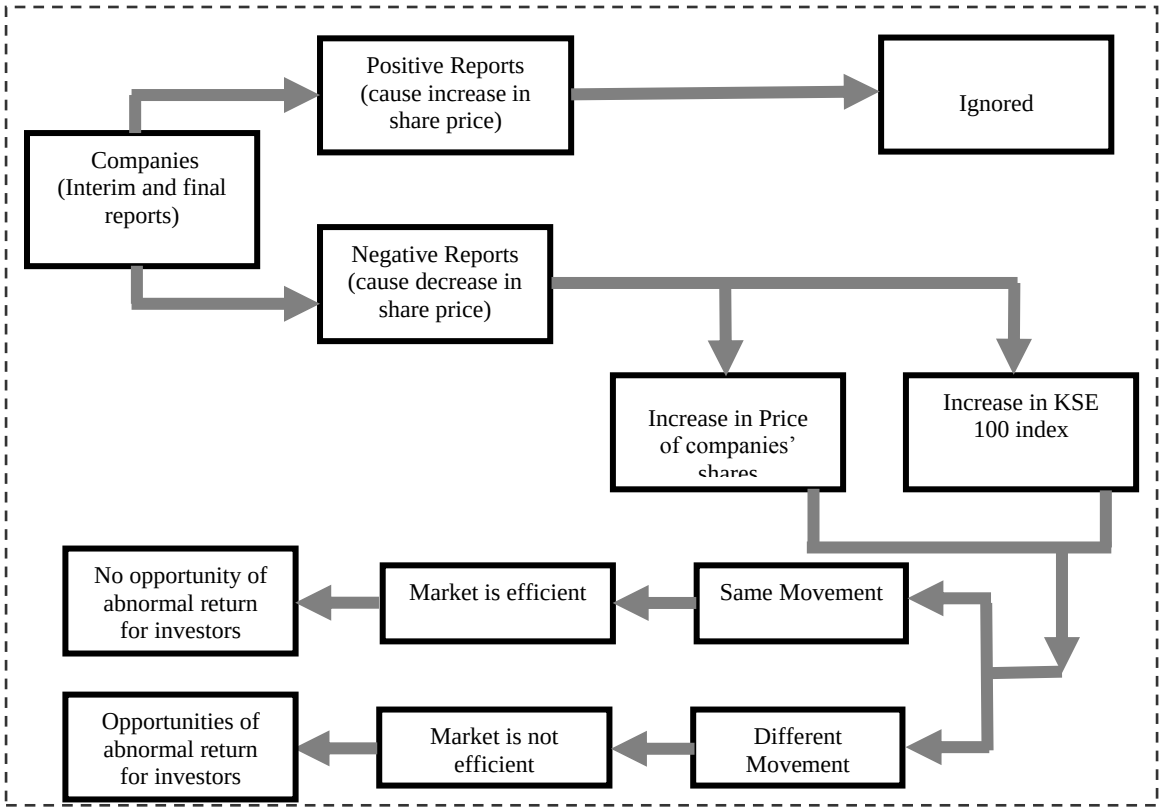
However in the literature review we also found that stock exchange may respond differently to different industries at the same time. It may be efficient for one industry and not for the other one. We got its evidence from a study conducted on Chinese stock exchange. Martin, Francis and Sun (2010) selected the Chinese stock exchange for the analysis of weak form of efficiency. As china has two main stock exchanges i-e Shanghai and Shenzhen stock exchanges, offering two types of shares each. Type "A" shares are available for domestic investors only while type "B" shares are available to foreign investors. Results verified the presence of efficient market hypothesis in case of A type shares while absence of the same for B type shares. Based on this study, we conducted our study on specific power sector on the assumption that overall inefficiency may not be applied on every sector. Karachi stock exchange should be evaluated with respect to each sector. Raja and Clement (2009) also selected Indian stock market, an emergent market, for testing its efficiency at semi strong level. The

stimulus here selected was the stock split announcement in IT industry. He found that Indian stock exchange, in general, is efficient with respect to IT industry but not efficient specifically against the information of stock split announcements in the IT industry.

RESEARCH METHODOLOGY

Top 60 companies were selected from KSE 100 index companies based on the condition that they remain part of KSE 100 index companies throughout the selected time period of four years. These are the top companies of Karachi stock exchange containing more than 50 percent in number and more than 80 percent in capitalization of whole KSE 100 index companies. In this study four years time period, ranging from Jan, 2011 to 31st Dec, 2014, was selected. Four years time period was selected to avoid the anomalies which may appear in one, two or three years and hence may manipulate the results. Values of both variables are collected in the five surrounding days on which financial reports were presented. These days are named as d_{-1}, d_0, d_1, d_2 and d_3. Total numbers of reports, during the selected time period of four years, were 960 in total. Here we selected the negative reports only because we focused in this study to investors which already have the investment in Karachi stock exchange. Negative reports are defined as the reports which may cause decrease in the value of shares of that company. Where the reports were issued on holiday, we considered the coming working days as the first day and referred as d_0. Our main source of collecting the data is official websites of the corresponding companies and official website of Karachi stock exchange.

Diagrammatically the whole methodology can be expressed in the following table.



Source: Research design

Data collection process can be summarized in the following table.

Table1.

Items	Description	Selection
KSE 100 index Companies	Top 60 companies of KSE 100 index on the basis of their liquidity and capitalization.	60 shares
Companies financial Reports	Quarterly and Financial reports of selected companies for the duration of four years	Twelve financial reports per year per company for the time period of four years
Total number of reports	Total reports relevant to four years i-e 1st Jan 2011 to 31st Dec 2014.	960 reports
Number of negative reports	The reports which resulted decrease in share prices on day d_0	400 reports out of 960 reports.

Event study technique is used here to find the required results. This technique is familiar in the research world and frequently used by researchers. As far as Karachi stock exchange is concerned, different events like acquisitions and mergers, has been used to find out efficiency of Karachi stock events in response to these events. So following the same pattern here another event, the presentation of quarterly and annual financial reports, are used to find out the efficiency of Karachi stock exchange which ultimately help us out to find opportunity of abnormal returns for investors. Effects of these reports are observed during the five days duration i-e one day before the announcement of financial report, announcement day and following three days. The day before announcement day has not directly analysed but is used to segregate positive reports from the negative ones. Statistical tools like Jarque-Berau test, correlation and paired sample t-test are used to find out meaningful information from the data.

We formulated the following hypothesis to be tested:

H_0: Share price movement mean (μ_1) is equal to KSE 100 index movement mean (μ_2) in the selected time period of three days after presentation of financial reports.

H_1: Share price movement mean (μ_1) is not equal to KSE 100 index movement mean (μ_2) in the selected time period of three days after presentation of financial reports.

DATA ANALYSIS AND DISCUSSION

Day 1 Analysis

Before going for any major analysis data is required to be analysed with respect to normality. So among the normality test we selected the Jarque-Bera test. This test calculated the normality for both variables i-e share prices and KSE-100 index values. Test calculated the normality in two dimensions i-e kurtosis and skewness. The skewness values for share price and KSE-30 are 0.231 and -0.160. In the same way the kurtosis values for the same variables are 0.061 and 0.462 respectively. The other correlated calculation for these values is standard error. Standard error for skewness regarding these variables is 0.152. Accordingly, standard error for the kurtosis regarding these variables is 0.290. Statistical rule states that to check of normality within data, we have to double the standard error which is then the answer is given positive and negative sign to establish the two boundaries for the normality range. In our case, for example, when we double the standard error of skewness for these variables, it comes as 0.304. It means the normality range for the data is +0.304 and -0.304. Now, if we analyse the skewness values i-e 0.231 and -.160 of both variables, lie between the normality range i-e +0.304 to -0.304. This analysis reveals that data is normal with respect to skewness and not significantly exceeds the normality range. In the same way the normality range for the kurtosis is +0.580 and -0.580 respectively while kurtosis values for both the variables are 0.061 and 0.462 which are quite within the two extreme values. Again, we can conclude that data is normal and not significantly exceeds the normality range. The following table is giving statistical analysis for the variables with respect to normality.

Table2. *Descriptive Statistics*

		Statistic	Std. Error
Share Price	Mean	.15303	.13689
	Median	.00000	
	Variance	5.602	
	Std. Deviation	2.3904	
	Skewness	.295	.192
	Kurtosis	.067	.293
KSE 100 Index	Mean	-.07701	.10208
	Median	.09712	
	Variance	3.068	
	Std. Deviation	1.76093	
	Skewness	-.125	.192
	Kurtosis	.401	.293

Further statistical analysis of data regarding paired samples and correlation can be observed in the following table. Mean values of both variables, in the first day after the issuance of negative reports, calculated as 0.15209 and -0.07703. These values are different from each other by 0.22912. As far as standard deviation is concerned values for both variables are as 2.38997 and 1.76112. These values also away from each other by 0.62885. The correlation value is 0.598.

Table3. *Paired Samples Statistics*

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Share Price	.15208	500	2.38906	.13989
	KSE 30 Index	-.07702	500	1.76102	.10207
Paired Sample Correlations					
		N		Correlation	Sig.
Pair 1	Share Price & KSE 30 Index	400		0.589	.000

The Table 3 is giving the detail of results regarding paired sample t-test. SPSS was used to find the value of t which is 2.107. This value is greater than the corresponding tabulated value. Significance level in this analysis was found to be 0.039.

Table4. *Paired Samples Test*

		Paired Differences				
		95% Confidence Interval of the Difference				
		Lower	Upper	T	df	Sig.(2-tailed)
Pair 1	Share Price - KSE 30 Index	.00907	.44092	2.103	399	0.052

Both the variables have a significance difference in their mean values which means that these variables are not moving with the same pace. Difference reflects that share price is moving downward with faster than KSE-30 index. In case of standard deviation, used to find the expansion of variables, again there is a major difference and share price expansion is more as compared to KSE-30 index. Correlation regarding these two variables is indicating that both variables have a positive correlation and their direction is same. All these calculations enable us to make a rough idea about relation between variables. Both the variables are looking to be positively inter related but one variable is moving faster as compared to the other. But final conclusion cannot be formulated unless we take a view of t values from the paired sample t test which gives clearer picture about the variables patterns.

Paired sample t-test revealed that during the first day time period t value is higher than that of the value taken from the table. Here the significance level is less than 0.05 which mean that results are obtained with 95% confidence level. So the null hypothesis, in this case, can be rejected with the same confidence level. These results reveal that Karachi stock exchange is not efficient at semi strong level in the selected time period of the first day. This behaviour to Karachi stock exchange leads to the situation where investor can gain abnormal gain by selling the shares before their value decline. Inefficiency means stock exchange takes some time to fully absorb the negative impacts of financial reports. This time is the golden time for investor and he can sell his shares to gain abnormal gain.

Day 2 Analysis

Day 2 is the next day to Day 1. Again first normality is tested by Jarque-Berau test. For share price, value of skewness and kurtosis are calculated to be 0.308 and 0.094 respectively. In case of KSE 100 index same values are -0.104 and 0.306 respectively. Standard errors for both variables in this calculation are 0.203 and 0.307 respectively. Applying the same rule, normal range for skewness is +0.406 to -0.406 and for kurtosis is +0.614 to -614. On day 2 values for skewness and kurtosis lie well within limit which prove normality of data.

Table5. *Descriptive Statistics*

		Statistic	Std. Error
Share Price	Mean	.15345	.13721
	Median	.00000	
	Variance	5.571	
	Std. Deviation	2.3862	
	Skewness	.308	.203
	Kurtosis	.094	.307
KSE 100 Index	Mean	-.07679	.10189
	Median	.09689	
	Variance	3.096	
	Std. Deviation	1.76882	
	Skewness	-.104	.203
	Kurtosis	.306	.307

After proving data to be normal, further statistical tools are applied. Mean values of both variables are calculated as 0.153 and -0.0768. Standard deviation values are 2.388 and 1.760 respectively and the difference between these values is as 0.628. Correlation between these variables is 0.532.

Table6. *Paired Samples Statistics*

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Share Price	.15301	400	2.38892	.13701
	KSE 100 Index	-.07684	400	1.76085	.10193
Paired Sample Correlations					
		N		Correlation	Sig.
Pair 1	Share Price & KSE 100 Index	400		0.532	.000

After above calculation, paired sample t-test is used to compare mean of these variables. t value on the 2nd day is calculated to be 1.902. Significance value for this test is 0.389.

Table7. *Paired Samples Test*

		Paired Differences				
		95% Confidence Interval of the Difference				
		Lower	Upper	T	df	Sig.(2-tailed)
Pair 1	Share Price - KSE 100 Index	.00893	.44125	1.902	399	0.389

Both the variables, on Day 2, looking to be away from each other significantly with respect to their means. Difference is reflecting that share price is moving with more pace than that of KSE-100 index. Standard deviation is reflecting that share price value is more expanded than that of KSE-100 index. Correlation value between these values is 0.532 which is an indication that variables have a positive correlation and moving in the same direction. All these calculations are indicating roughly that both variables are moving in the same direction but with different pace. Clearer view is observed through t value.

t value calculated on the 2nd day to be 1.902 which is greater than the corresponding tabulated value. However again the problem is relevant to significance value which is again very high than what is required. Significance value in this case is 0.389 which means the null hypothesis can be rejected with 62% confidence level which is very low than the required level of 95%. With this confidence level the results cannot be generalized.

Day 3 Analysis

Day 3 is the next day to Day 2. Again first normality is tested by Jarque-Berau test. For share price, value of skewness and kurtosis are calculated to be 0.293 and 0.087 respectively. In case of KSE 100 index same values are -0.95 and 0.293 respectively. Standard errors for both variables in this calculation are 0.194 and 0.286 respectively. Applying the statistical rule, normal range for skewness is +0.388 to -0.388 and for kurtosis is +0.572 to -0.572. On day 3 values for skewness and kurtosis lie well within limit which prove normality of data.

Table8. *Descriptive Statistics*

		Statistic	Std. Error
Share Price	Mean	.15276	.13692
	Median	.00000	
	Variance	5.496	
	Std. Deviation	2.3907	
	Skewness	.293	.194
	Kurtosis	.087	.286
KSE 100 Index	Mean	-.07712	.10202
	Median	.09723	
	Variance	3.127	
	Std. Deviation	1.76126	
	Skewness	-.095	.194
	Kurtosis	.293	.286

After proving data to be normal, further statistical tools are applied. Mean values of both variables are calculated as 0.152 and -0.070. Standard deviation values are 2.389 and 1.761 respectively and the difference between these values is as 0.628. Correlation between these variables is 0.544.

Table9. *Paired Samples Statistics*

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Share Price	.15203	400	2.38907	.13694
	KSE 100 Index	-.07706	400	1.76113	.10123
Paired Sample Correlations					
		N		Correlation	Sig.
Pair 1	Share Price & KSE 100 Index	400		0.544	.000

After above calculation, paired sample t-test is used to compare mean of these variables. t value on the 3rd day is calculated to be 1.893. Significance value for this test is 0.401.

Table10. *Paired Samples Test*

		Paired Differences				
		95% Confidence Interval of the Difference				
		Lower	Upper	T	df	Sig.(2-tailed)
Pair 1	Share Price - KSE 100 Index	.00914	.44207	1.893	399	0.401

Means of both variables again have a significance difference between their values. This difference is the evidence that both variables are not moving with the same speed and share price movement is more than KSE 100 index. In case of standard deviation, share price expansion is more than that of KSE 100 index. Correlation is showing positive correlation which means variables are moving in the same direction. T value on the third day is 1.893 and it is greater than the corresponding tabulated value. Significance level in this calculation is 0.401 which is again quite below than that of required value. With significance value we can reject the null hypothesis with 60% confidence and hence with such a low level results cannot be generalized.

Day 1 -3 Analysis

Now we cumulatively analyse the data from day 1 to day 3. Data for all the three days relevant to positive reports was collected and same statistical test are applied. Skewness and kurtosis values appeared as 0.286 and 0.186 for share price while -0.195 and 0.192 values for KSE 100 index. Standard error for both variables is 0.304 for skewness and 0.295 for kurtosis. Standard errors are reflecting that data is significantly normal.

Table11. *Descriptive Statistics*

		Statistic	Std. Error
Share Price	Mean	.15546	.13786
	Median	.00000	
	Variance	5.753	
	Std. Deviation	2.3514	
	Skewness	.286	.304
	Kurtosis	.186	.295
KSE 100 Index	Mean	-.07817	.10458
	Median	.09823	
	Variance	3.206	
	Std. Deviation	1.76248	
	Skewness	-.195	.304
	Kurtosis	.192	.295

After proving data to be normal, further statistical tools are applied. Mean values of both variables are calculated as 0.153 and -0.078. Standard deviation values are 2.387 and 1.763 respectively and the difference between these values is as 0.624. Correlation between these variables is 0.642. Correlation between these variables is 0.671.

Table12. *Paired Samples Statistics*

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Share Price	.15312	1200	2.38703	.13812
	KSE 100 Index	-.07812	1200	1.76321	.10213
Paired Sample Correlations					
		N	Correlation	Sig.	
Pair 1	Share Price & KSE 100 Index	1200	0.671	.000	

T value in the paired sample t-test for all three days calculated to be 2.258 and corresponding significance value is 0.039.

Table13. *Paired Samples Test*

		Paired Differences				
		95% Confidence Interval of the Difference				
		Lower	Upper	T	df	Sig.(2-tailed)
Pair 1	Share Price - KSE 100 Index	.00795	.44286	2.258	1199	0.039

Means again have almost the same patterns as in the analysis of individual days. Difference is again giving evidence that variables are not moving with the same speed. Speed of share price is looking to be more than KSE 100 index. As far as standard deviation is concerned, expansion in case of share price is more than KSE 100 index. Correlation between these values is positive and indicating that variables are moving in the same direction. T value also has same pattern as in case of individual days. However the important thing in this case is the significance level. Significance level in this calculation is 0.039 which means that result have a confidence level of 96%. So this level is above the required level of 95%. So null hypothesis in this case can be rejected with 96% confidence and results can be generalized.

So the simple explanation of the results is that impacts of negative reports remain in the stock exchange for few days and are absorbed slowly. And slowly absorption of the stock exchange is the characteristic of inefficiency. So this inefficiency becomes blessing for the investor and he sells his shares before the stock exchange start reflecting these impacts. Stock exchange inefficiency is not only belongs to Karachi stock exchange but it the characteristic which may be observed throughout the world in various stock exchanges. Same results have been obtained in the Karachi stock exchange, using different variables and in the different time frames.

CONCLUSION

The study worked on the efficiency of Karachi stock exchange during the time period of three days, using two variables i-e KSE 100 index and share prices of the companies which remain part of KSE 100 index throughout the chosen time period of four years. Relation of both the variables was measured, mainly, using paired sample t-test. Results revealed that although both variables are moving in the same direction but share price movement is moving bit faster than KSE 100 index. This difference of movement reveals that Karachi stock exchange is not efficient at semi strong level as fails to absorb instantly company negative reports effects within the chosen time period of 3 days. On the basis of these result we are in the position to reject null hypothesis and accept the alternative one. When company fails to show the efficient behaviour, chances for investor arise to earn abnormal gain from the negative reports. He may sell out the shares before Karachi stock exchange absorbs the effects of company negative reports.

In this study we selected negative reports only. Author has also done same analysis on the basis of positive reports with different time period. All this study is in the short term and measures on the report announcement day and following three days. However further study can be done in the long run to find out how much time it takes to fully absorb effects of these reports. But in extension with the time period, other stimuli also start to influence, and it may a problem to distinguish these effects. Similarly other indices of Karachi stock exchange like KSE 30 index and KMI which are also the powerful indicators of Karachi stock exchange performance, may be used to find efficiency of stock exchange.

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