

## Random Walk, Capital Market Efficiency and Predicting Stock Return: A Case Study of Karachi Stock Exchange

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### Abstract

This research aims to investigate the presence of weak form of efficiency and stock return predictability in Pakistani Equity Market. The daily return on stock here is used to verify the weak form of market efficiency in Karachi Stock Exchange (KSE). For this purpose a data set from August 1998 to August 2013 was obtained and applied ADF, PP test, Run test, Autocorrelation and OLS model. These entire tests are applied to check the hypothesis of Randomness in stock returns. The result revealed that return distribution of KSE is not normally distributed and short term predictability exists in KSE. There is day of week effect. The study has important implications for investors and regulatory authority. This study is limited to the sample element and period. Future study may be conducted by taking Tuesday as a first day of week followed by Monday holiday to testify daily predictability in KSE.

**Keywords:** KSE; Stock market efficiency; Weak form efficiency; Random Walk Model

### Introduction

Capital market efficiency is an important issue in developing economy, as investors confidence depends on level of market efficiency [1]. Previous studies were focused on testing weak form market efficiency in Pakistani equity market, but they overlooked the stock return predictability. Further none of studies attempts to interpret their results based on country characteristics and foundation of developing economy. The literature concerning about capital market efficiency and Random walk is inconclusive and give mixed result in KSE. Karachi Stock Market is efficient in daily, weekly and monthly return that is random walk in stock prices is followed [2]. KSE is volatile, it goes up gradually but falls down sharply, and hence investors earn unusual return [3]. Patel et al. conducts a study on Asian Stock Market and reports weekend anomaly in most of Asian stock markets including KSE. Another study by Irfan et al. on KSE found non-randomness in stock prices and serial dependency among stock return and weekend effect.

On the other hand Riaz et al. conducted a study on monthly data of stock return of Karachi Stock Exchange. Applying Autoregressive Model, their result shows that the Karachi market follows random walk, and proves that Karachi Stock Exchange is efficient in weak form. Mehmood et al. in his research proved that Karachi stock market is efficient in daily, weekly and monthly return. They analyzed data set from 1991 to 2003. Sanaullah et al. also in view that Karachi Stock Market is not in the weak form of efficiency, as they analyzed data from 2000 to 2010 by applying ADF and KPSS tests.

Moreover Rabbani et al. in their study on the Karachi Stock Market explore that in some way random walk follows, but in general the random walk behavior does not follow by Karachi Stock Market. However Nawaz et al. are in view that Karachi Stock Market follows random walk and Pakistani market is very efficient in absorbing information, as their evidence revealed by Johnson co-integration technique.

The mixed results in KSE create room for researcher not to only testify validity of Random Walk Model (RWM) but to check stock predictability in the KSE. In following we will present relevant work on it and proceed to literature gap and methodology of current Research work.

### Background

The theory of EMH is widely tested in different markets and shows inconclusive result. For an equity market, it's an important concern. In behavioral finance different ways are discovered how to respond to coming forth information in financial market. There are few assumptions of EMH, one of them is a large number of investors trading in equity markets and their primary aim is to enhance profit for them. For profitable trading they evaluate each piece of information and then valued the security at market and shows bull or bear behavior. Information comes in market randomly and independently, information has a unique effect on security, so if the market is efficient in processing information, security prices must show random behavior. Return on one time must be independent of another time, which is the assumption of Random Walk Model. In evaluating bad or good news help the investor to determine the intrinsic value of a security. It means in an efficient market, prices uncorrelated and serially independent, which satisfies the Weak form of efficiency of markets. Conversely to this means market is inefficient, and there exists room for technical analyst to beat the market. As in developing market, there is informational inefficient, security prices do not follow a random walk. Pakistan is an emerging economy; weak form of market efficiency is primarily concerned for investors and academicians.

### Review of Literature

The EMH attracted academicians since Fama presents EMH theory in 1970. There are three forms of market efficiency and these were tested across the world and reports mix results. In developing countries extensive literature is available in Weak form of Market efficiency.

Jarrett conducts a study in Hong Kong stock exchange and found

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it an inefficient market. Abeysekera conducted a study on Colombo stock exchange, employing non-parametric test on daily stock return from 1991 to 1996 and revealed that Colombo market is not weak form of efficient. Random walk in stock prices is not followed in Karachi Stock Exchange, it is more volatile, it goes up gradually but falls down sharply, and hence investors earn unusual return [4]. Riaz et al. conducted a study on monthly data of stock return of Karachi stock exchange. Applying Autoregressive Model, their result shows that the Karachi Market do not follow random walk, and proves that Karachi stock exchange is not weak form of efficient. Another study conducted by Patel et al. they took monthly return from 2000 to 2011, applying Runttest, ADF, Variance Ratio test and Autocorrelation. These set of data revealed that some anomalies exist in returns of stock of HANSENG and SSE shows that they are not efficient in weak form. Mustafa and Nishat in his research proved that Karachi stock market is efficient in daily, weekly and monthly return. They analyzed data set from 1991 to 2003. Haque and Liu also in view that Karachi stock market is not in weak form of efficient, as they analyzed data from 2000 to 2010 by applying ADF and KPSS tests. Moreover Mehmood et al. analyzed three year financial data of KSE-100 Index, employing ADF, PP and autocorrelation test, their result revealed that Pakistani market is inefficient market, no opportunity for technical analyst.

However Tahir concluded on the basis of ARIMA test on data set of 2000 to 2009 that KSE is not efficient in weak form. Stock return predictability exists for technical analyst. Husain [5] in his study proved the stock return in Karachi stock exchange is serially dependent, hence investor can get abnormal return by analyzing past trend. Another study was conducted on KSE-100 index by Mustafa and Ahmed and reported that weak form of efficiency is prevailing in Pakistani Market. Dhaka Stock Exchange does not follow RWM as stock returns are serially correlated [6]. Almonte studied the Philippine Stock Market and observed some anomalies that existed in stock return over the period 2001 to 2010.

Furthermore Jethwani and Achuthan tested Indian stock market by analyzing daily stock return for the period of 1994 to 2010 and their result shows that Indian market is efficient in weak form. Moreover Irfan et al. in their study on Karachi stock market explored that in some way random walk follows but in general the random walk behavior do not followed by Karachi Stock Market. However Mudassar et al. in view that Karachi Stock Market do not follow random walk and Pakistani market is inefficient in absorbing information, as their evidence revealed by Run test, ADF and PP Test. Bangladeshi stock market is not informational efficient, as it does not follow the Random Walk Model [7]. Another study conducted by Nisar and Hanif on four Asian market, India, Pakistan Bangladesh and Sri Lanka and come to the conclusion that all these market follow Random walk, Hence all these major Asian market are efficient in weak form. Similarly a comparative study on Saudi Stock Market conducted by Asiri and Alzeera reports that in the year 2005, 2006 and 2010 Saudi market was efficient but in others years the market shows inefficient behavior.

## Literature on Monday Effect

Monday effect is a hot issue in literature on stock market efficiency. This is an anomaly that exists in share prices and a serious challenge for EMH. There is evidence that the day of week, that is Monday has a lower or negative return as compare to other day of week, and Friday has a higher return. This weekend effect is tested all over the world and reported for policy implication and restoring investors' confidence. Monday have significant effect in stock exchange and day of week effect

exists in major stock exchange of world as reported [8-11]. Theories of finance give possible explanation of this weekend anomaly, but researchers thrust is still unfulfilled about it. One possible explanation they give the measurement of errors while taking the closing prices for calculating stock return is not considered as correct representation of intrinsic value of stock. Some argues that since Monday is the first day of trading and Friday is last trading day, there is a high trading on last day and low trading on first day, so Monday shows unusual return. Okpara studies the Ghana Stock Exchange and proved that GSE is inefficient market as it does not followed Random walk, and shows Serial correlation and Monday effect.

Gilmore and McManus investigated Indian stock Market and found that the Indian market is inefficient in processing information as Monday effect exists. In Pakistani equity market week of the day effect is significant and Monday have either negative or low return compare to other days of week [12-14]. However Ali and Akbar reports that there is no day of week affect in KSE and stock return follow a Random Walk. The Monday effect is vibrant for researchers of Behavioral finance and Stock market regulatory Authority.

## Literature gap

Extensive research work has been done on testing weak form of market efficiency and reports mixed result. Few authors are in view that market is not efficient and other are opposite to the opinion. But no study reports the daily predictability in KSE. The current study aims to meet purposes, testing weak form and the extent of predictability of Stock return in Karachi Stock Exchange, being largest Market in Pakistan.

## Statement of the problem

Academic motivation for the revise is that empirical evidence on weak form efficiency is dissimilar. Current research will use different tests to inspect the patterns of Stock return and predictability of future return in KSE based on past information.

## Objectives of Study

- To empirically investigate the weak form of market efficiency in KSE.
- To test the validity of Random Walk Behavior at KSE.
- To empirically investigate the daily predictability in KSE.

## Method of Study

In this study we used different statistical model to test the Random Walk Model. A data set of stock prices of Karachi Stock Exchange from Aug 1998 to Aug 2013 was obtained for analysis purposes and checks the presence of unit root and predictive properties in stock return.

## The sample

Forty companies are selected, using proportionate sample from ten sectors. These ten sectors contribute more than 90% of total market capitalization. Their daily prices from August 1998 to August 2013 were obtained for analysis purposes.

There daily prices were obtained from business recorder and yahoo finance official websites. Then there Return is calculated by using formula in excel sheet,  $Y_t = \ln(Pit) - \ln(Pit-1)$ .

Where  $Y_t$  is daily stock return,  $Pit$  is share price today and  $Pit-1$  is the share price of the previous day. And  $\ln$  is natural logarithmic of the fraction.

### Sources of data

This research work based on secondary data. The stock prices have been taken from reliable sources. The KSE official websites in addition to yahoo finance and Business Recorder websites were used for the purpose.

### Random Walk Model (RWM)

$$\Delta Y_t = \Theta Y_{t-1} + \epsilon_t$$

Where  $\Delta Y_t$ =Share price at time t,  $\Theta Y_{t-1}$ =Share price at previous day and  $\epsilon_t$  is an unpredictable component. It is known as Random Walk Model (RWM), which states that the current price is equal to last day price plus an unpredictable term, thus if RWM follow on the stock market, prices follow Random Walk, otherwise prices are predictable and confirms weak form of market inefficiency.

### Predictive model (OLS)

For stock return predictability in KSE we will use an OLS model, borrowed from Jarret. The model is  $Y_{it} = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \epsilon_{it}$

Where  $Y_{it}$  is daily stock return and  $\beta_0$  is intercept of model  $\beta_1, \beta_2, \beta_3, \beta_4$  and  $\beta_5$  is the slope of days of the week.  $X_1$  is dummy variable for Monday, takes a value of 1, else 0, while  $X_2, X_3, X_4$  and  $X_5$  dummy variable for Tuesday, Wednesday, Thursday and Friday, takes value 1, if same day, else 0 and  $\epsilon_{it}$  is the error term of regression model (Table 1).

### Empirical Results

#### Descriptive statistics of daily return

The mean return is 0.000875 with a standard deviation of 0.01529. Similarly the Skewness is -0.290, and value of Kurtosis is 6.86, shows very little trouble in data for estimating our required result. We can proceed further with the said data set.

#### Run test

The Run test is also called as Geary test is a non-parametric statistical test that checks randomness hypothesis for a two-valued data sequence, more precisely it can be used to test that elements of the sequence are mutually independent.

A "run" of a sequence is a maximal non-empty segment of the sequence consisting of adjacent equal elements. For example, the sequence "++++-+++-+++++----" consists of six runs, three of which consist of +'s and the others of -'s. If +s and -s alternate randomly, the number of runs in the sequence  $N$  for which it is given that there are  $N_+$  occurrences of + and  $N_-$  occurrences of - If the expected number of Runs is different than the actual number of runs than the null hypothesis of randomness will be rejected.

The Result of Run Test is presented in Table 2 the Z-statistics is -3.777, which is less than 1.96 critical values. The null hypothesis that data has a random behavior is rejected. The expected number of runs is less than the actual runs, which confirms the non-random behavior of stock return of KSE. So on the basis of Run Test, we are in no doubt that Karachi Stock Market does not follow RWM and the market is inefficient in processing past information, and create a room for investors to make unusual return. The result is consistent with Mustafa

and Nishat [2], Nisar and Hanif [1], Haroon, Patel et al. (2012), Irfan et al. (2010), Mehmood et al. (2012), Sanaullah et al. (2012), Rabbani et al. (2013) and Nawaz et al. (2013). However, our output contradicts with Ali and Akbar.

### Philip-Perron test

The Phillip-Perron (PP) test is widely used to test the RWM hypothesis. The null hypothesis of PP test claims that a unit root is present in series at a given level of confidence. The high negative t-statistics is proof of Non-Randomness in series.

In Table 3 the Philip Peron test was presented. This test also checks the randomness of Data, since the t-value of -56.00 is less than 1% critical Value of -3.43. Hence null hypostasis of Non-Stationary was rejected; it gives consistent result of ADF test. So again on the basis of PP test we reject the null hypothesis of the Randomness in Daily Return. We are not in doubt that Karachi Stock Exchange does not follow a Random walk, consistent with Abeysekera, Haque and Liu, Mudassar et al., Tahir et al., Husain and Mustafa and Ahmed.

### Augmented Dickey-Fuller test

The Augmented Ducky fuller test result present here in the Table 4 above. ADF test is applied at level with intercept. The null hypothesis was that data contain a unit root, which is Random walk follow by stock prices in our case. The more is the negative test value, the stronger is the probability of rejecting null hypothesis. The value of t-statistics is -55.03 which is less than the 1% critical Value, hence we reject the null hypothesis of non-stationairty, and the data is stationary at 1% level. So it is concluded that there is non-randomness in data, the distribution follows non-random behaviors. Therefore on the Basis of ADF Result it is concluded that the daily Return of Karachi Stock Exchange do not follow Random walk, so we reject the null hypothesis that Karachi stock Exchange follow Random walk. The implication of ADF test result for investors is that the better forecast the stock return by analyzing past trend of securities in KSE. The result match with those studies done in emerging economy like Poshakwale, Mehdiian and Perry, Aggarwal and Rivoli, Aly et al. and Guidi et al. [8-12].

### Autocorrelation

Serial correlation measures the correlation between stock return in one period with stock return in the previous period. Positive or negative results indicate the possible existence of potentially profitable trading strategies. A zero correlation means that no trading strategy can yield potential.

A zero correlation is consistent with the random walk hypothesis. Durbin-Watson Coefficient is used to check presence of serial in residual.

In Table 5 the result of autocorrelation is presented; all the t-statistics are significant at the 1% level. The Q-Stat is ranging from 32.756 to 58.944, and Auto-correlations have values from -0.001 to 0.093. All these values are significant at 0.00 probabilities. Since Autocorrelation of 1ll 16 lags is not equal to zero, it shows the strong autocorrelation among prices and return of stocks at Karachi Stock Exchange. The today's return correlates with the last day return. Similarly the same result also revealed from Figure 1, where the coefficients of each day lie

KSE-100	Min	Max	Mean	Std. Deviation	Skewness	Kurtosis
Daily Return	-0.09934	0.09998	0.000875	0.015290	-0.2950	6.863

Table 1: Descriptive statistics of daily return of KSE.

<b>Test Value</b>	<b>0.0001311</b>
Cases < Test Value	1855
Cases ≥ Test Value	1855
Total Cases	3710
Number of Runs	1741
Z	-3.777
Asyp. Sig. (2-tailed)	0.0000

Table 2: Run test KSE daily return.

Test Statistics	1% Critical Limit***	5% Critical Limit**	10% Critical Limit*
-56.00675	-3.4352	-2.8628	-2.5675

\*10% significant, \*\*5% significant and \*\*\*1% significant

Table 3: Test result of Philip-Perren test.

Test Statistics	1% Critical Limit***	5% Critical Limit**	10% Critical Limit*
-55.03	-3.43	-2.86	-2.56

\*10% significant, \*\*5% significant and \*\*\*1% significant

Table 4: Augmented Dickey-Fuller test.

Lag	Autocorrelation	Std. Error	Box-Ljung Statistic		
			Value	df	Sig.
1	0.093	0.016	32.421	1	0
2	0.047	0.016	40.576	2	0
3	0.047	0.016	48.761	3	0
4	0.038	0.016	54.167	4	0
5	0.035	0.016	58.689	5	0
6	0.003	0.016	58.712	6	0
7	0.033	0.016	62.649	7	0
8	0.009	0.016	62.935	8	0
9	0.046	0.016	70.851	9	0
10	0.037	0.016	75.83	10	0
11	0.011	0.016	76.311	11	0
12	0.025	0.016	78.678	12	0
13	0.001	0.016	78.68	13	0
14	0.012	0.016	79.199	14	0
15	-0.001	0.016	79.206	15	0
16	0.034	0.016	83.475	16	0

Table 5: Test Result of autocorrelation for a lag of 16 based on AIC criteria.

within upper and lower limits. It means that there exists a linear trend among the returns at Karachi Stock Exchange, which is a clue of Weak form of Market efficiency existence. So based on Auto-correlation test it is concluded that Karachi Stock Exchange is not efficient in Weak form and do not follow RWM. The result consistency has with Mustafa and Ahmed, Uddin and Khoda and Almonte.

### Day of week effect

Table 6 presents the Daily mean return on stocks at KSE. For this purpose returns all days returns were sorted out in excel sheet and then calculate the descriptive statistics. The result clearly shows that Monday effect exists in KSE. The Monday has lowest return of 0.000249 and standard deviation of 0.007502. Since it is the lowest return in all days of the week. It means there is selling trend on Monday while Friday has a return of 0.000915, which clarifies the purchase trend. However Wednesday has the highest mean return among five trading days of the week. It means there is day effect in Karachi Stock Exchange; hence Random walk is not followed. Investors are involved in insider trading, because of Information asymmetry in the stock market. Our result confirms studies of Haroon and Nida (2013), Aggarwal and Rivoli [10], Aly et al. [11] and Guidi et al. [12]. However it is inconsistent with Ali and Akbar (2010).

### OLS predictive model

For daily predictability we use OLS model with dummy variable for days of week as used by Jarret. The outputs of regression result present here in Table 7 for the dependent variable of daily return of ending prices. We reject the null hypothesis that  $\beta_0 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$ , since each day has their own coefficients and t-value ranging from -1.23 to 6.22 and p-value from 0.001 to 0.07. The result of these time series estimation is good fit as our F-statistics has a value of 168.08 and highly significant as probability is 0.000. The adjusted coefficient of determination of the overall study time period is 0.244, it means the independent variable of the model is explaining 24% variation in our dependent variable, which is return on daily stock in KSE.

The coefficient of the days of the week not equal to zero for four trading days and all are significant up to 1% level. As we have five

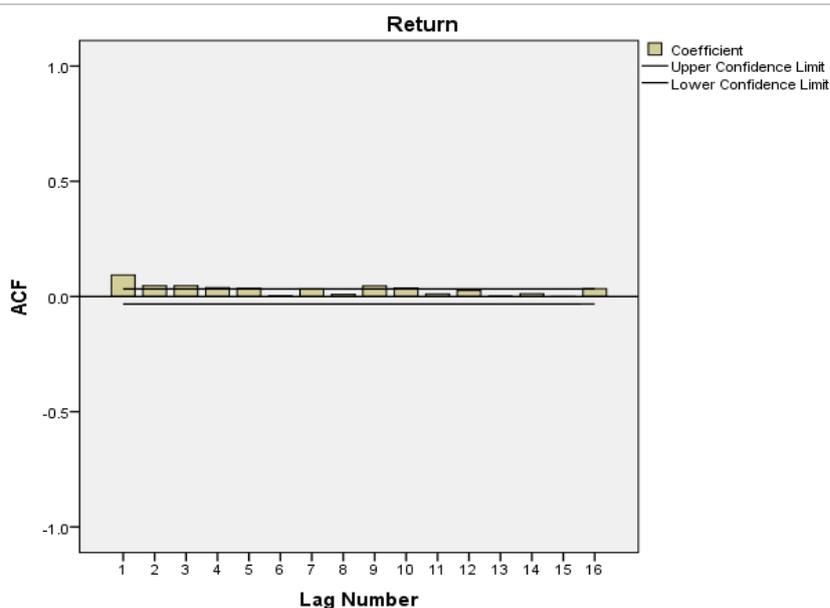


Figure 1: Autocorrelation of daily Return of KSE.

dummy variables in our model, so we will estimate only four dummy variables in order to avoid dummy trap. We take Monday as a base dummy as it is the first trading days in the stock market; rest of four dummy variables have been estimated and presented in Table 7. The intercept point of the model has a coefficient of 0.0362 with a standard error of 0.0056, the statistics is -1.23 and it is insignificant. While the coefficient of Tuesday is 0.0693 with a standard error of 0.0087 and it is significant at the 5% level. Similarly the coefficient of Wednesday, Thursday and Friday are 0.0119, 0.0181 and 0.0554 respectively, and all are significant up to 1% level.

There is clear evidence that there is day effect and short term predictability exists in the Pakistani equity market, the Random walk is in doubt. As we see from table that Tuesday have a coefficient of 0.0693, if we add coefficient of intercept, which is Monday have a coefficient of 0.0056, and the coefficient becomes 0.1055. It means that on Tuesday the return will be greater a unit of 0.1055 than Monday. Similarly for Wednesday it will be 0.048, Thursday 0.543, Friday will be increased by 0.0916 units from the starting day of the week. Hence we would conclude based on our results KSE is inefficient in its Weak, as it does not satisfy the assumptions of the EMH in Weak form. The results give clear evidence of getting an abnormal return based on past information as predictability in short run exists here.

The previous studies also prove the same result, that random walk does not follow most of the Asian Stock markets, which includes Bombay Stock Exchange Jethwani and Achuthan, Dhaka Stock Exchange, Sultana and Sharmin, and Colombo Stock market Almonte, Saudi Stock Market, Assaf and Hong Kong Stock Exchange and

	Monday	Tuesday	Wednesday	Thursday	Friday
Mean	0.000249	0.00069	0.001702	0.000524	0.000915
Std. Dev.	0.017502	0.014092	0.014757	0.013545	0.014575
Skewness	-0.056636	-0.20071	-0.488311	-0.540746	-0.447562

Table 6: Mean Return for 5 days of week [4].

Variable	Coefficients	Std. Error	t-Statistics	Probability (Level of Significant)
C	0.0362	0.0056	-1.23	0.146
X2	0.0693**	0.0087	3.98	0.05
X3	0.0119***	0.0059	4.63	0.001
X4	0.0181**	0.0068	6.22	0.006
X5	0.0554*	0.0076	3.69	0.07

R-Square 0.259 Adjusted R-Square 0.244  
 F-Statistics 168.08 Prob. of F-Statistics 0.000  
 Durbin-Watson Stat 1.91  
 \*10% significant, \*\*5% significant and \*\*\*1% significant.

Table 7: OLS Model for overall period.

Political Regime	Mean Return	St. Deviation
1998-1999	-0.00021	0.026
2000-2006	0.00129	0.015
2007-2009	-0.000718	0.0178
2010-2013	0.000941	0.0091

Table 8: Showing Mean return and Std. deviation in Political Era.

Time Period	ADF Test Statistics	Critical Value	Remarks	PP test statistics	Critical Limit	Remarks
1998-1999	-8.20	-3.56	Reject	-68.09	-3.46	Reject
2000-2006	-2.98	-3.18	Fail to Reject	-2.92	-3.39	Fail to Reject
2007-2009	-12.89	-3.89	Reject	-11.78	-3.76	Reject
2010-2013	-3.52	-3.45	Reject	-2.94	-3.35	Fail to Reject

Table 9: ADF and PP test result for four political regimes.

Clearing Limited, Jarrett. All these markets are inefficient in weak form and abnormal return can be made here based on past information. Our results of all tests revealed that Karachi Stock Exchange an emerging market shows non-random behavior. Our results are consistent with those done on developing markets across the Globe. These developing markets are inefficient in weak form and unable to absorb past information. The developing market is illiquid, inefficient, unstable political situation, hyperinflation and highly volatile. As in Pakistan goes under law and order situation, war against terrorism and natural disaster for the last of fifteen year, thus Stock Market do not perform well. Random Walk Model does not hold in our study time period, and shows a serious anomaly of weekend effect. This might occur because of high speculative pressure, weak regulator system and high rate of institutional investors. Another rational for such results might be the political shifts that occur between 1998 to 2013, dictatorships to democratic regime, and few mega corruptions Scandal like rental power project and Lawyers movement, due to which investors shows lack of confidence and hence market do not functioned well.

Regression result is subject to the limitation on sample element and study time period. Since our sample elements are forty and time period is fifteen years, it is lengthy enough period to minimize any short term effect on stock prices and return.

### Political regime wise analysis

Descriptive Statistics of Stock Return in Political regime in Pakistan

Table 8 represents the mean stock return and its standard deviation in different political setup in which Pakistan has underwent in last 15 years. The highest return was in a period of 2000-2006, being the dictatorship era, the mean return is 0.00129 with a standard deviation of 0.015. While there is a negative return in the time period of 1998-1999. This is because Pakistan faces some international bane after the 1998 atomic explosion experiment. KSE performs very well in the time period of 2000 to 2006, the possible explanation of good performance of KSE during the period of 2000 to 2006 due to stable prices of oil and petroleum and exchange rates. Foreign reserve was high because foreign aid was high lieu of war against terrorism and aid for earthquake effectives. The period of 2007-09 show negative return due to financial crisis of 2007, where whole world faces the same situation.

However the market is performing well after 2010 to 2013, being shifts of Govt. setup to democratic setup. Further, there the relation with China, India and Afghanistan is going to favor in Pakistan and the economy slowly boost up and effects of financial crisis slowly eliminates.

### Random walk test in political regime

Table 9 depicted that only time period of 2000-2006 shows the random behavior in stock return, that is RWM hypothesis is valid, other three eras show no evidence of RWM that is in 1998-1999, 2007-2009 and 2010-2013 on the basis of ADF. However PP test suggests that RWM followed both in 2000-2006 and 2010-2010 time period. The possible explanation may be the financial crisis, which occurs in 2007

to 2009 and post financial crisis after 2010 to till and 1998-1999 may be due to post Asian crisis effect on the stock exchange. The Dictatorship time period Of 2000 to 2006 was good as the stock market performs well in this era, as RWM follows in the time period while there was the highest mean return in that time period as shown in Table 8.

## Conclusions

The behavior of stock return is a hot issue in behavioral finance and risk management of financial assets. The EMH theorem supports the Random Walk Model, which claims that the stock prices are random and unpredictable. In this research work we tried to empirically investigate the weak form of market efficiency and existence random walk in Karachi Stock Exchange, being largest stock market in Pakistan. For this purpose we took stock prices of KSE since 1998 to 2013. It is sufficient a large data set to absorb any short term fluctuation in the market. We apply Run test, ADF, PP and Autocorrelation to test Random Walk Model. These tests were used by different researchers across the world. The result of all tests of the random walk, model shows no evidence of Random behavior in the KSE. The return is serially correlated with previous return, which is violation of the Random Walk Model. The market is not able to absorb the past available information, which creates room for the investors to make unusual return. The result is consistent with those done in KSE and other stock market by developing market like BSE, DSE, and HKSE and alike. Furthermore to check the daily predictability in KSE, we apply the technique used by Jarret and Kyper, an OLS model with day's dummy variable. The model gives interesting results, as each day of the week has a separate co-efficient and significant up to 1% level. It means each day return is predictable, hence past information are useful in the KSE. Results of tests of the Random Walk Model and OLS model are consistent with each other. Further by dividing the whole set of data into four groups with respect to political setup, in a period of 2000-2006 KSE was functioning well and RWM is valid only in this period. This entire test supports the non-random behavior of KSE. We are in no doubt based on our result that KSE shows non-random behavior and there is predictive property of stock returns.

## Policy implication

On the basis of our different test of Randomness of stock return it is concluded that Karachi Stock Market does not follow the Random Walk Model. The Karachi Stock Exchange is not efficient in its weak form. Investors can easily predict the future outcome of stocks by applying technical analysis. As in Karachi Stock Exchange the current prices do not reflect all available information, so one can massively beat the market. Furthermore, there is day of the week effect which evidences that the Market is not efficient in processing information coming out.

The policy maker need to review the pricing mechanism at KSE in order to achieve fair pricing of financial assets, at least to the extent of past prices. There is need a prudent policy gauge and regulatory structure to control trading activities at KSE.

## Limitation of Study

We are only limited to, our result of the tool applied to data and sample period. Further study may cover diverse techniques of time series analysis and large sample period to measure the performance of equity markets.

## Future Research Perspective

Further study may be conducted by taking Tuesday as a first day of

the week, followed by a Monday holiday to testify daily predictability in the KSE. It would be a further confirmation of stock return predictability.

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