# Comparison between Kuwait and Pakistan Stock Exchange Market: Testing Weak Form of Efficient Market

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**Abstract:**
This empirical research is undertaken to check out the weak form of efficient markets, Karachi Stock Exchange (Pakistan) Vs Kuwati Stock Exchange. Daily based observations were taken from 1st January 2005 to 30th December 2010. With the help of Augmented Dickey Fuller test (ADF) and Autocorrelation, null hypothesis was accepted. Descriptive statistics were used to identify whether yearly return are normally distributed or not. Results revealed that In 2005, 2006 and 2010 return was normally distributed whilst remaining three years showed a non-normally distributed returns, displaying a skeweness negative value of these years. We conclude that the stock markets of both countries are weak and inefficient. By using this research investors can earn excessive returns based on historical database.
**Key words:** Market efficiency, Autocorrelation, Comparison, Existence, Pakistan KSE, Kuwait KSE.

## Introduction:

This article discusses testing the weak form of the efficient market, Karachi stock exchange (KSE 100 index) and Kuwait stock exchange (KSE). At the start it is imperative to understand, what is meant by efficient capital market. Efficient Capital market means, flow of information regarding the stock is symmetrical e.g., all information in the market is instantly and fully absorbed. This raises a question, which types of information can come on the market?. Scores of information types can be identified like news, dividend distribution etc. All these types of information affect stock prices and investor behavior.

In 1970 (Fama) explaining efficient markets proposed four assumptions regarding EM (efficient markets). First, In EM, large number of investors trade in the market. Second, all these investors are rational investors, mean all these investors always take decision on investment after thorough analysis. Third, all these investors have the objective to optimize profits and fourth, flow of information is balanced. Thus the market is said to be efficient market when all these assumptions are met. There are three types of efficient markets. First, weak form efficient market it means information based on historical data and here investors could not earn high profit, so due to this reason; this market is called weak from efficient market. Second, semi strong efficient market in this market information is based on currently disclosed public information like: GDP,

Inflation, interest rate etc. this type of information is absorbed immediately in the market and also this is the ideal position of the market. The third type of efficient market is a strong form efficient market in this type; information is based on future expectations. In this type, information is obtained from internal company sources, might be regarding dividend distribution. In this market if an investor can ascertain future events or can obtain companies internal information, can earn optimum profits but normally it can rarely happen.

The basic purpose of efficient markets is to minimize the risk and optimize the profits. This research paper lays emphasize upon only one type of efficient market, the weak form EM. There are a number of test's to find out the weak form of efficient market like to run the autocorrelation test, random walk model test and unit root test with the help of these test investors can easily find out the WEMH (weak efficient market hypothesis). Fama designed this theory in 1970. This paper discusses WEMH of KSE of Pakistan and Kuwait stock exchange (KSE).

## Literature Review:

For the last 30 years, scores of studies have been done for checking the efficient markets which include (Fama and French, 1996; Segall and Raachou, 1998; Mcqueen, 1996), in which efficient market hypothesis and random walk

model theories are most popular for checking the market efficiency, some studies are also evident that the stock returns include predictable elements which are against the random walk hypothesis. Recent research conducted by (Urritia, 2004) in Latin America, (Griebandreyes, 2005) in Asia (Pyum and Ayaid, 2002) shows results pertinent to the random walk hypothesis for the emerging markets. For getting the highest return there must be a gap between market information and the efficiency of the market.

In 1995 Urritia tested the random walk model in Latin America which involved different countries: Argentina, Mexico, brazil and chili, he used monthly index data of these countries from December 1975 to March 1991 for the testing of WEMH. The basic reason of this work is that Urritia wanted to emphasize that domestic and emerging markets have the potential for higher returns.

In 1995 (Huang) also determined and evaluated the market efficiency of the stock exchange of Asian (nine) countries. He used the variance ratio statistics and random walk model and find out the RWM hypothesis for different Asian countries including Korea and Malaysia. He found that for these countries the hypothesis was strongly rejected on the other hand this hypothesis was also analyzed for Hong Kong, Thailand, Bahrain and Kuwait and Saudi Arabia. In this analysis (Huang) collected data of these countries from 1994 to 1998 and at the end of this analysis he concluded that except Kuwait all countries do not have WEMH. Only Kuwait has a weak form of the efficient market. Based on the findings he further concluded that in Kuwait all investors take decisions based on historical data.

1991 to 1997 (Fama and Lo) discussed anomalies, mean why investor behavior change at the end of the month. Normally at the end of the month or before holiday's investors trade more quickly compared to normal (starting and middle month) days. Fama and Lo wanted to explore this type of behavior, in this situation many tests have been applied to investigate the strength of EMH and RWM. Concerning this situation to the Pakistan, Hassan Shah and Abdullah in 2007 found that the price behavior of the stock does not sustain RWM and therefore KSE is not a weak form efficient market. According to this situation technical analysis is not considered fruitful for them. Technical analysis may be used for long term period as compared to short term period.

Reilly and Brown, 2003 documented that AC Test (auto correlation) & R Test (Run) are also very important and famous tools for the measurement of weak form efficient market hypothesis. There are a number of studies available on the local market and as well as regional market. In 1996 (Groenewold & Ariff) studied ten countries in Asia region to search out the impact of liberalization on market efficiency. They conclude that liberalization does not affect marker efficiency. These findings are only for international markets but domestic phenomena remain unknown.

Abraham A, Seyyed, F and Alsakran, S, (2002) studied EMH in Middle East countries and concluded that null hypothesis is rejected in the Middle East. On the other hand three emerging countries equity of Gulf region showed irregular trading; significantly that has changed the consequence of market efficiency and random walk test. According to the study of (Borges, 2008) for the equity

market of Europe: France, Germany, UK, Greece, Portugal and Spain. He collected data country wise on a monthly basis since January, 1993 to December, 2008. He applied the serial correlation test, Dickey-fuller test, and a run test to test the random walk in the equity market. The results were reported to be insignificant. Verification for monthly prices and return follow RWN in all six equity markets of Europe. The daily returns are oddly distributed and is presented by negative skeweness. The basic reason behind this factor is there is positive correlation but after 2003 two countries also follow random walk behavior.

These all studies are about efficient markets and no doubt a number of studies are available in the world. In this paper weak form of the efficient market is discussed pertinent to 100 index of KSE (Pakistan) and Kuwaiti Stock Exchange and explore whether a weak form of efficient market exist between both countries.

## Methodology:

In this session we shall discuss first about sources of data, hypothesis, descriptive and quantitative analysis with the help of E-views and Excel, the detail discussion about these shall be presented afterwards.

### Source of Data:

Collected index value on a daily basis of Pakistan stock exchange and Kuwait stock exchange from dated 2005 to 2010 and calculate daily routine. It's a time series data and the total observations of collected data are 2968 and the source of data is website of stock exchange of both countries and formula of returns computed as follows:

$R = pt - p(t-1) / p(t-1)$

$Pt$ = current value of index

$P(t-1)$ = previous value index

### Hypothesis:

**H1:** Weak form efficient markets exist in Pakistan and Kuwait stock exchange market from 2005 to 2010.

**Ho:** Weak form efficient market does not exists in Pakistan and Kuwait stock exchange market from 2005 to 2010

### Descriptive Statistics:

Descriptive statistics are contain mean, median, maximum value of returns, minimum values of returns, SD. Skeweness, observations, and probabilities etc. the basic purpose of the Jarque-Bera statistics are to define the normality of the data series.

### Quantitative Analysis:

In quantitative analysis to check the weak form efficient market of Pakistan and Kuwait stock exchange market we apply the two types of test the first test which we have applied is Autocorrelation test and the second one test which we have used is ADF augmented dickey fuller test.

### Auto correlation Test:

Firstly With the help of autocorrelation we will find out the weak efficient form of KSE Pakistan and KSE Kuwait. We can interpret that if the probability of autocorrelation shows0 so its mean the null hypothesis is accepted. Zero

figure shows that the no autocorrelation probability. In case of zero no autocorrelation does not exist in data so the market is weak form of inefficient and investor can earn excess return on the behalf of historical data. The equation of this test is:

$$\hat{p}_k = \frac{\frac{1}{n} \sum_{t=k}^{N-(k+1)} (y_t - \bar{y})(y_{t+k} - \bar{y})}{\frac{1}{n} \sum_{t=0}^{N-1} (y_t - \bar{y})^2}$$

### ADF Test:

The second method or test for checking the weak form of efficient market is that the Augmented Dickey Fuller Test and with the help of ADF we will find out the results of Pakistan and Kuwait market index results regarding market efficiency the interpretation method of this test is if the ADF value is smaller than a critical value then its mean

unit root exists and the market is weak from inefficient. The equation of this test is given below:

### Results and discussion:

Table no 1 shows the descriptive statistics of comparison between KSE Pakistan returns and KSE Kuwait returns from dated 2005 to 2010. In 2005 and 2008. Kuwait KSE returns are more as compared to Pakistan KSE because the average return of Kuwait is high as compared to Pakistan and in the year of 2006 returns of Pakistan is more as compared to Kuwait due to a higher average value of return of Pakistan. In the years 2007, 2009 and 2010 once again the return of Pakistan market is more as compared to Kuwait. Skeweness element is negative form 2007 to 2009 for both countries which signify a huge negative return. Kurtosis of given statistics is positive for all years of both countries. It means that the distribution of returns is higher with respect to expected return and other elements are also vigilant in table no1.

$$\Delta Y_t = \alpha + \beta T + \delta Y_{t-1} + u_t$$

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Descriptive Statistic of Pakistan stock exchange and Kuwait Stock exchange from 2005 to 2010** | | | | | | | | | | | | |
| | **PK2005** | **KW2005** | **PK2006** | **KW2006** | **PK2007** | **KW2007** | **PK2008** | **KW2008** | **PK2009** | **KW2009** | **PK2010** | **KW2010** |
| **Mean** | 7872.26 | 8991.37 | 10631.2 | 10248.9 | 12744.6 | 11550.5 | 11981.29 | 13137.1 | 7654.81 | 7380.55 | 10199.2 | 6964.9 |
| **Median** | 7582 | 8782.45 | 10561 | 10081.3 | 12805 | 12065.4 | 12247 | 14078.5 | 7595.5 | 7492.65 | 10023.5 | 6954.3 |
| **Maximum** | 10302 | 11961 | 12273 | 12053.7 | 14813 | 13174.2 | 15675 | 15653.8 | 9838 | 8370.1 | 12030 | 7574 |
| **Minimum** | 6285 | 6388.3 | 8766 | 9163.3 | 10146 | 9583.5 | 5884 | 7781.6 | 4809 | 6390.5 | 9228 | 6318.7 |
| **Std. Dev.** | 885.91 | 1684.85 | 664.96 | 685.25 | 1189.79 | 1195.23 | 2614.29 | 2265.87 | 1334.29 | 529.2 | 619.96 | 298.92 |
| **Skeweness** | 0.58 | 0.14 | 0.27 | 1.16 | -0.21 | -0.37 | -0.17 | -1.07 | -0.18 | -0.18 | 1.15 | 0.25 |
| **Kurtosis** | 2.41 | 2.05 | 2.64 | 3.63 | 2.02 | 1.58 | 1.69 | 2.73 | 2.04 | 1.86 | 3.82 | 2.26 |
| **Jarque-Bera** | 17.71 | 10.5 | 4.13 | 60.04 | 11.43 | 27.75 | 17.87 | 50.89 | 9.6 | 15.56 | 59.65 | 8.59 |
| **Probability** | 0 | 0.01 | 0.13 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 | 0 | 0.01 |
| **Observations** | 248 | 258 | 239 | 249 | 243 | 258 | 234 | 261 | 220 | 260 | 240 | 258 |

Table no 1, shows "YES" in 2005 of Pakistan and Kuwait its mean auto correlation exists, the probability of no autocorrelation are zero. In simple word chance of a no autocorrelation does not exist and Omit if no autocorrelation is exist then market called weak form efficient so in this paper the weak form of efficient market of Pakistan and Kuwait hypothesis is rejected mean H1 is rejected and Ho is accepted so it is confirmation that in 2005 both market situation were weak form inefficient and

investor can depend on historical data of market for gaining ideal return. Same result in 2006 to 2010 you can see below given table for more detail you also check out the appendix. According to the table no 2 ADF test also shows the unit root exist in Pakistan and Kuwait stock market throughout from 2005 to 2010 the question arises in your mind why unit root exists so you can see the result of ADF in appendix if the ADF value is small as compared to critical value then it mean unit root exist in the market. On the

behalf of existence of the unit root market called weak form inefficient so the null hypothesis is accepted and investor can believes on historic data for the purpose of high return.

### Table no 2

| | Pakistan KSE | | Kuwait KSE | |
|---|---|---|---|---|
| **Years** | **AC** | **ADF Test** | **AC** | **ADF Test** |
| 2005 | YES | unit root exist | YES | unit root exist |
| 2006 | YES | unit root exist | YES | unit root exist |
| 2007 | YES | unit root exist | YES | unit root exist |
| 2008 | YES | unit root exist | YES | unit root exist |
| 2009 | YES | unit root exist | YES | unit root exist |
| 2010 | YES | unit root exist | YES | unit root exist |

### Conclusions:

In this study we explored the comparison between Pakistan and Kuwait stock exchange for weak form of efficient market. The sample size of this study exists on daily base data of indexes values of both countries stock exchange from 2005 to 2010. The basic objective of this study was to identify the weak form of efficient market of Pakistan KSE and Kuwait KSE. In this research we used descriptive statistic for verifying the normal distribution of the data. We also used quantitative analysis for the examination of hypothesis. In this analysis we used two type of test the first one test is Autocorrelation and second one is that ADF augmented dickey fuller test. With the help of these we find out the results of both countries stock market is weak form of inefficient so its mean investor can depend on historic data and news of the market and may get higher return in 2005 to 2010. Conclusion is that the null hypothesis is accepted.

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In table 2 we discuss the result of autocorrelation test and ADF test. If we see in given result of autocorrelation test

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## Appendix:

## AUTOCOORELATION TEST RESULTS OF BOTH COUNTRIES

### Kuwait KSE 2005

| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| .\|******** | .\|******** | 1 | 0.990 | 0.990 | 257.05 | 0.000 |
| .\|******** | .\|. | 2 | 0.981 | -0.028 | 509.93 | 0.000 |
| .\|*******\| | .\|. | 3 | 0.970 | -0.025 | 758.46 | 0.000 |
| .\|******* | .\|. | 4 | 0.960 | -0.020 | 1002.5 | 0.000 |
| .\|*******\| | .\|. | 5 | 0.949 | -0.021 | 1242.0 | 0.000 |
| .\|******* | .\|. | 6 | 0.938 | 0.015 | 1477.0 | 0.000 |
| .\|*******\| | .\|. | 7 | 0.927 | -0.002 | 1707.8 | 0.000 |
| .\|******* | .\|. | 8 | 0.917 | 0.013 | 1934.3 | 0.000 |
| .\|*******\| | .\|. | 9 | 0.907 | -0.003 | 2156.8 | 0.000 |
| .\|******* | .\|. | 10 | 0.896 | -0.039 | 2374.9 | 0.000 |
| .\|*******\| | .\|. | 11 | 0.885 | -0.024 | 2588.5 | 0.000 |
| .\|******* | .\|. | 12 | 0.874 | -0.025 | 2797.4 | 0.000 |
| .\|*******\| | .\|. | 13 | 0.862 | 0.000 | 3001.7 | 0.000 |
| .\|*******\| | .\|. | 14 | 0.850 | -0.026 | 3201.2 | 0.000 |
| .\|****** | *\|. | 15 | 0.837 | -0.061 | 3395.5 | 0.000 |
| .\|****** | *\|. | 16 | 0.823 | -0.061 | 3584.2 | 0.000 |
| .\|****** | .\|. | 17 | 0.809 | -0.039 | 3766.9 | 0.000 |
| .\|****** | .\|. | 18 | 0.794 | -0.010 | 3943.8 | 0.000 |
| .\|****** | .\|. | 19 | 0.779 | -0.005 | 4114.9 | 0.000 |
| .\|****** | .\|. | 20 | 0.765 | -0.005 | 4280.4 | 0.000 |
| .\|****** | .\|. | 21 | 0.750 | 0.000 | 4440.3 | 0.000 |
| .\|****** | .\|. | 22 | 0.735 | -0.029 | 4594.5 | 0.000 |
| .\|****** | .\|. | 23 | 0.721 | 0.009 | 4743.5 | 0.000 |
| .\|***** | .\|. | 24 | 0.706 | -0.033 | 4886.9 | 0.000 |
| .\|***** | .\|. | 25 | 0.691 | -0.003 | 5024.9 | 0.000 |
| .\|***** | .\|. | 26 | 0.676 | 0.010 | 5157.6 | 0.000 |
| .\|***** | .\|. | 27 | 0.662 | -0.003 | 5285.3 | 0.000 |
| .\|***** | .\|. | 28 | 0.647 | -0.009 | 5407.8 | 0.000 |
| .\|***** | .\|. | 29 | 0.632 | -0.019 | 5525.2 | 0.000 |
| .\|***** | .\|. | 30 | 0.616 | -0.051 | 5637.4 | 0.000 |
| .\|***** | .\|. | 31 | 0.600 | -0.009 | 5744.2 | 0.000 |
| .\|**** | .\|. | 32 | 0.584 | -0.018 | 5845.9 | 0.000 |
| .\|**** | .\|. | 33 | 0.568 | -0.009 | 5942.3 | 0.000 |
| .\|**** | .\|. | 34 | 0.551 | -0.021 | 6033.7 | 0.000 |
| .\|**** | .\|. | 35 | 0.535 | -0.013 | 6120.0 | 0.000 |
| .\|**** | .\|. | 36 | 0.519 | 0.021 | 6201.7 | 0.000 |

### Pakistan KSE 2005

| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| .\|*******\| | .\|*******\| | 1 | 0.972 | 0.972 | 238.19 | 0.000 |
| .\|*******\| | *\|. | 2 | 0.940 | -0.087 | 461.95 | 0.000 |
| .\|*******\| | .\|. | 3 | 0.909 | -0.010 | 671.72 | 0.000 |
| .\|*******\| | *\|. | 4 | 0.872 | -0.106 | 865.75 | 0.000 |
| .\|****** | *\|. | 5 | 0.832 | -0.081 | 1042.9 | 0.000 |
| .\|****** | .\|. | 6 | 0.795 | 0.051 | 1205.3 | 0.000 |
| .\|****** | .\|. | 7 | 0.758 | -0.025 | 1353.6 | 0.000 |
| .\|****** | .\|. | 8 | 0.721 | -0.003 | 1488.3 | 0.000 |
| .\|***** | .\|. | 9 | 0.686 | 0.001 | 1610.8 | 0.000 |
| .\|***** | .\|. | 10 | 0.650 | -0.046 | 1721.2 | 0.000 |
| .\|***** | .\|. | 11 | 0.615 | 0.003 | 1820.6 | 0.000 |
| .\|**** | .\|. | 12 | 0.584 | 0.028 | 1910.4 | 0.000 |
| .\|**** | .\|. | 13 | 0.553 | -0.010 | 1991.3 | 0.000 |
| .\|**** | *\|. | 14 | 0.519 | -0.069 | 2063.1 | 0.000 |
| .\|**** | .\|. | 15 | 0.486 | -0.027 | 2126.2 | 0.000 |
| .\|*** | .\|. | 16 | 0.452 | -0.041 | 2181.1 | 0.000 |
| .\|*** | .\|. | 17 | 0.419 | 0.006 | 2228.4 | 0.000 |
| .\|*** | *\|. | 18 | 0.382 | -0.094 | 2267.9 | 0.000 |
| .\|*** | .\|. | 19 | 0.345 | -0.007 | 2300.3 | 0.000 |
| .\|** | .\|. | 20 | 0.312 | 0.037 | 2326.9 | 0.000 |
| .\|** | .\|. | 21 | 0.282 | 0.028 | 2348.8 | 0.000 |
| .\|** | .\|. | 22 | 0.252 | -0.015 | 2366.3 | 0.000 |
| .\|** | .\|. | 23 | 0.224 | -0.023 | 2380.1 | 0.000 |
| .\|* | .\|. | 24 | 0.196 | -0.022 | 2390.8 | 0.000 |
| .\|* | .\|. | 25 | 0.172 | 0.044 | 2399.0 | 0.000 |
| .\|* | .\|. | 26 | 0.149 | -0.020 | 2405.2 | 0.000 |
| .\|* | .\|. | 27 | 0.125 | -0.028 | 2409.6 | 0.000 |
| .\|* | .\|. | 28 | 0.102 | -0.010 | 2412.6 | 0.000 |
| .\|* | .\|. | 29 | 0.082 | 0.003 | 2414.5 | 0.000 |
| .\|. | .\|. | 30 | 0.062 | -0.002 | 2415.6 | 0.000 |
| .\|. | .\|. | 31 | 0.044 | 0.021 | 2416.2 | 0.000 |
| .\|. | .\|. | 32 | 0.030 | 0.051 | 2416.4 | 0.000 |
| .\|. | .\|. | 33 | 0.017 | -0.030 | 2416.5 | 0.000 |
| .\|. | .\|. | 34 | 0.003 | -0.016 | 2416.5 | 0.000 |
| .\|. | .\|. | 35 | -0.006 | 0.049 | 2416.5 | 0.000 |
| .\|. | .\|. | 36 | -0.012 | 0.032 | 2416.6 | 0.000 |

## Kuwait KSE 2006

| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| .\|******** | .\|******** | 1 | 0.981 | 0.981 | 243.65 | 0.000 |
| .\|*******\| | *\|.    \| | 2 | 0.958 | -0.125 | 477.00 | 0.000 |
| .\|*******\| | .\|.    \| | 3 | 0.938 | 0.057 | 701.18 | 0.000 |
| .\|*******\| | .\|.    \| | 4 | 0.916 | -0.042 | 916.07 | 0.000 |
| .\|*******\| | *\|.    \| | 5 | 0.890 | -0.127 | 1119.7 | 0.000 |
| .\|*******\| | *\|.    \| | 6 | 0.861 | -0.080 | 1311.0 | 0.000 |
| .\|****** \| | .\|.    \| | 7 | 0.832 | -0.001 | 1490.4 | 0.000 |
| .\|****** \| | .\|.    \| | 8 | 0.803 | -0.035 | 1658.1 | 0.000 |
| .\|****** \| | .\|.    \| | 9 | 0.774 | 0.027 | 1814.7 | 0.000 |
| .\|****** \| | *\|.    \| | 10 | 0.741 | -0.148 | 1958.7 | 0.000 |
| .\|***** \| | .\|.    \| | 11 | 0.706 | -0.012 | 2090.2 | 0.000 |
| .\|***** \| | .\|.    \| | 12 | 0.671 | -0.048 | 2209.5 | 0.000 |
| .\|***** \| | .\|.    \| | 13 | 0.638 | 0.012 | 2317.5 | 0.000 |
| .\|***** \| | .\|.    \| | 14 | 0.604 | -0.009 | 2414.9 | 0.000 |
| .\|**** \| | .\|.    \| | 15 | 0.570 | 0.011 | 2502.0 | 0.000 |
| .\|**** \| | *\|.    \| | 16 | 0.536 | -0.057 | 2579.2 | 0.000 |
| .\|**** \| | *\|.    \| | 17 | 0.499 | -0.062 | 2646.6 | 0.000 |
| .\|**** \| | .\|.    \| | 18 | 0.463 | -0.036 | 2704.7 | 0.000 |
| .\|*** \| | .\|.    \| | 19 | 0.427 | 0.002 | 2754.4 | 0.000 |
| .\|*** \| | .\|.    \| | 20 | 0.393 | 0.027 | 2796.7 | 0.000 |
| .\|*** \| | .\|*    \| | 21 | 0.363 | 0.092 | 2832.9 | 0.000 |
| .\|*** \| | .\|.    \| | 22 | 0.335 | 0.028 | 2863.9 | 0.000 |
| .\|** \| | .\|.    \| | 23 | 0.307 | -0.020 | 2890.0 | 0.000 |
| .\|** \| | .\|.    \| | 24 | 0.282 | 0.029 | 2912.1 | 0.000 |
| .\|** \| | .\|.    \| | 25 | 0.258 | -0.004 | 2930.8 | 0.000 |
| .\|** \| | .\|*    \| | 26 | 0.239 | 0.089 | 2946.8 | 0.000 |
| .\|** \| | .\|.    \| | 27 | 0.221 | 0.024 | 2960.6 | 0.000 |
| .\|** \| | .\|.    \| | 28 | 0.205 | 0.015 | 2972.5 | 0.000 |
| .\|* \| | *\|.    \| | 29 | 0.187 | -0.096 | 2982.4 | 0.000 |
| .\|* \| | *\|.    \| | 30 | 0.169 | -0.064 | 2990.6 | 0.000 |
| .\|* \| | .\|.    \| | 31 | 0.153 | 0.003 | 2997.3 | 0.000 |
| .\|* \| | .\|.    \| | 32 | 0.139 | 0.035 | 3002.8 | 0.000 |
| .\|* \| | .\|.    \| | 33 | 0.126 | 0.030 | 3007.5 | 0.000 |
| .\|* \| | .\|.    \| | 34 | 0.115 | 0.032 | 3011.3 | 0.000 |
| .\|* \| | .\|.    \| | 35 | 0.105 | -0.008 | 3014.6 | 0.000 |
| .\|* \| | .\|.    \| | 36 | 0.097 | -0.006 | 3017.4 | 0.000 |

## Pakistan KSE 2006

| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| .\|*******\| | .\|*******\| | 1 | 0.955 | 0.955 | 221.83 | 0.000 |
| .\|*******\| | *\|.    \| | 2 | 0.907 | -0.070 | 422.48 | 0.000 |
| .\|*******\| | .\|.    \| | 3 | 0.857 | -0.032 | 602.63 | 0.000 |
| .\|****** \| | .\|.    \| | 4 | 0.814 | 0.038 | 765.50 | 0.000 |
| .\|****** \| | .\|.    \| | 5 | 0.777 | 0.055 | 914.71 | 0.000 |
| .\|****** \| | .\|.    \| | 6 | 0.743 | 0.004 | 1051.8 | 0.000 |
| .\|****** \| | .\|*    \| | 7 | 0.723 | 0.128 | 1182.0 | 0.000 |
| .\|***** \| | .\|.    \| | 8 | 0.702 | -0.019 | 1305.2 | 0.000 |
| .\|***** \| | .\|.    \| | 9 | 0.681 | -0.004 | 1421.7 | 0.000 |
| .\|***** \| | *\|.    \| | 10 | 0.646 | -0.155 | 1527.2 | 0.000 |
| .\|***** \| | *\|.    \| | 11 | 0.598 | -0.151 | 1618.0 | 0.000 |
| .\|**** \| | .\|.    \| | 12 | 0.549 | -0.028 | 1694.6 | 0.000 |
| .\|**** \| | .\|.    \| | 13 | 0.497 | -0.045 | 1757.9 | 0.000 |
| .\|*** \| | .\|.    \| | 14 | 0.449 | -0.027 | 1809.8 | 0.000 |
| .\|*** \| | .\|.    \| | 15 | 0.402 | -0.052 | 1851.6 | 0.000 |
| .\|*** \| | .\|*    \| | 16 | 0.370 | 0.109 | 1887.1 | 0.000 |
| .\|*** \| | .\|.    \| | 17 | 0.345 | 0.012 | 1918.2 | 0.000 |
| .\|** \| | *\|.    \| | 18 | 0.317 | -0.066 | 1944.6 | 0.000 |
| .\|** \| | *\|.    \| | 19 | 0.283 | -0.080 | 1965.6 | 0.000 |
| .\|** \| | .\|.    \| | 20 | 0.240 | -0.055 | 1980.8 | 0.000 |
| .\|** \| | .\|*    \| | 21 | 0.203 | 0.069 | 1991.7 | 0.000 |
| .\|* \| | *\|.    \| | 22 | 0.160 | -0.070 | 1998.6 | 0.000 |
| .\|* \| | .\|.    \| | 23 | 0.121 | 0.017 | 2002.5 | 0.000 |
| .\|* \| | .\|*    \| | 24 | 0.093 | 0.100 | 2004.9 | 0.000 |
| .\|* \| | .\|*    \| | 25 | 0.077 | 0.066 | 2006.5 | 0.000 |
| .\|. \| | *\|.    \| | 26 | 0.060 | -0.114 | 2007.4 | 0.000 |
| .\|. \| | .\|.    \| | 27 | 0.044 | 0.021 | 2008.0 | 0.000 |
| .\|. \| | .\|.    \| | 28 | 0.028 | 0.001 | 2008.2 | 0.000 |
| .\|. \| | .\|.    \| | 29 | 0.011 | 0.032 | 2008.2 | 0.000 |
| .\|. \| | .\|.    \| | 30 | -0.001 | 0.060 | 2008.2 | 0.000 |
| .\|. \| | .\|.    \| | 31 | -0.013 | 0.027 | 2008.2 | 0.000 |
| .\|. \| | .\|.    \| | 32 | -0.026 | -0.002 | 2008.4 | 0.000 |
| .\|. \| | *\|.    \| | 33 | -0.044 | -0.121 | 2009.0 | 0.000 |
| *\|. \| | *\|.    \| | 34 | -0.059 | -0.072 | 2010.0 | 0.000 |
| *\|. \| | *\|.    \| | 35 | -0.082 | -0.153 | 2011.8 | 0.000 |
| *\|. \| | .\|*    \| | 36 | -0.099 | 0.075 | 2014.7 | 0.000 |

## Kuwait KSE 2007

| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| .\|******** | .\|******** | 1 | 0.994 | 0.994 | 258.94 | 0.000 |
| .\|******** | .\|. | 2 | 0.988 | -0.002 | 515.83 | 0.000 |
| .\|******** | .\|. | 3 | 0.982 | -0.005 | 770.66 | 0.000 |
| .\|******** | .\|. | 4 | 0.976 | -0.037 | 1023.2 | 0.000 |
| .\|*******\| | .\|. | 5 | 0.970 | 0.021 | 1273.7 | 0.000 |
| .\|*******\| | .\|. | 6 | 0.964 | -0.017 | 1521.9 | 0.000 |
| .\|*******\| | .\|. | 7 | 0.958 | 0.032 | 1768.2 | 0.000 |
| .\|*******\| | .\|. | 8 | 0.952 | -0.001 | 2012.5 | 0.000 |
| .\|*******\| | *\|. | 9 | 0.946 | -0.074 | 2254.4 | 0.000 |
| .\|*******\| | *\|. | 10 | 0.939 | -0.062 | 2493.6 | 0.000 |
| .\|*******\| | .\|. | 11 | 0.931 | -0.056 | 2729.7 | 0.000 |
| .\|*******\| | .\|. | 12 | 0.923 | -0.023 | 2962.7 | 0.000 |
| .\|*******\| | .\|. | 13 | 0.914 | -0.009 | 3192.5 | 0.000 |
| .\|*******\| | .\|. | 14 | 0.906 | -0.015 | 3419.1 | 0.000 |
| .\|*******\| | *\|. | 15 | 0.897 | -0.071 | 3642.1 | 0.000 |
| .\|*******\| | .\|. | 16 | 0.888 | -0.032 | 3861.3 | 0.000 |
| .\|*******\| | .\|. | 17 | 0.878 | -0.017 | 4076.8 | 0.000 |
| .\|*******\| | .\|. | 18 | 0.869 | 0.026 | 4288.7 | 0.000 |
| .\|*******\| | .\|. | 19 | 0.860 | 0.003 | 4497.0 | 0.000 |
| .\|*******\| | .\|. | 20 | 0.850 | -0.028 | 4701.5 | 0.000 |
| .\|****** \| | .\|. | 21 | 0.841 | -0.028 | 4902.2 | 0.000 |
| .\|****** \| | .\|. | 22 | 0.830 | -0.031 | 5098.9 | 0.000 |
| .\|****** \| | .\|. | 23 | 0.820 | 0.002 | 5291.6 | 0.000 |
| .\|****** \| | *\|. | 24 | 0.809 | -0.062 | 5480.0 | 0.000 |
| .\|****** \| | .\|. | 25 | 0.798 | -0.034 | 5663.9 | 0.000 |
| .\|****** \| | .\|. | 26 | 0.786 | -0.048 | 5843.1 | 0.000 |
| .\|****** \| | .\|. | 27 | 0.774 | 0.001 | 6017.8 | 0.000 |
| .\|****** \| | .\|. | 28 | 0.762 | -0.056 | 6187.7 | 0.000 |
| .\|****** \| | .\|. | 29 | 0.749 | -0.032 | 6352.7 | 0.000 |
| .\|****** \| | .\|. | 30 | 0.736 | -0.026 | 6512.7 | 0.000 |
| .\|****** \| | .\|. | 31 | 0.724 | 0.009 | 6668.0 | 0.000 |
| .\|***** \| | .\|. | 32 | 0.711 | 0.029 | 6818.6 | 0.000 |
| .\|***** \| | .\|. | 33 | 0.699 | -0.007 | 6964.6 | 0.000 |
| .\|***** \| | .\|. | 34 | 0.686 | 0.011 | 7106.1 | 0.000 |
| .\|***** \| | .\|. | 35 | 0.674 | -0.004 | 7243.1 | 0.000 |
| .\|***** \| | .\|. | 36 | 0.661 | -0.015 | 7375.5 | 0.000 |

## Pakistan KSE 2007

| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| .\|******** | .\|******** | 1 | 0.979 | 0.979 | 236.98 | 0.000 |
| .\|*******\| | *\|. | 2 | 0.957 | -0.065 | 464.03 | 0.000 |
| .\|*******\| | *\|. | 3 | 0.932 | -0.061 | 680.33 | 0.000 |
| .\|*******\| | .\|. | 4 | 0.907 | -0.007 | 886.12 | 0.000 |
| .\|*******\| | .\|. | 5 | 0.883 | 0.005 | 1081.9 | 0.000 |
| .\|*******\| | .\|. | 6 | 0.858 | -0.021 | 1267.8 | 0.000 |
| .\|****** \| | .\|. | 7 | 0.833 | -0.050 | 1443.3 | 0.000 |
| .\|****** \| | .\|. | 8 | 0.806 | -0.030 | 1608.5 | 0.000 |
| .\|****** \| | .\|. | 9 | 0.779 | -0.013 | 1763.4 | 0.000 |
| .\|****** \| | .\|. | 10 | 0.751 | -0.041 | 1908.1 | 0.000 |
| .\|****** \| | *\|. | 11 | 0.721 | -0.058 | 2042.1 | 0.000 |
| .\|***** \| | .\|. | 12 | 0.694 | 0.040 | 2166.6 | 0.000 |
| .\|***** \| | .\|. | 13 | 0.666 | -0.011 | 2281.9 | 0.000 |
| .\|***** \| | .\|. | 14 | 0.640 | 0.017 | 2388.8 | 0.000 |
| .\|***** \| | .\|. | 15 | 0.616 | 0.015 | 2488.2 | 0.000 |
| .\|***** \| | .\|. | 16 | 0.593 | 0.022 | 2580.7 | 0.000 |
| .\|**** \| | .\|. | 17 | 0.572 | 0.040 | 2667.3 | 0.000 |
| .\|**** \| | .\|. | 18 | 0.553 | 0.013 | 2748.5 | 0.000 |
| .\|**** \| | .\|. | 19 | 0.535 | 0.007 | 2824.9 | 0.000 |
| .\|**** \| | .\|. | 20 | 0.517 | -0.006 | 2896.6 | 0.000 |
| .\|**** \| | .\|. | 21 | 0.503 | 0.061 | 2964.7 | 0.000 |
| .\|**** \| | .\|. | 22 | 0.491 | 0.040 | 3029.9 | 0.000 |
| .\|**** \| | .\|. | 23 | 0.480 | 0.010 | 3092.6 | 0.000 |
| .\|**** \| | .\|. | 24 | 0.472 | 0.014 | 3153.2 | 0.000 |
| .\|**** \| | .\|. | 25 | 0.463 | -0.001 | 3212.0 | 0.000 |
| .\|*** \| | .\|. | 26 | 0.454 | -0.029 | 3268.7 | 0.000 |
| .\|*** \| | .\|. | 27 | 0.447 | 0.042 | 3324.0 | 0.000 |
| .\|*** \| | .\|. | 28 | 0.440 | -0.028 | 3377.7 | 0.000 |
| .\|*** \| | .\|. | 29 | 0.432 | -0.021 | 3429.8 | 0.000 |
| .\|*** \| | .\|. | 30 | 0.423 | -0.031 | 3480.0 | 0.000 |
| .\|*** \| | .\|. | 31 | 0.416 | 0.030 | 3528.7 | 0.000 |
| .\|*** \| | .\|. | 32 | 0.408 | -0.016 | 3575.7 | 0.000 |
| .\|*** \| | .\|* | 33 | 0.403 | 0.068 | 3621.9 | 0.000 |
| .\|*** \| | .\|. | 34 | 0.398 | 0.005 | 3667.2 | 0.000 |
| .\|*** \| | .\|. | 35 | 0.395 | 0.028 | 3711.9 | 0.000 |
| .\|*** \| | .\|. | 36 | 0.390 | -0.019 | 3755.9 | 0.000 |

## Kuwait KSE 2008

| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| .\|******** | .\|******** | 1 | 0.988 | 0.988 | 258.44 | 0.000 |
| .\|*******\| | .\|. \| | 2 | 0.975 | -0.019 | 511.20 | 0.000 |
| .\|*******\| | .\|. \| | 3 | 0.962 | -0.011 | 758.26 | 0.000 |
| .\|*******\| | .\|. \| | 4 | 0.949 | -0.018 | 999.52 | 0.000 |
| .\|*******\| | .\|. \| | 5 | 0.936 | 0.026 | 1235.4 | 0.000 |
| .\|*******\| | .\|. \| | 6 | 0.924 | 0.013 | 1466.3 | 0.000 |
| .\|*******\| | .\|. \| | 7 | 0.912 | -0.016 | 1692.0 | 0.000 |
| .\|*******\| | *\|. \| | 8 | 0.899 | -0.062 | 1912.0 | 0.000 |
| .\|*******\| | .\|. \| | 9 | 0.886 | 0.003 | 2126.4 | 0.000 |
| .\|*******\| | .\|. \| | 10 | 0.873 | 0.017 | 2335.5 | 0.000 |
| .\|*******\| | .\|. \| | 11 | 0.861 | 0.020 | 2539.7 | 0.000 |
| .\|*******\| | .\|. \| | 12 | 0.849 | -0.002 | 2739.0 | 0.000 |
| .\|****** \| | .\|. \| | 13 | 0.837 | 0.007 | 2933.8 | 0.000 |
| .\|****** \| | .\|. \| | 14 | 0.826 | -0.019 | 3124.0 | 0.000 |
| .\|****** \| | .\|. \| | 15 | 0.813 | -0.041 | 3309.0 | 0.000 |
| .\|****** \| | .\|. \| | 16 | 0.799 | -0.035 | 3488.6 | 0.000 |
| .\|****** \| | .\|. \| | 17 | 0.785 | -0.023 | 3662.8 | 0.000 |
| .\|****** \| | .\|. \| | 18 | 0.771 | -0.033 | 3831.3 | 0.000 |
| .\|****** \| | .\|. \| | 19 | 0.756 | -0.014 | 3994.2 | 0.000 |
| .\|****** \| | .\|. \| | 20 | 0.742 | -0.009 | 4151.5 | 0.000 |
| .\|****** \| | .\|. \| | 21 | 0.727 | -0.020 | 4303.3 | 0.000 |
| .\|***** \| | .\|. \| | 22 | 0.712 | -0.027 | 4449.2 | 0.000 |
| .\|***** \| | .\|. \| | 23 | 0.697 | 0.001 | 4589.7 | 0.000 |
| .\|***** \| | .\|. \| | 24 | 0.681 | -0.015 | 4724.5 | 0.000 |
| .\|***** \| | .\|. \| | 25 | 0.665 | -0.055 | 4853.5 | 0.000 |
| .\|***** \| | *\|. \| | 26 | 0.647 | -0.058 | 4976.3 | 0.000 |
| .\|***** \| | .\|. \| | 27 | 0.630 | -0.011 | 5093.1 | 0.000 |
| .\|***** \| | .\|. \| | 28 | 0.612 | -0.020 | 5204.0 | 0.000 |
| .\|***** \| | .\|. \| | 29 | 0.595 | 0.002 | 5309.0 | 0.000 |
| .\|**** \| | .\|. \| | 30 | 0.577 | -0.025 | 5408.4 | 0.000 |
| .\|**** \| | .\|. \| | 31 | 0.559 | -0.034 | 5502.1 | 0.000 |
| .\|**** \| | *\|. \| | 32 | 0.540 | -0.066 | 5589.6 | 0.000 |
| .\|**** \| | .\|. \| | 33 | 0.520 | -0.018 | 5671.3 | 0.000 |
| .\|**** \| | .\|. \| | 34 | 0.500 | -0.001 | 5747.2 | 0.000 |
| .\|**** \| | .\|. \| | 35 | 0.481 | -0.029 | 5817.6 | 0.000 |
| .\|**** \| | .\|. \| | 36 | 0.461 | -0.010 | 5882.7 | 0.000 |

## Pakistan KSE 2008

| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| .\|******** | .\|******** | 1 | 0.984 | 0.984 | 230.66 | 0.000 |
| .\|*******\| | .\|. \| | 2 | 0.968 | -0.035 | 454.66 | 0.000 |
| .\|*******\| | .\|. \| | 3 | 0.952 | -0.011 | 672.01 | 0.000 |
| .\|*******\| | .\|. \| | 4 | 0.935 | 0.002 | 882.95 | 0.000 |
| .\|*******\| | .\|. \| | 5 | 0.919 | -0.009 | 1087.5 | 0.000 |
| .\|*******\| | .\|. \| | 6 | 0.903 | 0.009 | 1286.1 | 0.000 |
| .\|*******\| | .\|. \| | 7 | 0.890 | 0.056 | 1479.5 | 0.000 |
| .\|*******\| | .\|. \| | 8 | 0.878 | 0.041 | 1668.5 | 0.000 |
| .\|*******\| | .\|. \| | 9 | 0.867 | 0.029 | 1853.7 | 0.000 |
| .\|*******\| | .\|. \| | 10 | 0.857 | 0.030 | 2035.5 | 0.000 |
| .\|*******\| | .\|. \| | 11 | 0.849 | 0.046 | 2214.6 | 0.000 |
| .\|****** \| | .\|. \| | 12 | 0.842 | 0.054 | 2391.9 | 0.000 |
| .\|****** \| | .\|. \| | 13 | 0.837 | 0.028 | 2567.6 | 0.000 |
| .\|****** \| | .\|. \| | 14 | 0.830 | -0.042 | 2741.2 | 0.000 |
| .\|****** \| | .\|. \| | 15 | 0.822 | -0.010 | 2912.4 | 0.000 |
| .\|****** \| | .\|. \| | 16 | 0.814 | -0.013 | 3081.1 | 0.000 |
| .\|****** \| | .\|. \| | 17 | 0.806 | -0.004 | 3247.0 | 0.000 |
| .\|****** \| | .\|. \| | 18 | 0.797 | -0.021 | 3409.9 | 0.000 |
| .\|****** \| | .\|. \| | 19 | 0.786 | -0.018 | 3569.4 | 0.000 |
| .\|****** \| | .\|. \| | 20 | 0.776 | 0.001 | 3725.5 | 0.000 |
| .\|****** \| | .\|. \| | 21 | 0.766 | -0.012 | 3878.1 | 0.000 |
| .\|****** \| | .\|. \| | 22 | 0.756 | -0.002 | 4027.4 | 0.000 |
| .\|****** \| | .\|. \| | 23 | 0.745 | 0.001 | 4173.4 | 0.000 |
| .\|****** \| | .\|. \| | 24 | 0.736 | 0.014 | 4316.4 | 0.000 |
| .\|****** \| | .\|. \| | 25 | 0.728 | 0.009 | 4456.8 | 0.000 |
| .\|****** \| | .\|. \| | 26 | 0.719 | -0.018 | 4594.5 | 0.000 |
| .\|***** \| | .\|. \| | 27 | 0.710 | -0.026 | 4729.4 | 0.000 |
| .\|***** \| | .\|. \| | 28 | 0.701 | -0.009 | 4861.4 | 0.000 |
| .\|***** \| | .\|. \| | 29 | 0.691 | -0.006 | 4990.7 | 0.000 |
| .\|***** \| | .\|. \| | 30 | 0.682 | -0.018 | 5117.0 | 0.000 |
| .\|***** \| | .\|. \| | 31 | 0.672 | -0.023 | 5240.1 | 0.000 |
| .\|***** \| | .\|. \| | 32 | 0.661 | -0.025 | 5359.8 | 0.000 |
| .\|***** \| | .\|. \| | 33 | 0.649 | -0.025 | 5476.0 | 0.000 |
| .\|***** \| | .\|. \| | 34 | 0.636 | -0.043 | 5588.2 | 0.000 |
| .\|***** \| | .\|. \| | 35 | 0.623 | -0.024 | 5696.4 | 0.000 |
| .\|***** \| | .\|. \| | 36 | 0.609 | -0.025 | 5800.3 | 0.000 |

## Kuwait KSE 2009

| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| .\|******** | .\|******** | 1 | 0.989 | 0.989 | 258.28 | 0.000 |
| .\|*******\| | *\|. | 2 | 0.975 | -0.150 | 510.23 | 0.000 |
| .\|*******\| | *\|. | 3 | 0.959 | -0.072 | 755.00 | 0.000 |
| .\|*******\| | .\|. | 4 | 0.942 | -0.049 | 992.00 | 0.000 |
| .\|*******\| | .\|. | 5 | 0.925 | 0.002 | 1221.2 | 0.000 |
| .\|*******\| | *\|. | 6 | 0.906 | -0.074 | 1442.1 | 0.000 |
| .\|*******\| | .\|. | 7 | 0.887 | 0.007 | 1654.6 | 0.000 |
| .\|*******\| | .\|* | 8 | 0.869 | 0.073 | 1859.7 | 0.000 |
| .\|*******\| | .\|. | 9 | 0.854 | 0.051 | 2058.3 | 0.000 |
| .\|****** | *\|. | 10 | 0.837 | -0.066 | 2250.0 | 0.000 |
| .\|****** | *\|. | 11 | 0.818 | -0.165 | 2433.7 | 0.000 |
| .\|****** | .\|. | 12 | 0.798 | 0.021 | 2609.3 | 0.000 |
| .\|****** | .\|. | 13 | 0.778 | -0.041 | 2776.6 | 0.000 |
| .\|****** | .\|. | 14 | 0.757 | -0.016 | 2935.7 | 0.000 |
| .\|****** | *\|. | 15 | 0.734 | -0.064 | 3086.1 | 0.000 |
| .\|***** | .\|. | 16 | 0.711 | -0.026 | 3227.5 | 0.000 |
| .\|***** | .\|. | 17 | 0.686 | -0.045 | 3359.8 | 0.000 |
| .\|***** | .\|. | 18 | 0.662 | 0.011 | 3483.6 | 0.000 |
| .\|***** | .\|. | 19 | 0.638 | -0.038 | 3598.9 | 0.000 |
| .\|***** | .\|. | 20 | 0.615 | 0.062 | 3706.5 | 0.000 |
| .\|***** | *\|. | 21 | 0.590 | -0.081 | 3806.3 | 0.000 |
| .\|**** | *\|. | 22 | 0.565 | -0.072 | 3898.0 | 0.000 |
| .\|**** | .\|. | 23 | 0.540 | -0.013 | 3981.9 | 0.000 |
| .\|**** | .\|. | 24 | 0.514 | 0.005 | 4058.6 | 0.000 |
| .\|**** | *\|. | 25 | 0.488 | -0.075 | 4127.8 | 0.000 |
| .\|**** | .\|* | 26 | 0.463 | 0.130 | 4190.5 | 0.000 |
| .\|*** | .\|. | 27 | 0.439 | -0.036 | 4247.0 | 0.000 |
| .\|*** | .\|. | 28 | 0.415 | 0.011 | 4297.7 | 0.000 |
| .\|*** | .\|. | 29 | 0.392 | 0.000 | 4343.3 | 0.000 |
| .\|*** | .\|. | 30 | 0.371 | 0.055 | 4384.2 | 0.000 |
| .\|*** | .\|. | 31 | 0.350 | -0.042 | 4420.8 | 0.000 |
| .\|*** | *\|. | 32 | 0.328 | -0.069 | 4453.1 | 0.000 |
| .\|** | .\|. | 33 | 0.306 | -0.006 | 4481.2 | 0.000 |
| .\|** | .\|. | 34 | 0.284 | -0.001 | 4505.6 | 0.000 |
| .\|** | .\|. | 35 | 0.262 | -0.008 | 4526.3 | 0.000 |
| .\|** | .\|. | 36 | 0.241 | 0.030 | 4544.0 | 0.000 |

## Pakistan KSE 2009

| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| .\|******** | .\|******** | 1 | 0.986 | 0.986 | 218.00 | 0.000 |
| .\|*******\| | .\|. | 2 | 0.973 | -0.016 | 430.91 | 0.000 |
| .\|******* | .\|. | 3 | 0.959 | 0.001 | 638.88 | 0.000 |
| .\|******* | .\|. | 4 | 0.947 | 0.040 | 842.48 | 0.000 |
| .\|******* | .\|. | 5 | 0.935 | 0.001 | 1041.8 | 0.000 |
| .\|******* | .\|. | 6 | 0.921 | -0.050 | 1236.5 | 0.000 |
| .\|******* | *\|. | 7 | 0.907 | -0.061 | 1425.7 | 0.000 |
| .\|******* | *\|. | 8 | 0.890 | -0.060 | 1609.2 | 0.000 |
| .\|******* | .\|. | 9 | 0.874 | -0.034 | 1786.6 | 0.000 |
| .\|*******\| | .\|. | 10 | 0.857 | 0.005 | 1958.3 | 0.000 |
| .\|****** | .\|. | 11 | 0.840 | -0.052 | 2123.9 | 0.000 |
| .\|****** | .\|. | 12 | 0.823 | 0.001 | 2283.6 | 0.000 |
| .\|****** | .\|. | 13 | 0.805 | -0.039 | 2437.1 | 0.000 |
| .\|****** | .\|. | 14 | 0.786 | -0.057 | 2584.0 | 0.000 |
| .\|****** | .\|. | 15 | 0.766 | -0.015 | 2724.4 | 0.000 |
| .\|****** | .\|. | 16 | 0.747 | 0.002 | 2858.4 | 0.000 |
| .\|****** | .\|. | 17 | 0.726 | -0.054 | 2985.9 | 0.000 |
| .\|***** | .\|. | 18 | 0.707 | 0.031 | 3107.3 | 0.000 |
| .\|***** | .\|. | 19 | 0.689 | 0.051 | 3223.2 | 0.000 |
| .\|***** | .\|. | 20 | 0.671 | -0.008 | 3333.8 | 0.000 |
| .\|***** | .\|. | 21 | 0.653 | -0.015 | 3438.9 | 0.000 |
| .\|***** | .\|. | 22 | 0.635 | 0.009 | 3538.8 | 0.000 |
| .\|***** | .\|. | 23 | 0.618 | 0.015 | 3633.8 | 0.000 |
| .\|***** | .\|. | 24 | 0.600 | -0.036 | 3723.8 | 0.000 |
| .\|**** | .\|. | 25 | 0.583 | 0.040 | 3809.4 | 0.000 |
| .\|**** | .\|. | 26 | 0.569 | 0.058 | 3891.1 | 0.000 |
| .\|**** | .\|. | 27 | 0.553 | -0.051 | 3968.7 | 0.000 |
| .\|**** | .\|. | 28 | 0.537 | -0.002 | 4042.4 | 0.000 |
| .\|**** | *\|. | 29 | 0.520 | -0.078 | 4111.8 | 0.000 |
| .\|**** | .\|. | 30 | 0.502 | -0.022 | 4176.8 | 0.000 |
| .\|**** | .\|. | 31 | 0.486 | 0.021 | 4238.1 | 0.000 |
| .\|**** | *\|. | 32 | 0.469 | -0.058 | 4295.4 | 0.000 |
| .\|*** | .\|. | 33 | 0.452 | -0.021 | 4348.9 | 0.000 |
| .\|*** | .\|. | 34 | 0.435 | 0.010 | 4398.9 | 0.000 |
| .\|*** | .\|. | 35 | 0.418 | -0.045 | 4445.1 | 0.000 |
| .\|*** | .\|. | 36 | 0.401 | 0.007 | 4487.9 | 0.000 |

## Kuwait KSE 2010

| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| .\|******** | .\|******** | 1 | 0.991 | 0.991 | 257.27 | 0.000 |
| .\|******** | *\|. | 2 | 0.980 | -0.089 | 510.05 | 0.000 |
| .\|*******\| | .\|. | 3 | 0.969 | -0.053 | 757.83 | 0.000 |
| .\|*******\| | .\|. | 4 | 0.957 | 0.012 | 1000.8 | 0.000 |
| .\|*******\| | *\|. | 5 | 0.945 | -0.064 | 1238.3 | 0.000 |
| .\|*******\| | .\|. | 6 | 0.932 | -0.033 | 1470.2 | 0.000 |
| .\|*******\| | .\|. | 7 | 0.919 | 0.034 | 1696.9 | 0.000 |
| .\|*******\| | .\|. | 8 | 0.907 | 0.009 | 1918.4 | 0.000 |
| .\|*******\| | .\|. | 9 | 0.895 | 0.016 | 2135.1 | 0.000 |
| .\|*******\| | .\|. | 10 | 0.883 | -0.015 | 2347.0 | 0.000 |
| .\|*******\| | .\|. | 11 | 0.871 | -0.031 | 2553.8 | 0.000 |
| .\|*******\| | *\|. | 12 | 0.858 | -0.079 | 2755.1 | 0.000 |
| .\|****** | *\|. | 13 | 0.842 | -0.134 | 2949.7 | 0.000 |
| .\|****** | .\|. | 14 | 0.824 | -0.053 | 3137.2 | 0.000 |
| .\|****** | *\|. | 15 | 0.805 | -0.099 | 3316.8 | 0.000 |
| .\|****** | .\|* | 16 | 0.787 | 0.066 | 3489.1 | 0.000 |
| .\|****** | .\|. | 17 | 0.768 | -0.050 | 3653.8 | 0.000 |
| .\|****** | *\|. | 18 | 0.747 | -0.090 | 3810.4 | 0.000 |
| .\|****** | .\|. | 19 | 0.726 | -0.009 | 3959.0 | 0.000 |
| .\|***** | .\|. | 20 | 0.705 | -0.037 | 4099.7 | 0.000 |
| .\|***** | .\|. | 21 | 0.685 | 0.043 | 4233.1 | 0.000 |
| .\|***** | .\|. | 22 | 0.665 | -0.032 | 4359.2 | 0.000 |
| .\|***** | .\|. | 23 | 0.646 | 0.060 | 4478.8 | 0.000 |
| .\|***** | .\|. | 24 | 0.626 | -0.048 | 4591.5 | 0.000 |
| .\|***** | *\|. | 25 | 0.605 | -0.092 | 4697.1 | 0.000 |
| .\|**** | .\|. | 26 | 0.582 | -0.057 | 4795.3 | 0.000 |
| .\|**** | *\|. | 27 | 0.557 | -0.140 | 4885.6 | 0.000 |
| .\|**** | .\|. | 28 | 0.531 | -0.017 | 4968.1 | 0.000 |
| .\|**** | *\|. | 29 | 0.504 | -0.066 | 5042.8 | 0.000 |
| .\|**** | *\|. | 30 | 0.476 | -0.059 | 5109.7 | 0.000 |
| .\|*** | .\|. | 31 | 0.447 | -0.035 | 5169.0 | 0.000 |
| .\|*** | .\|* | 32 | 0.420 | 0.076 | 5221.4 | 0.000 |
| .\|*** | .\|. | 33 | 0.393 | -0.007 | 5267.7 | 0.000 |
| .\|*** | .\|. | 34 | 0.368 | 0.031 | 5308.4 | 0.000 |
| .\|*** | *\|. | 35 | 0.342 | -0.073 | 5343.8 | 0.000 |
| .\|** | .\|. | 36 | 0.316 | -0.039 | 5374.2 | 0.000 |

## Pakistan KSE 2010

| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| .\|*******\| | .\|*******\| | 1 | 0.967 | 0.967 | 228.14 | 0.000 |
| .\|*******\| | .\|. | 2 | 0.934 | -0.012 | 441.98 | 0.000 |
| .\|*******\| | .\|. | 3 | 0.902 | -0.008 | 642.20 | 0.000 |
| .\|*******\| | .\|. | 4 | 0.872 | 0.009 | 829.92 | 0.000 |
| .\|****** | *\|. | 5 | 0.838 | -0.060 | 1004.3 | 0.000 |
| .\|****** | .\|. | 6 | 0.807 | 0.017 | 1166.7 | 0.000 |
| .\|****** | .\|. | 7 | 0.775 | -0.041 | 1316.9 | 0.000 |
| .\|****** | .\|. | 8 | 0.743 | -0.013 | 1455.5 | 0.000 |
| .\|***** | .\|. | 9 | 0.711 | -0.004 | 1583.2 | 0.000 |
| .\|***** | .\|. | 10 | 0.680 | -0.013 | 1700.5 | 0.000 |
| .\|***** | *\|. | 11 | 0.647 | -0.063 | 1807.0 | 0.000 |
| .\|***** | .\|. | 12 | 0.617 | 0.047 | 1904.3 | 0.000 |
| .\|**** | *\|. | 13 | 0.584 | -0.070 | 1992.0 | 0.000 |
| .\|**** | .\|. | 14 | 0.553 | 0.000 | 2070.9 | 0.000 |
| .\|**** | .\|. | 15 | 0.519 | -0.050 | 2140.7 | 0.000 |
| .\|**** | .\|. | 16 | 0.488 | 0.002 | 2202.6 | 0.000 |
| .\|*** | *\|. | 17 | 0.453 | -0.064 | 2256.2 | 0.000 |
| .\|*** | .\|. | 18 | 0.418 | -0.031 | 2302.1 | 0.000 |
| .\|*** | .\|. | 19 | 0.384 | -0.006 | 2341.1 | 0.000 |
| .\|*** | .\|. | 20 | 0.354 | 0.034 | 2374.3 | 0.000 |
| .\|** | .\|. | 21 | 0.325 | -0.014 | 2402.3 | 0.000 |
| .\|** | .\|. | 22 | 0.299 | 0.037 | 2426.3 | 0.000 |
| .\|** | .\|. | 23 | 0.274 | 0.003 | 2446.5 | 0.000 |
| .\|** | .\|. | 24 | 0.251 | -0.009 | 2463.4 | 0.000 |
| .\|** | .\|. | 25 | 0.225 | -0.041 | 2477.2 | 0.000 |
| .\|** | *\|. | 26 | 0.197 | -0.073 | 2487.8 | 0.000 |
| .\|* | .\|. | 27 | 0.168 | -0.038 | 2495.5 | 0.000 |
| .\|* | .\|. | 28 | 0.144 | 0.056 | 2501.2 | 0.000 |
| .\|* | .\|. | 29 | 0.121 | -0.002 | 2505.2 | 0.000 |
| .\|* | .\|. | 30 | 0.100 | 0.005 | 2508.0 | 0.000 |
| .\|* | .\|. | 31 | 0.079 | -0.002 | 2509.7 | 0.000 |
| .\|. | .\|. | 32 | 0.058 | -0.038 | 2510.7 | 0.000 |
| .\|. | .\|. | 33 | 0.037 | -0.007 | 2511.0 | 0.000 |
| .\|. | .\|. | 34 | 0.020 | 0.028 | 2511.2 | 0.000 |
| .\|. | .\|. | 35 | 0.008 | 0.054 | 2511.2 | 0.000 |
| .\|. | .\|. | 36 | -0.004 | -0.001 | 2511.2 | 0.000 |

## ADF TEST RESULT OF BOTH COUNTRIES

# Pakistan KSE

| 2005 PK KSE | | | |
|---|---|---|---|
| ADF Test Statistic | 0.73787 | 1%   Critical Value* | -2.574 |
| | | 5%   Critical Value | -1.9409 |
| | | 10% Critical Value | -1.6163 |

| 2006 PK KSE | | | |
|---|---|---|---|
| ADF Test Statistic | -0.06272 | 1%   Critical Value* | -2.5743 |
| | | 5%   Critical Value | -1.941 |
| | | 10% Critical Value | -1.6164 |

| 2007 PK KSE | | | |
|---|---|---|---|
| ADF Test Statistic | 0.977221 | 1%   Critical Value* | -2.5742 |
| | | 5%   Critical Value | -1.941 |
| | | 10% Critical Value | -1.6164 |

| 2008 PK KSE | | | |
|---|---|---|---|
| ADF Test Statistic | -1.661 | 1%   Critical Value* | -2.5745 |
| | | 5%   Critical Value | -1.941 |
| | | 10% Critical Value | -1.6164 |

| 2009 PK KSE | | | |
|---|---|---|---|
| ADF Test Statistic | 1.348601 | 1%   Critical Value* | -2.5751 |
| | | 5%   Critical Value | -1.9411 |
| | | 10% Critical Value | -1.6164 |

| 2010 PK KSE | | | |
|---|---|---|---|
| ADF Test Statistic | 1.27902 | 1%   Critical Value* | -2.5743 |
| | | 5%   Critical Value | -1.941 |
| | | 10% Critical Value | -1.6164 |

# Kuwait KSE

| 2005 KW KSE | | | |
|---|---|---|---|
| ADF Test Statistic | -0.54917 | 1%   Critical Value* | -3.4577 |
| | | 5%   Critical Value | -2.873 |
| | | 10% Critical Value | -2.5728 |

| 2006 KW KSE | | | |
|---|---|---|---|
| ADF Test Statistic | -0.90048 | 1%   Critical Value* | -2.574 |
| | | 5%   Critical Value | -1.9409 |
| | | 10% Critical Value | -1.6163 |

| 2007 KW KSE | | | |
|---|---|---|---|
| ADF Test Statistic | 1.947049 | 1%   Critical Value* | -2.5737 |
| | | 5%   Critical Value | -1.9409 |
| | | 10% Critical Value | -1.6163 |

| 2008 KW KSE | | | |
|---|---|---|---|
| ADF Test Statistic | -1.45359 | 1%   Critical Value* | -2.5736 |
| | | 5%   Critical Value | -1.9408 |
| | | 10% Critical Value | -1.6163 |

| 2009 KW KSE | | | |
|---|---|---|---|
| ADF Test Statistic | -0.33838 | 1%   Critical Value* | -2.5736 |
| | | 5%   Critical Value | -1.9409 |
| | | 10% Critical Value | -1.6163 |

| 2010 KW KSE | | | |
|---|---|---|---|
| ADF Test Statistic | -0.13234 | 1%   Critical Value* | -2.5737 |
| | | 5%   Critical Value | -1.9409 |
| | | 10% Critical Value | -1.6163 |