



## Pakistan Stock Exchange and Its Relationship with Emerging Countries Stock Markets

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### ABSTRACT

Pakistan stock exchange has seen many ups and downs since the last period. The local investors are feeling themselves much insecure in local investment. The reasons behind are political instability, severe power crises and terrorism which compelled the local investors to go across boarder and need to explore the multiple option of investment in international securities to minimize the investment risk. Aims of the study to analyze short and long terms relationship between Pakistan stock exchange and its four emerging countries stock markets namely India, China, Turkey and Sri-Lanka. The study has utilized monthly data of stock indices for the period ranging from 1<sup>st</sup> January 2008 to 31<sup>st</sup> December 2016. We used Augmented Dickey-Fuller test to check the unit root or stationarity. ADF augmented dickey fuller test exhibits that all the data are at level so we run directly regression. From the consequences of the regression analysis it is found that there is no relationship between Pakistan stock exchange and other four emerging countries stock markets such as India stock market, china stock market, turkey stock market and Sri-Lanka stock market.

**KEY WORDS:** PSX-100 Index, India stock market, china stock market, turkey stock market and Sri-Lanka stock market.

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### INTRODUCTION

The stock exchange is known as the market in which shares of publicly held companies are issued and traded either through exchanges or over-the-counter (OTC) markets. It is also known as the equity market, the stock exchange is one of the most vital components of a free-market economy, as it provides companies with access to capital in exchange for giving investors a share of ownership in the company. The stock market makes it possible to grow small initial sums of money into large ones, and to become wealthy without taking the risk of starting a business.

According to Bodie and Marcus, (2007) that the investors hold a diversified security to get a suitable return, and get opportunity to reduce risk. Therefore, investors normally wants to select such types of security which are not correlated. For these purpose investors go outside their national borders and tend to invest in other countries stocks markets. By this geographic diversification investors are able to capture high rate of return offered by new emerging markets. This diversification increased significance of international capital markets.

For two main purpose investors tend to invest in other countries markets. First of all, due to worldwide liberalization during 1980-1990 developed countries reduced capital flow were followed by developing countries.

Yang and Bessler, (2003) studied that due to globalization and communication network among the countries are very significant for both, the institutional and individual investors to invest in stock market of other countries. The investors want to hold one's security and to invest other countries actually resulting the flow of capital across countries and especially to developing markets from developed markets.

Increase in communication and flow of capital of investors it will directly moving towards more economically integrated world. For success of economic integration, the world integrated financial countries are the most important factor. Countries want to provide desirable sources for sustainable growth of the economy and to get advantage from their emerging countries stock market. Commercial incorporation agrees stockholders to get stable growth and profits (Aksoy & zeytunlu, 2011)

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Ergun, (2013) explored in his research that the relationship between Pakistan and Turkey have long and good due to economic and supporting corporation between the countries in sectors such as energy, transport, communications, infrastructure, textiles, automobiles, agriculture, industry, food processing, dairy development, information technology, oil and gas. When the Prime Minister of Pakistan visited Istanbul in 2013 the corporation between the countries established stronger push and after that the Turkish Prime Minister visit to Pakistan in December. Both prime ministers of the state agreed to their mutual relationship for greater mutual gains. And were signed three important memorandum of understanding between the Karachi Industrial Department and Turkey Cooperation Agency, Pakistan Railways and Turkish Logistics Organization, Pakistan Standard Quality Control Authority and Turkish Standards Institution,

According to Aazim, (2012) main emerging countries of Pakistan are China, India, US, Malaysia, Japan and Singapore. Pakistan trade with these countries is relatively high and also the data of stock indices are easily available for the selected time period. Pakistan trade with emerging countries stock markets and its volume in 2010 was with European Union it was 13.6% with China it was 14.5% with UAE it was 8.5% with US it was 7.6% with Singapore it was 3.2% with Saudi Arabia it was 6.7% with India it was 5.3% with Kuwait it was 4.7% with Afghanistan it was 2.9% with Japan it was 2.7% with Iran it was 3.5% with Malaysia it was 5.1%.

DG Trade, (2012) studied in his research that emerging countries like Saudi Arabia, Afghanistan, Iran and Kuwait are not included in the study because the data of stock indices are not available for selected time period. This study is conducted to find out short and long-term relationship of Pakistan stock Exchange and its relationship with emerging countries stock markets. The problem which are facing that what type of relationship occur among selected stock market and what is the effect of other stock market on Pakistan stock exchange. Many researchers found this relationship but this research is slightly different from other researches due to using different emerging countries stock markets with Pakistan stock exchange. Secondly, whereas most studies have used daily and weekly data of those countries stock markets, while this study used monthly stock market indices values for each of these selected countries. Because the information flows rapidly and markets react to the information exposed in values of other stock markets very quickly. The objectives of the study to investigate the relationship among Pakistan stock exchange and selected emerging countries stock markets i.e. India, Turkey, China and Srilanka.

- To investigate the relationship between Pakistan stock exchange and National stock exchange India.
- To investigate the relationship between Pakistan stock exchange and Istanbul stock exchange Turkey.
- To investigate the relationship between Pakistan stock exchange and Shenzhen stock exchange China.
- To investigate the relationship between Pakistan stock exchange and Colombo stock exchange Srilanka.

## LITERATURE REVIEW

As discussed above, investigation of stock markets correlation is very essential performance so stockholders become aware of the stock markets. Where they reduce their risk and where they have chances of diversification. Following is brief literature review of the past studies conducted on area of the research.

Hassan and Naka, (1996) studied that Germany, Japan, UK and US stock market, to check the relationship among stock indices for long and short periods. Through the daily data for the period 1984-1991 and there was not significant evidence supporting the long and short-term relationship among the equity indices? It was also found in the study that in the post short term in 1987 all other stock exchanges were operating by the US stock market. But in all the long-held positions in all the periods led to all other stock markets.

Yang and Bessler, (2003) Studied the correlation of stocks exchange in Australia, Japan, UK, France, US, Hong Kong, Germany, Switzerland, and Canada using daily closing prices of stock indices for the period of June 1997 June 1999 provided proof of correlation and said that in America a consistent long-term impact in other stock markets.

Muckley, Lucey and Agarwal (2003) investigated the integration of the European stock markets and identified Frankfurt as the major market values. He has also determined that in year 1997-98 rose to the integration of the European stock markets.

The process of investigating the relationship between Equity Australia and Hong Kong, Taiwan, Singapore, America, Britain, Korea and Japan market value for Rock (1999) period 1974-1995 and using Johansen and Juselius, Granger Carany and Australia and others Zero correlation between markets

Irakle and Genduj, (2001) determined that after the Asian crisis, the relationship among G7 and Turkey Stock Exchange and Egypt, Morocco, Israel and Jordan, has been investigated, but no relations have been found with MENA countries. In addition, determine the implicit relationship between the G-7 and Turkey Stock Exchange.

Glezakos and Mylonakis, (2009) studied for the period of February 2009 during the financial crisis, before the investigation of interdependence among stock exchanges in Romania, Bulgaria, Croatia, Greece, Turkey and

Germany during the financial crisis. To check stationarity Dickie-fuller and Philips person test were used, and Granger was used to control the causation test. They found that these markets are loosely linked during the normal period of business and have been mutually correlated during the economic downturn.

According to Maghyereh, (2003) the market in Turkey, Jordan, Morocco and Egypt developed in 1997-2002. He also studied and found that there is the level of incorporation in the stock market of Morocco, Egypt, Jordan, that there is less and Turkey.

Kucukcolak, (2008) examined the level of market incorporation with Turkey stock exchange and European Union, the stock market indices of France, Britain, Greece and Germany for the period of daily data 2001-2005. The use of Engle-Granger's equation has shown, in the long term, the Turkish market value is not correlated with France, Britain and Germany, is correlated with the Greek stock market.

Ergun, (2010) discussed that EU markets under the condition of the Turkish region the use of Turkey stock market for the period of 1988-2010. The Dynamic Relationship examined the effect of instability, CGARCH, an agreement after establishing strong relations among the stock market between the EU, Turkey and NASDAQ Turkey throughout the sample period, the Istanbul Stock Exchange exited the instability of NASDAQ.

Atyeh and Rashad (2012) examined the integration between the financial markets of the Arab countries using the Johansen approach the indices for the period from January to December and establishment of integration between the countries of the European Union and Arab market. When the index is dependent variable the financial markets of the Arab countries, but when the EU is dependent variable, there is the integration among the EU and the financial markets with Arab countries.

Nath and Verma, (2003) describe in his research they used daily data of capital market indices from Nov 1994 to Jan 2002 to investigate the stock market of three interdependence countries market of India, Taiwan and Singapore stock markets. They examine that the number of indices levels is not stable and also pointed out that no co-integration between the index and both for the entire period is not a long-term balance.

Karim, (2007) explained the integration of stock market of Malaysia and major trading partners using weekly data for the period of July 1998-2007. The VECM approach and co-integration has established a strong integration between Johansen and Johansen by using evidence of Juselius among Malaysia stocks exchange there were no possibilities for its main trading partners and therefore international diversification.

Lamba, (2005) determined in his research a large sample for short and long-term relationship among in December 2003 Pakistan, Sri Lanka and Indian markets have been examined in South East Asian markets developed for the period of July 1997. His study has shown that the Indian market is influenced by the United States, Britain and Japan. In addition, he clarified that this effect has been taking place on the United States after September 11, 2001 terrorist attacks.

Saleem and Hassan, (2008) studied the long-term relationship among the developed world stock market and Karachi stock market using the multivariate correlation analysis he used weekly stock market data from 2000-2001. They included multivariate co-integration apply Johansen and Juselius's analysis. Studies have shown that a long-term relationship between these markets and the markets are not integrated. Together with their analysis co-integrated Germany, Canada, US, UK, Italy and Australia have shown that the stock markets are not co-integrated with Karachi stock markets.

Azeem and Ahmed Yasser, (2009) in his research he used monthly data from 1999 -2009 four major shares of the South Asian people for the markets including the Bangladesh Stock Exchange, Srilanka Stock exchange, Pakistan Stock Exchange and India Stock Exchange. It has been successful and South Asian stock correlation analysis and vector error correction models are very rare among market. Since last 48 months, the Pakistan stock exchange 100-index continued greatly unstable. During that period three most extreme financial crises were seen. Pakistan stock exchange PSX 100-index was crashed in 2005 firstly. Collapse was observed in the quarter of 2006 secondly. The most serious was observed from May 2008 to Jan 2009 thirdly. More than 9 thousand points of PSX 100 index was fallen in this period. In Jan 2013 again a major crash was observed which was the second largest crash in Pakistan history more than 500 points of PSX 100-index was fallen due to that crash (Economic Survey of Pakistan (2008-09 & 2012-2013).

### **Research Hypotheses**

- $H_0$ : There is no significant relationship among Pakistan Stock Exchange and other selected emerging countries stock markets.
- $H_1$ : There is significant relationship among Pakistan Stock Exchange and other selected emerging countries stock markets.

### Sub Hypotheses

- H<sub>0</sub>: There is no significant relationship between Pakistan Stock Exchange and National stock exchange India.
- H<sub>1</sub>: There is a significant relationship between among Pakistan Stock Exchange and National stock exchange India.
- H<sub>0</sub>: There is no significant relationship between Pakistan Stock Exchange and Istanbul stock exchange Turkey.
- H<sub>1</sub>: There is a significant relationship between Pakistan Stock Exchange and Istanbul stock exchange Turkey.
- H<sub>0</sub>: There is no significant relationship between Pakistan Stock Exchange and Shenzhen stock exchange China.
- H<sub>1</sub>: There is significant relationship between Pakistan Stock Exchange and Shenzhen stock exchange China.
- H<sub>0</sub>: There is no significant relationship between Pakistan Stock Exchange and Colombo stock exchange Srilanka.
- H<sub>1</sub>: There is significant relationship between Pakistan Stock Exchange and Colombo stock exchange Srilanka.

## DATA COLLECTION RESEARCH METHODOLOGY

### Type of research

This research is exploratory. Most of the work of others researcher has been briefly discussed and hypothesis is developed.

### Sample size

In this study the sample size taken ranged from Jan 2008 to Dec 2016. The monthly data of stock indices are used for all the variables.

### Sources of data

The data is secondary in nature and is collected from different sources. Google search engine and official sites of Pakistan stock exchange and yahoo finance.

### Data collection

The data is collected from several areas. The index price have been collected from the Pakistan stock exchange. The closing prices of the stock returns are taken and their log returns are calculated. The log returns are calculated by the formula in excel.

$$RT = \ln (P1/Po)$$

RT = represents the return

P1 = represents the closing price on the given day

Po = represents the closing price on the day previous to P1

## RESEARCH METHODOLOGY

To investigate short term and long-term relationship between Pakistan stock exchange and its relationship with emerging countries stock markets, different time series econometric techniques are used. This study used Unit Root Tests for data stationarity and Regression analysis to check the relationship among the stock exchange of Pakistan and emerging countries stock markets.

This study used monthly closing value of stock indices of Pakistan stock exchange and other four emerging countries stock markets including, India, China, turkey and Srilanka. The study includes five variables including Pakistan, India, China, Srilanka, Turkey stock indices.

### Augmented Dickey Fuller Test

As it is the assumption of regression analysis that there should be no trend in the data. We first checked the stationarity of data, there are different tests to check the Stationarity. We used ADF (augmented dickey fuller test). If the whole variables become stationary at level we will directly go for regression. If some of these variables become stationary at level and some on first difference then we use ARDL (Auto Regressive Distributed Lag) to check log-run relationship of our variables. If entire variables become stationary at 1<sup>st</sup> difference we use co-integration to check log-run relationship of our variables.

**Regression Model**

PSX=  $\alpha + \beta$  (India National stock exchange, China Shenzhen stock exchange, Turkey Istanbul stock exchange and Srilanka Colombo stock exchange) + error term

**Dependent variable**

**Pakistan stock exchange**

PSX 100 index used as a proxy for the stock exchange of Pakistan.

**Independent variables**

**Indian stock exchange**

National stock exchange NSE used as a proxy for the stock exchange of India.

**China stock exchange**

Shenzhen stock exchange used as a proxy for China.

**Turkey stock exchange**

Istanbul stock exchange ISE used as a proxy for the stock exchange of turkey.

**Srilanka stock exchange**

Colombo stock exchange used as a proxy for Srilanka.

**RESULTS AND DISCUSSION**

As we have taken four stock markets such as India stock market, china stock market, turkey stock market and Sri-Lanka stock market and checked the relationship with Pakistan stock exchange. The monthly data are collected for these four variables which is time series in nature so we should have to check the stationarity of the data, for this purpose we used the Augmented Dickey –Fuller (ADF) test to check the stationarity of our data. For ADF test there is a null hypothesis  $H_0$  that there is a unit root. The results of ADF test is given below:

**Table 1**

Variables	ADF Test value	Order of Integration
Pakistan Stock Market	-8.982335	I (0)
India Stock Market	-8.817425	I (0)
China Stock Market	-9.319610	I (0)
Turkey Stock Market	-7.900811	I (0)
Srilanka Stock market	-8.204207	I (0)

ADF augmented dickey fuller test exhibits that all the data are at level therefore we go directly for regression.

**Regression Analysis**

**Table 2**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.005140	0.031968	0.160789	0.8726
NSE	0.388873	0.467407	0.831981	0.3073
CSE	0.353749	0.344736	1.026142	0.4074
ISE	-0.165815	0.487144	-0.340382	0.4785
SSE	0.370563	0.520980	0.711282	0.7343
R-squared		0.029854	Mean dependent var	0.008590
Adjusted R-squared		-0.008190	S.D. dependent var	0.324026
S.E. of regression	0.325350		Akaike info criterion	0.637772
Sum squared resid		10.79697	Schwarz criterion	0.762671
Log likelihood		-29.12080	Hannan-Quinn criter.	0.688404
F-statistic		0.784716	Durbin-Watson stat	2.920182
Prob (F-statistic)	0.537683			

**Interpretation of regression analysis**

From the above regression analysis the results exhibits that the p-value of India stock market, china stock market, turkey stock market and Sri-Lanka stock market are 0.4074, 0.3073, 0.7343 and 0.4785 respectively. We concluded from these values that there is no significant relationship of Pakistan stock market with other four emerging

countries stock market because the p-value is greater than the critical value 0.05. Our result shows that  $H_0$  is accepted and alternative hypothesis  $H_1$  is rejected due to no relationship between Pakistan stock exchange and other four emerging countries stock markets. There is no relationship between the stock exchange of Pakistan and its other emerging countries stock markets because Pakistan stock exchange is inefficient and therefore doesn't represent the effect of other international capital markets although it is receptive to national events like ups and downs in Pakistan stock exchange, natural disasters (Earthquake and flood) and artificial disasters (Terrorism, War against Terror) and represents the effects of these events. These results are consistent with Anjum Shezad (2014), Muhammad Ihsan Ullah Khan (2012) and Tazeem Anwar (2016).

### Conclusion

In this research the relationship between Pakistan stock market and other four emerging countries stock markets such as India stock market, China stock market, Turkey stock market and Sri-Lanka stock market. This is obvious from this study that there is no significant relationship between Pakistan stock exchange and other four emerging countries market such as India stock market, China stock market, Turkey stock market and Sri-Lanka stock market. We collected the monthly data for all the five variables which is time series. Before going to analysis we first check the unit root for Pakistan stock exchange and other four emerging countries stock markets such as India stock market, China stock market, Turkey stock market and Sri-Lanka stock market for which the null hypothesis is that there is a unit root. We used Augmented Dickey-Fuller test to check the unit root or stationarity. ADF augmented Dickey Fuller test exhibits that all the data are at level so we run directly regression. From the consequences of the regression analysis it is found that there is no relationship between Pakistan stock market and other four emerging countries market such as India stock market, China stock market, Turkey stock market and Sri-Lanka stock market. These results are consistent with Anjum Shezad (2014), Muhammad Ihsan Ullah Khan (2012) and Tazeem Anwar (2016).

### Recommendation

This study analyzed relationship between Pakistan stock exchange and its only four emerging countries stock markets such as India, China, Turkey and Sri Lanka stock markets. However other major emerging countries of Pakistan like Afghanistan, UAE, Saudi Arabia, Kuwait and Iran are not included because of unavailability of data for the selected period so further research on the area can be carried out by taking these countries into account.

### Limitation

However, the limitation of the study must be included in this research. My analysis is based on some limitation. The limitations are given below.

The first limitation is that we consider only four emerging countries stock markets.

Second refers to the fact that the research is only on the basis of Pakistan which is the developing country because in the literature some researchers study these relationships on the basis of developed countries therefore their results were different from mine.

Lastly some of the journals are chargeable. In chapter 2, I conducted the literature review by reading on the journal that was done by other researchers on the topic which is similar to our research. For some of the important journals which are directly discussing their findings among the countries, I only found their paragraphs of abstract but not in full journals, I am required to pay for it prior to access to the whole journal. Students may not afford to pay for it. These are all limitations due to a short period of time.

This study is conducted in a limited span of time and to check the relationship. After studying the previous researches on the co-relation of Pakistan stock exchange with four emerging countries stock markets especially in my selected sample there is little work being available in which these markets are studied together. Therefore, it can be an emerging topic for further research to analyze co-relation in these markets.

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