Orient Research Journal of Social Sciences *ISSN Print 2616-7085*
December 2019, Vol.4, No. 2 [295-311] *ISSN Online 2616-7093*

Exploring the Relationship between Stock Exchange Prices and Macroeconomic Indicators in Pakistan: An Application of ARDL Approach

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Abstract

Stock exchange plays crucial role in economic development a country. Contemplation among various macroeconomic indicators was established by utilizing, 1975-2018 annual time series data. In this study Gross Domestic Product is used as the regress and while, Inflation, Foreign Direct Investment, Money Supply and Exchange Rate are used as regressors, and KSE price index is used as an indicator of Stock exchange price.. Base on the unit root results tested by utilizing the ADF test, the study adopt the ARDL co-integration as the estimation technique for empirical investigation. The conclusion state that GDP is negatively correlated to the Exchange Rate and Foreign Direct Investment whereas the positive correlation is observed with Inflation and Money Supply.

Keywords: Pakistan Gross Domestic Product, Inflation, Foreign Direct Investment, Exchange Rate, Money Supply

Introduction

The emergent consequence of stock market in the world has newly open a latest occasion of study addicted to the involvement, concerning stock market expansion and contraction. A stock exchange is an exchange where the traders and stock brokers sell or buy bonds, stocks (that also called shares) and securities. Stock exchange serves as (1) primary market where municipalities, corporation and governments can lift capital that investors elevate their savings of creative projects and (2) secondary markets where the existing securities are traded among investors.

Many organizations listed their securities and share them in markets to gain higher level of profit. The financial market is a place or organization where the individuals or companies traded stocks. It is also known as the aggregation of stock buyers and sellers at fixed prices. Stock market is also known as Equity Market and Share market. Many large companies participate in the stock market. Trade occur in stock market is basically used to transfer money in the form of securities and bonds. Indeed investors are interested only in the rate of interest.

The investors only invest in those projects from where they could gain higher rate of interest. There are many agents in the stock market that participate in the buying and selling of securities, bonds, equities and shares. Investors are taking risk when they are investing their money in the stock market. There are three types of investors that participate in market. (1) Households (2) institutions (3) Foreign traders. All these investor's works as direct participant or indirect participant. In Direct Participant investors are investing their money on their own behalf. Many

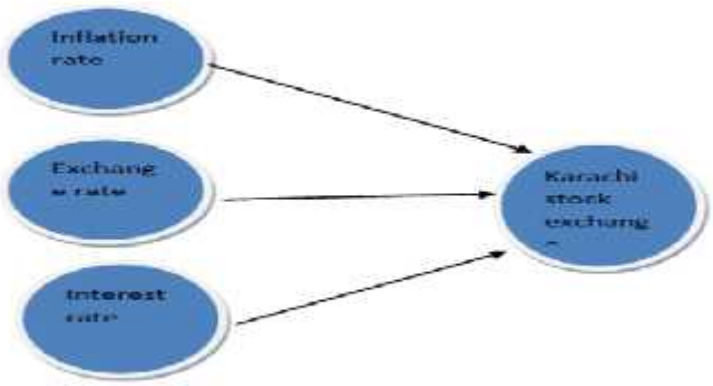
investors invest on someone's behalf these participants are known as indirect participants.

Macroeconomic variables also influence the concept of stock market. In stock market macroeconomic variable exchange rate is positively related with stock prices. In the contrast, Inflation is also determined factor of stock market. Rise in the inflation rate has adverse impact on the KSE and other markets. Due to raise of prices it is very dangerous condition because investors feel insecure about their investment and they do not invest their money in this critical condition and this critical condition resulted is that to reduce the volume of investment.

When investors perform in the stock market they also take risk because any fluctuations in the economy reduce their level of profit. Managing risk is critical in the stock market to improve economic stability in the companies. Risk is involved in every investment process. To reduce the risk and maintain the suitable conditions for business to attain their maximum profit level, this situation of risk managing is suitable in investing process. In the risk management both macro and microeconomic indicators must substantial by risk managers. Risk management provides information about the indicators that are useful in the expectations regarding market risk.

When inflation rate raises more than targeted rate, this condition is really harmful for the economic growth than monetary policy takes actions to control this situation. It is suggested that if all the economic factors work efficiently and they remains under the control of stock market then it improves the growth level of the economy.

Karachi Stock Exchange: KSE was established on Sep 18, 1947. The biggest market of the stock market is known as Karachi Stock Exchange.



Karachi Stock Exchange

The above diagram is about KSE. It explains the factors on which KSE depends. Here KSE depends upon the exchange rate, interest rate and on inflation rate.

Literature Review

There exist a great amount of work is presented on the conducted research. However some of the worth-mentioning studies are reviewed in the table below.

Ibrahim and Yusuf (2001) investigated the lively relationship output, supply of money and level of price, regarded as the major macro variables for Malaysian economy. In this study vector auto regressive and co integration techniques are applied on time series data to get the required results. This study concluded that in short run money supply is negatively associated with stock price level and also have a negative effect on stock market.

Nishat and Shaheen (2004) discussed the relationships and trends of the major variables of KSE index. This study applied a VECM to found the empirical association of selected variables from 1973 to 2004. This paper concluded that all the variables were related with each other and there exist stability among them.

Husain (2006) illustrated the linking of real sector with the stock prices. This study is conducted from 1959 to 2004 and applied functional Granger Co-integration Test and ADF test for empirical estimation of the data. This paper mainly focused on explaining the relationship among Gross Domestic Product, real consumption level, real investment level with the stock prices. Gan, C. et al. (2006) explained the empirical association of the variables of New Zealand's market. This study use data from 1990 to 2003 for Co- integration analysis. This study explains the interrelationships among variables that's why Granger Causality test is also applied to check which one cause the other. This study concluded that increase in interest rate cause to increase the level of output and employment. And due to excess supply the price level increased and it causes to increase the exchange rate.

Rashid (2008) study a paper that investigated a dynamic affiliation of stock exchange prices with other variables of Pakistani markets. This study apply Granger Causality test to check that which variable cause the other. This study concluded that stock prices, interest rate, consumer prices and exchange rate are linked very closely. Acikalin et al. (2008) examined the association among the Istanbul Stock Exchange (ISE) and the Turkish economy. In this study we found that current account balance, Exchange rate, GDP and rate of interest are related with stock market. The co-integration model and VECM technique is applied on the quarterly data. This study concluded that both test stock exchanges have a negative impact on the stability of the economy.

Rehman, Md. Uddin (2009) observed the interaction among the South Asian countries, i.e. Bangladesh, Pakistan and India. This study covered time period from January 2003 to June 2008, to explain the relationship of exchange rate with stock prices. This study concluded that there exists insignificant association among selected variables.

Shahzadi and Chohan (2010) inspected that the stock exchange market in the world especially in developing countries presented low level of trading activities. Investors show less interest to invest in the stock exchange market of developing

countries. They prefer to invest in valuable metals like gold. Due to this the gold prices always have high trends. The data of five years from 2006 to 2010 were used. This paper concluded that gold prices have a sufficient impact on the exchange market generally this study concluded that gold prices and exchange markets are negatively associated. Nazir, Nawaz and Gilani (2010) analyzed that either stock exchange market have strong effect on economic growth or not. This study used time series data from 1986 to 2008 for empirical analysis. The ADF technique was applied. This study concluded that economic growth of a country can be gained by enhancing the capitalization in a market as well as the size of stock market too in Pakistan.

Pilnkus (2010) explained the association among market factors and market efficiency. The macroeconomic variables can affected the pronouncements of investments, and attract the investigators to study the exchange markets. This study takes data from 2000-1 to 2008-12. This study applied Augmented Dickey Fuller test. This study analyzed that according to investor's performance the stock market is strongly related with economic growth. Sharma and Mahendru (2010) considered the connection along with stock prices and market forces. The selected variables in this study were exchange reserves, gold prices, rate of interest and rate of exchange. Simple ordinary least square is used in this study. This study examines that gold prices and exchange rate highly precious to determine the stock prices.

Nisa and Nishat (2012) investigated that casual correspondence amongst macroeconomic factors, stock prices and financial fundamentals of KSE. Risk involved in the stock markets and the investors avoided the situation of risks that's why they highly avoid to invest in stock markets. This study analyzed that the macroeconomic variables have been significantly related to stock prices.Mushtaq, Shah and Rehman (2012) analyzed the Stock market of Pakistan and also explain the association among different variables of stock market. This study used production index of industrial sector, CPI, Investment, Money Market and Inflation as variables. The error correction model is implies to explain such relationship. This study concluded that some macroeconomic variables are positively associated while some variables are negatively affect the stock prices. Majorly industrial production has positive impact while inflation has negative effect on stock prices.

Kabir et al. (2012) attempts to explore the association among stock prices and economic growth of Bangladesh. This study takes data from 2001- 2010. The Unit Root Test, VAR model, VECM were applied on the data in this data. This study concluded that there exists a significant connection among all the macroeconomic variables. Naik and Padhi (2012) discussed the association of stock market with one of the major macroeconomic variable i.e. rate of interest. Interest rate means the amount charged by the lender to the borrower to use the money and assets. If interest rate increased it reduced the amount of money in circulation that creates inflation and makes difficult the borrowing of money. This entire situation reduced the volume of investment in stock market. It was concluded that there is negative relationship between interest rate and investment. That lowers the efficiency of stock market.

Model Specification, Data and Methodology

Financial market is important economic sector for stabilizing the economy of the country and also important for the improvement of the financial sector. This study works on time series data from 1975-2018. Data collected from World Development Indicator (WDI). Choice of good and relevant variables plays a vital role in attaining best and applicable results.

Model Specification

In this section the ARDL technique is applied to examine the long run and short rum association among variables.

The general equation is.

$$\Delta GDP = \alpha 0 + \sum_{i=1}^{k1} a1i\Delta(INF)t-1 + \sum_{i=1}^{k2} a2i\Delta(ER)t-1 + \sum_{i=1}^{k3} a3i\Delta(MS)t-1 + \sum_{i=1}^{k4} a4i\Delta(FDI)t-1$$

In this equation:

Δ = First Difference

GDP = Gross Domestic Product

INF = Inflation Rate

ER = Exchange Rate

MS = Money Supply

FDI=Foreign Direct Investment

This equation shows the long and short run association among selected variables. Because it is implemented on both type of data means that if the data is stationery at level and first difference, and also applicable if the sample size of data is small. According to the requirements selected variables and sample size is suitable in this equation so it gives accurate results.

Description of Variables

There are a lot of variables suggested for this study from literature, but we selected some of them for present research. In this study Gross Domestic Product (GDP) is taken is dependent variable while Inflation (INF), Exchange Rate (ER), Money Supply (MS), Foreign Direct Investment (FDI) is taken as independent variables. The data for this study is taken from 1975-2016. The data is taken from World Development Indicators (WDI).

Table 1
Description of Variables

Variables	Description	Expected Sign	Measuring Units
Source			
GDP	Gross Domestic Product		Annual %
WDI			
INF	Inflation	Positive	Annual %
WDI			
ER	Exchange Rate	Negative	Annual %
WDI			
MS	Money Supply	Positive	Annual%
WDI			
FDI	Foreign Direct Investment	Negative	% of GDP
WDI			

***Source*:** The data is taken from WDI.

This table shows the brief explanation of selected variables for this paper. Furthermore the source from which the data is taken and the meaningful units are also mentioned in the table. The expected sign column shows the relationship of dependent variables with other independent variables.

Gross Domestic Product (GDP)

It includes all type of goods and services produced at current market prices in a specific time period. It can be estimated from three methods i.e. (a) Income Approach,(b) Expenditure Approach, (c) Production Approach. In production approach it calculated all type of goods that made in a country. In income approach it is considered that the income of the producers must be equal to their production level. In expenditure approach it is measured that customer must purchase all goods. GDP is taken as dependent variable in this study. GDP can be calculated as,

GDP = C + I + G

Inflation Rate

In this study Inflation is used as independent variable. Inflation means continuous rise in general price level. By increasing the price level the value of currency reduces. This situation is not suitable for the stability of any economy because it reduces the purchasing power of consumers. The inverse of inflation is known as deflation. Due to inflation the prices of goods and services rises in the economy and the income level of the consumers remains the same. So the consumption of luxuries goods and the expenditure on unproductive goods declines. It has negative impact on the gross domestic product in this study because in the case of rise in prices the consumption level of the consumer reduces so that the government earnings in the form of taxes declines and this situation is not suitable for the economic growth.

Exchange Rate

When foreign investors invest in someone country then they must exchange their currencies. In this study exchange rate is taken as an independent variable and have a negative impact on GDP.An exchange market where the brokers and traders sell and buy securities, bonds, securities, equities, common stocks and shares. Individuals participate in such markets directly and indirectly. Breakage firms work as an intermediate between buyers and sellers of securities.

Money Supply

It meansmoney in circulation. It may include currency, coins, bond and bank deposits etc. Money supply has a crucial impact on the economy as well as on prices and on the level of interest rate. In the economic analysis this is not fully accurate that in the determination of money supply besides Central Bank and Government, the commercial and public bank. The money supply means the total amount of money in circulation. The central bank controls the supply of money. Money supply plays a very important role in the determination of interest rate and price level. In the economic analysis it is assumed that the Central Bank and the government play a sufficient role in this process. It is not fully correct that in the determination of money supply besides Central Bank and Government, the commercial and public bank also play a crucial role.

Foreign Direct Investment

The foreign investors invest their money from domestic country to foreign country to earn interest rate, so higher the interest higher will be the gain from investment. This situation encourages the investors to invest more in that country for maximization of interest rate. It should be of two types.

- Innermost FDI
- Noticeable FDI

Process of Estimation

The process of estimation consists of various steps. In this study, entire estimation is done by using Software E - Views 9.5. Here time series data has been utilized in order to check the characteristics of such type of data. E- Views have been used to test the stationarity of data. Checking stationarity will be helpful for the decision of most optimal techniques to be used for analysis. After that, we will employ co integration test. Furthermore, short term and long term coefficients of both of models will be estimated.

Stationary of Data

If stationary of the time series data would be tested then the issue of spurious regression can be removed. Whereas, if mean and variance of the data are constant then it means that data is stationary. As time series data is non-stationary, then prediction for future trend of variables may not be possible.

Unit Root Test

Unit root is a combination of different test that are used to check that whether the data is stationery or not and if the data is stationery then what is the stage of stationarity. There is lot of test presented there like Dickey Fuller (DF) test. Augmented Dickey Fuller (ADF) test etc.

Null Hypothesis

Ho = Data is non stationary and Unit root is present

Alternative Hypothesis 2

HI = Data is stationary and Unit root is absent

If F (calculated value) > F(critical value)

We refuse the null hypothesis Ho and admit HI

Co-integration Analysis

Co integration indicates the relationships among variables. There are a lot of test that checks the co integration of variables. Every co integration test has some special criteria which are selected according to the test of stationarity.Some important tests are, ARDL, Johnsons co integration test, Granger Causality test etc.

Auto Regressive Distributed Lag Approach

ARDL is used to find out the co integration and also the nature of co integration. This approach will be helpful to estimate just one equation. Furthermore, this method is useful for relatively small sample size. The implication of ARDL approach can be rationalized through following characteristics:

- ARDL technique is suitable if all the variables are stationery at level I (0), or all at first differenceI (1) or the mixture of level I (0) and first difference I (1).
- This approach gives reliable results if data have small sample size.
- If the model used dummy variables in order to measure co-integration, then ARDL technique will be useful.
- ARDL will not give reliable results when the variables are stationary at second difference 1(2).

The implication of ARDL approach work under such circumstances. Their results based on.

- Firstly, the F-Statists (Bound Test) is used to examine the long run and short run association among variable.
- Secondly, the coefficient of both long run short run relations is measured and after that the ARDL is concluded.

Bound Test (F-Statistics)

After the estimation of stationarity we must have to check the bound test because this test is used to explain that further long and short run association among variables exists r not.

Following are the basic merits of Bound test:

1. All of the variables are assumed to be endogenous in the model.

2. Bounds test is helpful in the measurement of long term and short term coefficients of variables.

Tabulated value of F-statistics has two critical limits or boundaries, i-e upper limit or upper bound I (1) and lower limit or lower bound I (0).

- If F-statistics (computed) > upper limit => relationship exist between the variables exists.

- Upper limit < F-statistics (computed) < lower limit => Results are uncertain no relationship exists.

Error Correction Model (ECM)

Error correction term removes the fluctuations in the previous time period which may influence the current economic situation. ECM shows the momentum from short term value to long run values in the process of attaining the stable equilibrium.

Tests for Stability

To interpret the results most accurately, parameters' stability should be checked. Stability confirmation also helps the policy makers in making decision regarding suitable policy. There are various tests for checking stability of the coefficients. Here, we will use CUSUM and CUSUMS. If plotted lines lie between upper and lower bounds, then model would be considered as stable and useful for policy decision making.

Descriptive Analysis

Descriptive analysis is helpful to see the past tendencies of variables and also predict the future values of the variables. Descriptive statistics discussed the variables in numerical figures. Before econometric investigation, descriptive analysis is carried out.

Table 2
Descriptive Statistics

	GDP	INF	ER	MS	FDI
Mean	4.951227	17.11205	132.9669	16.37685	0.824354
Median	4.832817	8.585055	113.6581	16.40353	0.568544
Maximum	10.21570	319.6447	2208.982	45.53201	3.668323
Minimum	1.014396	2.463093	45.48190	4.647627	70.061630
Std. Dev	2.028916	408.69723	47.31746	67.267433	0.837733
Skewness	0.306216	6.061547	0.803045	1.703831	2.029337
Kurtosis	2.815949	308.17297	2.356651	7.968571	6.724319
Jarque- Bera	0.698618	2364.516	5.113769	62.01055	51.83661
Probability	0.705175	0.000000	0.077546	0.000000	0.000000

Source: Calculations are made through of Eview's 9.5 (Qualitative Software)

The mean average of GDP 4.951227 over the 41 years. This mean show that GDP is moderate in Pakistan. We use standard deviation in order to estimate data fluctuations. This study explained that S.D of GDP is 2.028916. The mean of the INF is 17.11205. This shows that high inflation in Pakistan. The standard deviation of INF is 408.69723. This seems to be severe deviation from its mean.

Average of ER is 132.9669. That will be point out that exchange rate will be high in Pakistan from 1975-2016. The standard deviation of ER is 47.31746. This represents that moderate dispersion from its mean value. The mean of MS is 16.37685. This indicates that highly moderate in Pakistan. The standard deviation MS is 67.267433. This expressed that severe fluctuation from its mean value. The mean of FDI is 0.824354. It indicates that the value of FDI is less efficient from concerned time period.

The standard deviation is 0.837733. This indicates that low fluctuations. The median is the value in the middle of the observation in the data or it is the average value of two middle observations. In this study, values of median of GDP, INF, ER, MS, FDI are 4.832817, 8.585055, 113.658, 16.40353 and 0.568544 are respectively. Here, maximum of the above described variables are 10.21570, 319.6447, 2208.982, 45.53201 and 3.668323 are respectively.Minimum of these variables are 1.014396, 2.463093, 45.48190, 24.647627and 70.061630 are corresponding.

There are two main types of distribution i.e. skewed or asymmetric distribution and symmetric distribution. The distribution is positively skewed or has a

long right tail. In this study, the values of skewness of variables GDP, INF, ER, MS, FDI are greater than zero so these variables are positively skewed. In this study, the value of Kurtosis indicates that INF, MS and FDI are Platykurtic. ER is Platykurtic, while GDP is Mesokurtic as it just about normal distribution. Jarque Bera test checks whether the variables have normal distribution or not.

Time Series Analysis

The future values of the variables can be predicted by checking the stationarity of data. Prediction cannot be possible if data is non-stationary.

Table 3: Estimates of ADF

	AT Level		AT First Difference	
Variables Results	I	I&T	I	I&T
GDP I (0)	-4.132212*	-4.835177*	-10.26871*	-10.13233*
INF I (0)	-3.298752	-4.086684	-6.432318*	-6.644334*
ER I (1)	-2.122132	-2.255297	-4.51355*	-5.743040*
MS I (0)	-4.799011*	-4.806261*	-8.515079*	-6.810638*
FDI I (1)	-2.563833	-2.787063	-4.836425*	-4.810638*

Source: Calculation, (*) shows significance at 1 % correspondingly.

Table is prepared with the help of Eviews9.5 to check whether the variables that are chosen for this study or paper are stationary or not. To check the stationarity level ADF test is employed. Stationary level of the variables is checked to avoid the weakening regression of the data to use for this paper.GDP is stationary at both level and 1st difference. Its ADF values are -4.132212 and -10. 26871 at 1% level of significance with intercept. So it might be concluded that GDP I (0). FDI is stationary at 1st difference. Its ADF value is -4.836425 at 1% level of significance. Hence, it may be written as FDI I (1). INF is stationary at the level. Its ADF value is -6.432318 1% critical values with intercept. MS is stationary at both level and 1st difference. Its ADF values are -4.799011 and -8.515079 with intercept at 1% level of significance. It might be concluded MS I(0). ER is stationary at 1st difference. Its ADF value is -4.51355 1% level of significance at intercept. So it means that ER I (1). So, the computations indicate that variables are stationary at diverse levels. ARDL approach would be suitable to be applied in such scenario.

Bound Test for Co Integration

To estimate the long run association between variables we apply Bound test.

Table 4
Result of Bound Test

Equation	F-Statistic	Upper Bound (Critical Value)	Results
GDP/ INF, ER, MS, FDI	5.083870	4.37	Co-integration Subsist

Source: Calculations are made through Eview's 9.5 (Qualitative Software)
Computed value of F-statistic is 5.083870 and it is statistically significant. While the critical value is 4.37. This table concluded that there exist long co-integration in this model

Long run Estimates of the Model

The results which are obtained by applying ARDL technique are given in the following table.

Table 5
Long Run Estimates of Model

Variables	**Co-Efficient**	**St. Error**	**t- statistics**	**Probability**
INF	0.000020	0.0007595	0.002691	0.9979
ER	-0.000949	0.014793	-0.064129	0.9494
MS	0.368019	0.170873	2.153761	0.0420
FDI	-2.480365	1.082391	-2.291561	0.314
C	1.587999	1.962205	0.809293	0.4266

Source: Author's Calculations (Eview's 9.5)

Inflation rate is positively related with GDP and its value is 0.000020.This is statistically important as shown by it's the value of probability i.e. 0.9979. 1% increase in INF will increase the level of GDP by 0.000020%. On the surface, the inflation is good, since the increase in the demand encourage to the companies to increase the production. So that, this will be improved to GDP. FDI is negatively associated with GDP i.e. -2.480365. Statistically significantprobability is 0.314. The value of coefficient FDI show that 1% rise in FDI would decrease GDP by -2.480365%. The results indicate that when the investors go and invested in foreign country and when they invest in productive projects they gain the higher profit but it will decrease the national's GDP value. The decrease in GDP means that low level of production of goods and services. So that, the GDP will decreases and FDI negatively correlated with GDP.

The coefficient of exchange rate is negative and its value is -0.000949. This shows the statistical importance ofits value which is 0.9494. These results show that when the exchange rate increased the value of reserved currency increases. The

available goods used only in the country and their imports on international level decreases that will be badly affected the level of GDP. Therefore, exchange rate is negatively correlated with GDP. The coefficient of money supply is positive. It is statistically significant as shown by it's the value of probability value which is 0.368019. This shows that money supply increases the prices of products.

Short Run Estimates of Model

Short run estimates of this research are below in the table.

Table 6
Short Run Estimates of Model

Variables probability	**Coefficient**	**Std. error**	**t-Statistic**
INF 0.9976	0.000013	0.004445	0.003000
D(ER) 0.0002	0.025332	0.005642	4.489844
D(MS(-2)) 0.1315	-0.059281	0.037910	-1.563744
2D(FDI (-1)) 0.1430	0.762731	0.502916	1.516618
CointEq (-1) 0.0000	-0.693381	0.116157	-5.969363
Cointeq=GDP-(0.0000*INF *ER+0.3680-2.4804*MS+1.5880*FDI-0.0009)			
R-Squared	0.720024	AIC	3.778755
Adjusted R-Squared	0.586123	SBC	4.312017
F-statistics	5.377265	HQC	3.962837
Prob. (F-stat)	0.000337	Durbin Watson Stat	1.439709

Source: Author's calculations from Eview's 9.5

In this model, value of R2 and Adjusted R2 0.72 and 0.58 showing 72% and 58% variation in GDP function that is explained by regressors i.e. inflation, money supply, foreign direct investment and exchange rate. In this model, Durbin-Watson statistics value is 1.43. Furthermore, F-statistic has a value of 5.377265 which is strong. On the whole, the performance regarding short run estimation of the model seems to be of good quality. CointEq has the value of - 0.69 which is statistically significant as pointed out by its probability value which is 0.0000. Both restrictions of minus sign and significance have been satisfied here. About 69% of disequilibrium in the previous decades will be eliminated currently. The Value of CointEq is highly significant indicating the confirmation that there is a stable long term association among variables.

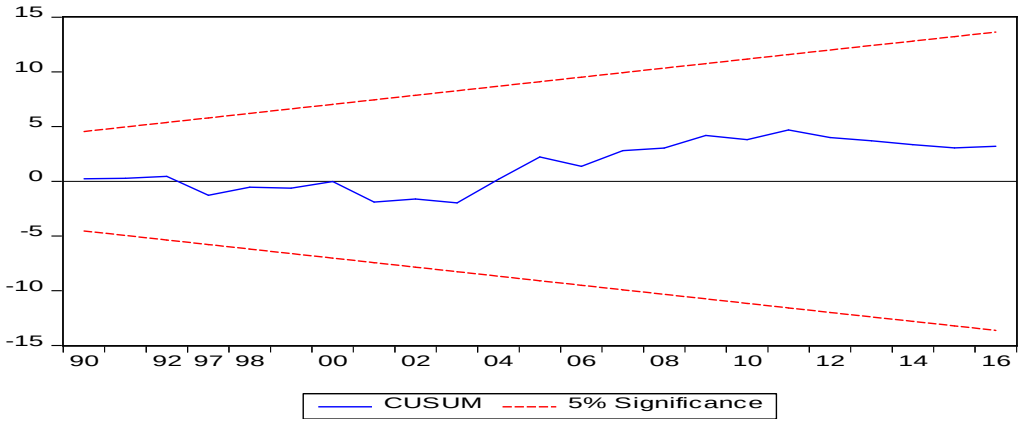
Table 7
Diagnostic Test for Model

Name of Test	F-Statistic	Probability
Breush-Godfrey Co-relation LM Test	0.297402	0.7458
Hetroskedasticity Test	0.240933	0.9910

This table shows the probability of F-Statistics regarding two tests i.e. Breush-Godfrey Correlation LM Test and Heteroscedasticity Test. The F-statistic value of both LM test and Heteroscedasticity are 0.297402 and 0.240933 respectively and their probabilities are 0.7458 and 0.9910 respectively.

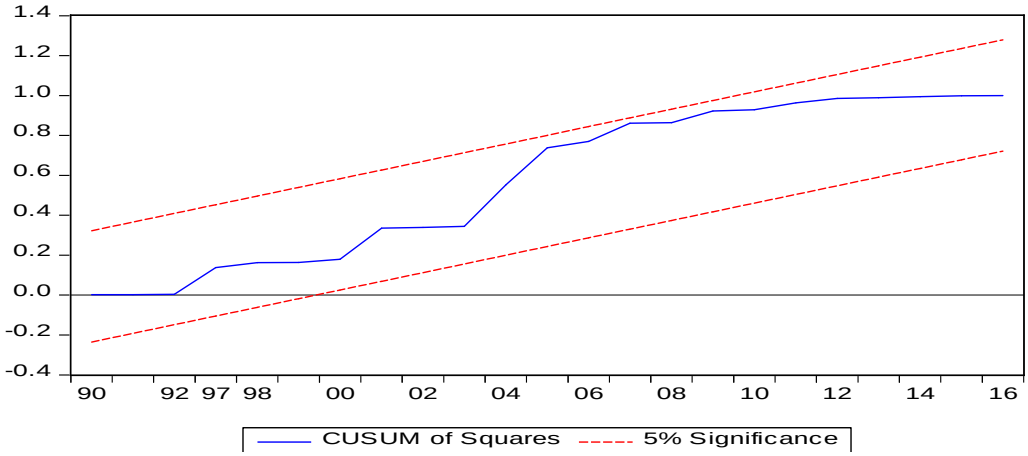
Tests for Stability

The stability of the coefficient estimates is tested to measure the appropriateness of the model. We design CUSUM and CUSUM of square Stability tests. These tests are important to be applied as it provides support and strength of the model to be employed for policy implications.



Plot of Cumulative Sum of Recursive Residual

This graph is plotted to check the result and this shows that the estimates of the models are stable. The blue line is in between the red lines shows that the level of significance is at 5%. And shows that the data that is used in this study is accurate and relations are exact.



Plot of Cumulative Sum of Square Recursive Residual Test

The above figure is plotted to show the reliability and significance of results by taking the square. This figure shows that the blue line that shows the significance is in between the red lines and shows the level of significance at 5%.

Conclusions

The financial market known as an organization wherever individual's trade stocks it is known as the aggregation of buyers and sellers of stock at fixed prices. Stock market is also known as Equity Market and Share market. Many large companies perform in the stock market. Trade in stock market to transfer to money in securities and bonds. Investors interested in interest rate. They invest in only those projects from where they gain higher interest rate. There are many agents in the stock market that participate in selling and buying of securities. Investors take risk when they invest their money in market. This study work on time series data from 1975-2018. Data collected from World Development Indicator (WDI). Choice of good and relevant variables plays a vital role in attaining best and applicable results.The GDP is negatively correlated to the Exchange Rate and Foreign Direct Investment whereas GDP is positively correlated to Inflation or Money Supply. The connection of inflation, foreign direct investment is negative on GDP. The exchange rate and money supply is positively correlated with GDP.

Policy Implications

The results of the study are helpful to put forward some optimal policies regarding Pakistan's stock markets. Policies are very useful to formulate a system proficiently and in a best manner. Policy makers develop policy decisions in order to overcome the problems in regulating a classification. Many applicable policies can be suggested. If these suggestions are properly and practically implemented, a lot of fruitful outcomes can be attained. Keeping all the aspects in view, following policies are suggested:

i. The rate of inflation and unemployment should be overcome and kept within controllable bounds, so that stable economic growth could be achieved.
ii. The rapidly increasing population should also be controlled. So that limited resources in the developing countries could be efficiently and maximally utilized.
iii. Government of Pakistan should maintain balance between its revenues and spending in order to avoid budget deficit. In this way outflow of domestic capital in the form of return of those loans which govt. gets from foreign countries for deficit financing?
iv. Government should manage a stable exchange rate. In this way the rapid devaluation of domestic currency could be curbed and the shaking financial sector could be stabilized.
v. The government of Pakistan should invest in productive and labor intensive production and techniques, so that the unemployed labor force can get job opportunities and most of the goods be produced in the economy leading to increase supply and to slow down the rise in price level.

References

Acikalin, S. Aktas, R. and Unal, S. (2008). Relationships tetween Stock Markets And Macroeconomic Variables: An Empirical Analysis of the Istanbul Stock Exchange, *Investment Management and Financial Innovations Volume* 5: 8-16

Gan, C. et al. (2006). Macroeconomic Variables and Stock Market Interactions: New Zealand Evidence, *Investment Management and Financial Innovations* Volume 3:89-101

Husain, F. (2006). Stock Prices, Real Sector and The Causal Analysis: The Case of Pakistan, *Journal of Management and Social Sciences*,Vol. 2 pp. 179-185

Ibrahim, M. Yusuf, W. (2001). Macroeconomic Variables, Exchange Rate And Stock Price: A Malaysian Perspective, *IIUM Journal of Economics and Management* vol 9(2): 141-63

Kabir, S. Taleb, A. Noman, A. and Shermeen, S. (2012). Responsiveness of Stock Prices to Changes in Macroeconomic Environment In Bangladesh, *Journal of Business Studies*

Mushtaq, R. Shah, S. and Rehman, M. (2012). The Relationship between Stock Market Volatility And macroeconomic Volatility: Evidence from Pakistan, *African Journal of Business Management*, Vol.6: pp.7387-7396

Naik, P. Padhi, P. (2012). *The impact of Macroeconomic Fundamentals on Stock Prices revisited: An Evidence from Indian Data*, Indian Institute of Technology Bombay pramodnaik@iitb.ac.in pp.1-24

Nazir, M. Nawaz, M. and Gilani, U. (2010). Relationship between Economic Growth and Market Development, *African Journal of Business Management* Vol. 4: pp. 3473-3479

Nisa, M. Nishat, M. (2012). The Determinants of Stock Prices in Pakistan**,** *Asian Economic and Financial Review* vol 1:pp.276-291

Nishat, N. Shaheen, R. (2004). *Macroeconomic Factors and Pakistani Equity Market*, Department of Finance and Economics mnishat@iba.edu.pk :1-19

Pilnkus, D. (2010). Macroeconomic Indicators and Their Impact on Stock market Performance in the Short and Long Run: The Case of the Baltic States, *Technological and Economic Development of Economy* vol16: pp.291-304 Pp.480-487

Rashid, A. (2008*). Macroeconomic Variables and Stock Market Performance: Testing for Dynamic Linkages with A Known Structural Break*, International Institute of Islamic Economics (IIE) arahmad_pk@yahoo.com:1-28

Rehman, Md. Uddin, J. (2009). Dynamic Relationship between Stock Prices and Exchange Rates: Evidence from Three South Asian Countries, *International Business Research* vol 2: 167-174

Shahzadi, H. Chohan, M. (2010). *Impact Of Gold Prices On Stock Exchange: A Case Study Of Pakistan*, Department of Management Sciences hina.chohan@hotmail.com: 1-12

Sharma, G. Mahendru, M. (2010). Impact of Macro-Economic Variables on Stock Prices in India, *Global Journal of Management and Business Research*,Vol. 10: pp.19-26