



# The Impact of Macro-economic Factors on Equity Market Return of Pakistan Stock Exchange (PSE)

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**Abstract:** The study examines the impact of macroeconomic variables such as Interest Rate (IR), inflation, Exchange Rate (ER) and Foreign Direct Investment (FDI) over Pakistan Stock Exchange (PSE) returns. Mainly secondary data used in the research process. The study consists of data for the period of 12years started from 2006 till 2018. For this purpose, monthly data of PSE-100 index has been observed for the period 2006 to 2018. The market returns have been calculated through the opening and closing index value of each month. The FDI, inflation, IR, and ER has been taken as independent variables. Hypotheses have been tested to find out whether there exists a significant relationship between the Stock market return and macroeconomic variables or not. To test this hypothesis, Regression analysis used and results are calculated through Eviews software.

**Keywords:** PSE, macroeconomic variables, PSE returns, stock prices, FDI, GDP

**Received:** 10 January 2022; **Accepted:** 23 May 2022; **Published:** 28 June 2022

## INTRODUCTION

Stock market creates opportunity for investment and savings. That is one of the main objectives of Stock market where savers as well as borrowers facilitate like stock market collects the saving and provide the podium to convert them into investments. Stock market is a place which used for reallocation of funds in different sector of the economy.

On the basis of macroeconomic variables investor always try to understand about the significant impact on future return so then they manage their portfolios.

Ross (1976) developed a theory named Arbitrage Price Theory (APT). Most of the analyst and investor use APT result to help in price securities. APT is a technical model which shows the relationship between financial assets expected return and also its risk. APT model is use especially for sensitivity of the stock return to change in macroeconomic variables. The basic assumption of APT is that mispriced securities can be present in short run where free risk prospect. He presented equation for multiple risk factors in stock market which is below.

$$E(R_p) = R_f + \beta_1 f_1 + \beta_2 f_2 + \dots + \beta_n f_n \quad (1)$$

This equation shows relationship among dependent variables with independent variables.

Where

$E(R_p)$  = Expected return

$R_f$  = Risk-free return

$\beta_n$  = Sensitivity to the factor of n

$f_n$  = nth factor price.

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$R_f$  = is stock return in case of not exposure to any of factors that is say all

$$\beta_n = 0$$

(Ross, 1976) presented in his model that Arbitrage price theory does not specify the factors. But according to him most important factors are below.

- Change in Inflation
- Change in the level of FDI
- Shifts in Risk
- Change in the shape of the term structure of IR.

According to Stephen Ross and Roll that if there is no shocker happened in above factors so the expected return will be equal to actual return. While other hand in case of unexpected changes occurred to the above factors then the actual return will be define as below.

$$R_p = E(R_p) + \beta_1 f_1' + \beta_2 f_2' + \dots + \beta_n f_n + e \quad (2)$$

Where

$F_n$  = shows the unforeseen change in the factor

$e$  = shows the residual part of actual return

$f_1 f_2$  = shows Unexpected change in variables

$E(R_i)$  = shows unanticipated changes

### **Research Backgrounds**

A stock exchange market is the center network of transactions where buyers and sellers of securities meet at specific time with a specified price. Stock market plays a most important role in the mobilization of capital in budding and developed countries. It foremost to the growth of industry and commerce of the country, as a outcome of liberalized and globalized policies adopted by most budding and developed government. Numerous factors can be a signal to stock market participants to expect a higher or lower return when investing in stocks and one of these factors are macroeconomic variables (Khan, Jam, Akbar, Khan, & Hijazi, 2011; Shahbaz, Jam, Bibi, & Loganathan, 2016). The change in macroeconomic variable can significantly impact the stock price return.

The present research considers four macroeconomic independent variables:

- Interest Rate (IR)
- Consumers Price Index (CPI) as a proxy for inflation rate
- Exchange Rate (ER)
- Foreign Direct Investment (FDI)

Wachter (2013) observed that prospective acquiesce of return in equity market is reasonably higher. Stock market is a source of capital for the firm and also opportunity for the investors. The researcher also observed that stock of returns from equity market is greatly influenced by different factors such as performance of exacting stock, existing current macroeconomic condition and overall market activities. It is also observed that macroeconomic variable which is above mention is most important to analyze the performance of the stock market.

Besides this the current situation of equity market, importance and increasing growth of stock market has opened a new sphere for researcher. This is because of informal relationship of macroeconomic factors and explosive nature of the stock market returns is the part of many researches. It is very necessary to put work on stock market due to which enables the investors to makes effectives and efficient investment decision and also helpful for firms to improve the market implication (Ali et al., 2010; Qazi et al., 2014; Sanni, Ngah, Karim, Abdullah, & Waheed, 2013).

According to the words of Fraser and Groenewold (2000) they observed that the impact of ER fluctuations over stock market returns in Australian equity market and they concluded that there is positive relationship between above mention variables. They also observed that the variation of macroeconomic variables have the significant impact on prices.

Kyereboah-Coleman and Agyire-Tettey (2008) studied about Ghana Stock Market and concluded that the IR, inflation, production of industrial sector all these have significant influence on the stock market returns.

Bekiros and Georgoutsos (2008); Fraser and Groenewold (2000); Serfling and Miljkovic (2011); Wickremasinghe (2011), they all conducted studies about USA, Cyprus, Australia and Sri Lanka they all find and observed that association

between stock market return with macroeconomic variables. As a result they both find that petty variation of these macroeconomic variables have the significant impact on stock prices.

It is concluded that on the basis of previous researches it indeed to determine the explosive nature in stock market is because of macroeconomic variables. According to [Hussainey \(2009\)](#) they studied about Pakistan with reference to Lahore Stock Exchange so they observed the behavior of stock returns in effect of inflation, ER, IR at PSE.

Stock market plays a vital role in the development and growth of the country economy. Stock markets give the information about share prices prevailing in the economy. Most of the world economies achieved highly economic growth in financial markets. On the other hand due to globalization process world economies are globalized. Due to which global integration is useful for the progression of economies on one end. While on other side there is financial disaster. During last decade Pakistan also enjoyed historical performance of the stock market return. Macroeconomic variables such as GDP, Inflation, IR, ER, FDI are most important variables. Which fluctuation shows strength or weakness of the economy?

And the other hand PSE indices. In the current scenario Stock market has a distinctive growth in Pakistan. According to the present situation the time of economic growth arises and impact to the volatility in the stock market which create the uncertainty and also disturb the performance of the stock market.

The current situation of market impartiality awestruck not only investors as well as researchers that allow researcher to study the unpredictable behaviour of stock market returns as a result of different macro economic factors.

### ***Problem Statement***

Study shows the impact of some macro-economic factors such as the IR, Consumer Price Index (CPI), ER, FDI. The market efficiency theory, which is considered one of the most important theory in the finance and investment field, assumes that the investors cannot fulfil the abnormal return (The difference between the real return and the expected return), because all the information are reflected on the share price quickly and even immediately. The shares price change is considered as one of the most important indicators that measure the extent of response of the securities to the economic change. While the index is a balanced average for a sample represents the share prices, it is expected according to the efficiency theory that there is an impact of macro-economic factors on share prices at PSE.

### ***Research Question***

What are the relationships between stock return and macro-economic variables?

How can we measure the relationship between macroeconomic variable and stock return?

### ***Research Objectives***

The analysis which is the main determinants that influences the investing decisions in the choice of macro-economic variables. The objectives of the study given below.

1. In the context of KSE (Karachi Stock Exchange) to check that is there any relationship between Stock market return and macroeconomic variables.

2. To find out the result of stock return and macroeconomic variables such as Inflation Rate, Interest like, inflation, IR, ER, FDI.

The main finding of the research is to guide the investor to study about the pattern of instability in stock returns at KSE. This research will guide the investor to give quick response towards decision when there is any movement or changes occurring in macroeconomic factors which enhance their investment returns in KSE (Karachi Stock Exchange).

The impact of FDI, ER, Inflation and IR on stock returns (captured by PSE 100 index) in Pakistan.

The appropriate policy measures regarding the dynamics of macro-economic variable IR, Inflation rate, ER and FDI measures their resultant effect on the stock market returns in Pakistan.

### ***Significance of the Study***

The stock market is a mirror which helps to provide an image of the essential economic state of affairs [Galbraith and Jelley \(1955\)](#). The result of this empirical research helps the reader to understand whether the movement of stock prices of the PSE 100 index is subject to some macro-economic variables change. Investors will find this study as a helpful tool to identify some economic variables that they should focus on while investing in the stock market and will have an advantage to make their own suitable investment decisions. [Kyereboah-Coleman and Agyire-Tettey \(2008\)](#)

observed that macroeconomic variables have significant control over Stock market return. Wickremasinghe (2011) also observed that macroeconomic have significant influence over stock market return. So all we conclude that there is very huge positive relationship between macroeconomic variables with stock return market across the world. Sometime inflation has insignificant relationship with stock return market. Which shows negative relationship?

## LITERATURE REVIEW

The number of researches have been conducted on Equity Stock Market which is best express the emerging and importance of impact of macroeconomic variables on the stock return and that is concluded that there is a positive relationship between macroeconomic variables and stock return market. Some of the research studies are discuss below.

According to Abbas, Tahir, and Raza (2015) their findings and results shows the relationship between independent variables which is ER, IR, Gross Domestic Product (GDP), Gold Price (GP) and Treasury Bills (T-Bills) and dependent variables PSE 100 Index. They used secondary data on monthly basis from period Jan 2002 to Dec 2012. They have utilized Pearson correlation method and Regression observed that Dependent variable negatively correlated with independent variables which showed insignificant positive relationship between ER and stock return market. On the other hand the relationship between Inflation Rate and stock return is negative insignificant. T-Bills and GP have insignificant negatively correlated with stock return market. And observed only GDP has positive insignificant relationship between stock return markets.

Sohail and Hussain (2009) observed the relationship between stock prices and variables of macroeconomic at Lahore Stock Exchange (LSE) on the basis of Short Run And Long Run relationship. They picked secondary data from period 2000 to 2008 and their Dependent variables Stock Prices while independent variables are CPI, Real effective ER, 3 months Bill rate, Industrial Production Index (IDP) and money supply. They come across and find the long run Inflation has a negative impact on stock market. And suggested the monetary policy to control inflation. While on other side all other independent variables have positive return and play significant role in the development of Pakistan.

According to Singh and Jotwani (2012) the macroeconomic variables and stock market affect the perception of Monetary Policy, Fiscal Policy Decisions. And use dependent variable and Stock Prices independent variables such as Foreign Exchange Reserve and real ER, industrial production. They picked data from 1991 to 2009 which is base on secondary data. They used time series regression model and also co-integrated models and find out the effect of macroeconomic variables on the stock prices which is greatly affected investors decision. They picked case study India and focal point the share prices reflect the economic activity in the country and they also discussed and equity market and macroeconomic variables are relevant indicators for the movement.

Ullah, Fida, and Khan (2012) find out the relationship between KSE 100 Index and macroeconomic Variables which data was chosen from 1999 to 2008? They have been run causality test which shows the relationship between Money Supply and IR and find out negative relationship between inflation and foreign exchange reserves.

According to Ullah et al. (2012) they studied about Vietnamese stock price using different variables IR in long term and short term and the used data which was time series data period from 2001 to 2008 and they observed that there is positive effect while other hand there is no effect on stock prices.

Ibrahim and Aziz (2003) studied about Malaysia stock exchange and time period was from 2008 to 2013 they observed in their study and find out the relationship between macroeconomic variables and stock return. Regression they observed the relationship between stock price and macroeconomic variables while on the other hand they also observed that there is no relationship between CPI and industrial performance on stock prices.

Farooq, Farooq, Rauf, and Sharan (2012) studied about macro economic variables and thy said that there is positive relationship between macroeconomic variable and stock returns.

According to Naik and Padhi (2012) observed in their study and they run johanson co-integration and Vector Error Correction Model (VECM) and find out the equilibrium between macroeconomic variables and stock market return. Along with they took data from 1994 to 2001 and they analyzed that there is long term relationship. Money supply and industrial production has positive relationship with stock price while negative relationship with inflation.

According to Adam, Houkari, and Laurent (2008) they studied about macroeconomic variables such IR, FDI, ER, IR. They used secondary data from 1991 to 2006. They used johanson co-integration and observed long run relationship between macroeconomic variable and stock prices.

According to words of Ray and Sarkar (2014) they observed that how impact of variable on stock market. Data was obtaining from period of 1994 to 2003 and used VAR model. They examine the influence of variables on the stock

exchange. This finding shows the fiscal deficit, FI have very negligible impact on the stock market, while the others variables influence on the stock market movement.

Talla (2013) studied about studied to find the impact of changes I macro-economic variables on short prices of the Stockholm Stock Exchange (SSE) Denmark. To find the relationship the multivariate regression model computed on standard ordinary linear square method, unit root test and granger causality test applied. The study covers the period from 1993-2012 and concluded based on monthly data. The result showed Currency depreciation and inflation rate have significantly negative impact on the stock price.

Menike (2006) analyzed Sri Lankan stock Markets and chosen data from 1991 to 2002 they observed that macroeconomic variables effect over stock prices. They selected Stock Prices as dependent variable while IR, FDI, ER, inflation rate and money supply as a independent variables. They used Eviews Software and run multiple regression models they checked in their model that there is very romantic relationship among these variables. According to their result that is observed that 27 stocks from 35 have increased The result suggested that 27 stocks from 34 have increased instructive power greater than 50% in monthly stock prices during 1991 to 2002. It inform us that period of 1991 to 2002 was strongest facts linking to the period 1991-2002. This period provides strongest evidence linking inevitability of macroeconomic issues on the stock prices.

They find out that the null hypothesis which advocates the coefficients with the variable will not make any influence on the stock prices was rejected for those 35 stocks.

Hussainey (2009) find out the relationship between stock market indices with macroeconomic variables such as Crude Acrylic Price, Dollars Supply (M2), Industrial production, Inflation Rate they makes comparison with India and China Stock Markets.

Their time period was from 1991 to 2009 and they used Dicky Fuller unit root test and they find out that particular underlying series are tested as non stationary from the level so stationary is in first difference. They utilized different regression models such as Johanson Integration, multivariate co-integration, Vector Error Correction Model (VECM model) techniques. So the result shows that there is long run and as well as short run linkage with stock market prices and macroeconomic variables.

According to Naik and Padhi (2012) they obtain data from 1994 to 2011 from Bharat Stock Exchange (BSE) and observed the association between stock market indices and macroeconomic variables which is Money Supply (MS), Industrial Manufacturing Index (IMI) price index treasury bills and ER. They utilized Regression Models such as Johanson con-integration and VECM model and find the result that there is long run relationship between macroeconomic variables and stock indices. The study shows that there is long run equilibrium association between stock prices and macroeconomic variables. This is also observed that money supply and stock prices are positively association with each other while other hands negative association with inflation rate.

Hassan and Holmes (2013) selected independent variables such as ER, IR, inflation rate and money supply and dependent variable is stock market indices they picked data from 1993 to 2009. They run unit root test and tried to find out that stationary from variables which is followed by Durban Watson test Granger Causality and try to whether there is one way or bidirectional causality between macroeconomic factors and Egyptian stock exchange return. They used VAR model and find out the significant association between macroeconomic variables with stock market returns.

Ahmed (2008) observed that there is positive relationship between macroeconomic variables and stock return. The main independent variables of the research is FDI, Money Supply, Industrial Production, ER, IR, while other hand dependent variable stock market indices. They shows the association between macroeconomic variables and stock market equity with the help of regression causality model and he observed that there is long run relationship while short run association between macroeconomic variables and stock return.

Uddin and Alam (2007) studied about Dhaka stock (DSE) and they picked independent variables such as IR, especially Treasury bills and dependent variable stock market return and period of duration from 2000 to 2007 which was monthly basis data. They checked the relationship between macroeconomic variables and stock return market with the help of ARIMA model and they find out positive association between independent variable and dependent variable. Result also shows that IR with stock market return was insignificantly coefficients.

According to Liu and Shrestha (2008) they studied about Istanbul Stock Exchange (ISE) and find out the association between macroeconomic and stock return market. Their main independent variables such as GDP, IR, ER, and current account balance while other hand ISE was dependent variable. They used time series data quarterly for all dependent and independent variables and they found that there is long run association between ISE and macroeconomic variables.



They used causality test and they observed that there is unit directional causation between ISE Istanbul Stock Exchange with macroeconomic variables.

### ***Research Gap***

The introduction and background of the studies has provided an nearby to the problem being acknowledged. Pakistan has major trade with the USA, Japan, China, Malaysia and Taiwan. Due to globalization investors are interested in portfolio diversification and they looks for alternative baskets for their portfolio selection. To check if the PSE 100 Index has any dynamic inter association with emerging stock markets of USSE (USA), Shanghai Stock Exchange (Japan), SSE (China), Kuala Lumpur Stock Exchange, KLSE (Malaysia), and Taiwan Stock Exchange Corporation (TSEC) Taiwan, the current study investigate these dynamic linkage between PSX and the selected equity market. Whereby to the best of our knowledge that there is no prior study founded that investigated this specific relationship. The current study will be equally useful for financial investors, policy makers and regulators in these selected equity market.

## **RESEARCH METHODOLOGY**

This chapter consist of the universe of the study population, sample size, Variables Study, data collection method, theoretical framework and variables of the study.

### ***Universe of the Study***

This research led to find out relationship between macroeconomic variables with stock market return. Different macroeconomic independent variables are selected such as FDI, IR, Inflation Rate, and ER while dependent variable is Stock Market. This research contains secondary data which was obtained from Pakistan Economic Survey, State Bank of Pakistan and PSE.

Firm from non-financial sector are selected. And those companies are included in the study that can be more affected by the variables. Duration of study is from 2011 to 2018.

### ***Sample and Sample Size***

Sample for the study is made out from macroeconomic variables that are listed on PSE and SBP having non-missing perceptions for the entire information. Total numbers of 4 independent variables are selected and one is dependent variable which stock market. Total observations are 144.

### ***Data Collection***

Secondary data are used in this study. Diverse sources are utilized to gather the required information with respect to macroeconomic variables chose in the example of this study. Data are collected from SBP, annual reports, business sites and balance sheet and PSE.

### ***Study Variable***

The dependent variable of the study is Stock Market Return and the independent variables are FDI, IR, Inflation Rate, and ER.

### ***Variable Identification***

The variable that is selected for this study was based on the availability of information related to the data.

Where;

EXR: Exchange Rate.

INF: Inflation.

IR: Interest rate.

FDI: Foreign Direct Investment.

PSE: Pakistan Stock Exchange 100 index

### ***Dependent Variable***

**Stock Market Returns (PSX):** According to G, Merkas A.A, (2006), Coleman and Tetty (2008) they said about stock market is a place where investor and borrower interact with each other and in case of trading investor earn some return that is called capital gain from the purchase or sell the securities. They also observed that stock market is directly linked with prices of share which influenced by IR, inflation and ER.

### ***Independent Variables***

The followings are the independent variables.

**FDI:** According to Aurangzeb (2012) he observed that FDI is the most important variable among of macroeconomic variables. He observed the association between FDI and stock return. He said that FDI has significant positive impact on performance of stock market in South Asia.

According to Hypothesis

**H1:** *FDI has a positive significant relation with stock market returns.*

**ER:** Among of all macroeconomic variables ER is also important indicators for economic activity in the country. According to Ibrahim and Aziz (2003) they used ER is a independent variable. ER vacillation has strong sway on the investments behavior of the investors. They observed that ER has negative association with foreign exchange market. In case of positive relationship the ER shifts the investors from equity market. While on the other hand if there is negative vacillation the exchange market investor trundle towards stock markets with Dollars.

According to Hypothesis

**H2:** *ER has a positive significant relation with stock market returns.*

**Inflation rate (CPI):** In macroeconomic variables one of the most important variables is inflation variable. According to (Liu & Shrestha, 2008) the stock market has negative relationship with inflation (CPI) which is always insignificant. If there is higher inflationary periods in the economy so the investor expect disturb profit due to which falling trend in the stock returns. According to Hypothesis

**H3:** *Inflation has significant negative effect on the stock market returns.*

**IR:** IR is also most important indicator among all macroeconomic variables. According to Erdem, Arslan, and Sema Erdem (2005) they conduct study on Istanbul Stock Exchange (ISE) they observed about IR and stock returns is positively correlated. Stock market return is greatly influenced by IR. If there is high IR in the market so the investors trundle towards bond or saving schemes due to which prices of stock decreases. In case of decrease of IR investor shift their investment to the equity market.

According to Hypothesis

**H4:** *IR positively correlated the stock market returns.*

### ***Theoretical Framework***

Theoretical framework consists of various variables such as dependent variables which is Stock Market and Independent variables which are FDI, IR, Inflation Rate, and ER.

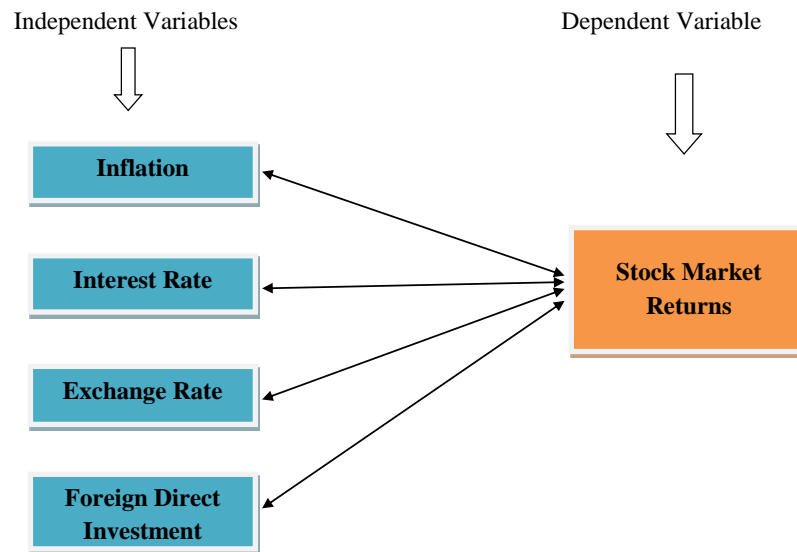


Figure 1 Theoretical Framework

**RESULTS AND DISCUSSION**

**Unit Root Test**

Nelson and Plosser (1982) said that we can't deny the fact the most macro-economic series is non-stationary. So the first part to analyze the macro economic variables is to check their stationary properties through unit root test. Most commonly we used Augmented Dickey Fuller Test, which is used to testing a null hypothesis that an observable time series is stationary around a determinants trend. It complements the results of other unit root test.

Table 1 MODEL SUMMARY

Variables	ADF at 1st Difference	Critical Value at 1%	Critical Value at 5%	Critical Value at 10%
ER	-1.755826	-3.886751	-3.052169	-2.666593
Inflation Rate	-1.776006	-4.571559	-3.690814	-3.286909
IR	-0.671706	-3.920350	-3.065585	-2.673459
FDI	-2.613333	-3.857386	-3.040391	-2.660551
Stock Prices	-3.582161	-3.886751	-3.052169	-2.666593

The largest value of the data and smallest value of data shows the range of the data. Skewness of this data is 0.600034 which is greater than 0 so its distribution of right having extreme values at right side and mean is having concentration of most values at the left side. Value of kurtosis is 1.969516 which are less than 3 that it doesn't have leptokurtic distribution because here is mean is less than median and it is not normally distribution. The value of Jarque-Bera is not more than probability and probability is 0.000692 which show data is not normally distributed. ADF test has applied to check the stationary of the data. All the variables are stationary at 1st difference.



**Descriptive Statistics**Table 2 *DESCRIPTIVE STATISTICS*

Variables	PSX	INF	ER	IR	FDI
Mean	3.04E+08	7.657931	103.1425	1.379179	60947368
Median	4.56E+08	7.444625	100.7547	1.910929	52000000
Maximum	9.77E+08	20.28612	121.4889	8.321459	2.12E+08
Minimum	1.03E+08	2.529328	95.26953	-6.774088	9000000.
Std. Dev.	3.00E+08	4.668167	7.982401	4.579553	48875663
Skewness	0.600034	1.113129	1.138900	-0.452990	1.610599
Kurtosis	1.969516	2.840191	3.239146	2.161986	5.829080
Jarque-Bera	1.980799	4.482529	4.152740	1.205762	14.55069
Probability	0.371428	0.106324	0.125385	0.547233	0.000692
Sum	7.68E+09	145.5007	1959.708	26.20440	1.16E+09
Sum Sq. Dev.	1.61E+18	392.2521	1146.937	377.5015	4.30E+16
Observations	20	20	20	20	20

Results of descriptive statistics test are presented in Table where Mean is 4.04E+08 and Median is 3.56E+08 of the dependent variables that is index price which show where centre of the data is located. The largest value of data is 9.77E+08 and smallest value is 1.03E+08, this largest and smallest data shows us the range of the data. Skewness of this data is 0.600034 which is less than 0 so its distribution of right, which has extreme values at right side and mean, is having concentration of most value at the left side. The values of Kurtosis 1.969516 which are less than 3 that it don't have leptokurtic distribution because here is mean is less than median it is platy Kurtic distribution. The value of Jarque-Bera 1.980799 is more than probability 0.317428 which shows that data is normally distributed. Mean is 7.657931 and median is 7.444625 of independent variables that is INFLATION shows where centre of data is located. The largest value of data is 20.28612 and the smallest value is 2.529328, this largest and smallest data shows the range of the data. Skewness of this data is 1.113129 which is greater than 0 so its distribution of right having extreme values at right sides and the mean is having concentration of most value at the left sides. Value of kurtosis is 2.840191 which is greater than 3 so it don't have leptokurtic distribution because here is the mean value is less than median and its platy kurtic distribution. The value of Jarque-Bera is not more than probability value is 0.106324 which shows data is normally distributed. Mean is 103.1425 and median is 100.7547 of independent variable that is ER which shows where centre of data is located. The maximum value is 121.4889 and minimum value is 95.26953, this maximum and minimum data show the range of the data. Skewness of this data is 1.138900 which is greater than 0 so its distribution of right having extreme value at right side and mean is having concentration of most values of at left side. Value of Kurtosis is 3.239146 which is greater than 3 so it's have leptokurtic distribution because here is mean greater than median it not platy distribution. Mean is 1.379179 and median data is 1.910929 of independent variable that is IR which show where centre of data is located. Mean data is 60947368 and median data is 52000000 of independent variable that is FDI which shows where centre data is located. The maximum data is 2.12E+08 and minimum data is 9000000 this maximum and minimum data shows the range if the data. Skewness of this data is 1.610599 which is greater than 0 so its distribution of right having extreme values at right side and mean is having concentration of most values at left side. Value of kurtosis is 5.829080 which is greater than 3 that it have leptokurtic distribution because here is the mean value is greater than median value so it's don't have platy kurtic distribution. The value of Jarque-Bera is not more than probability is 0.000692 which shows data is not normally distributed.

**OLS Results**Table 3 *MODEL SUMMARY*

Variables	Coefficients of dt	Standard. Error	<i>t</i> -test	<i>p</i> Value.
C	1.19E+09	1.28E+09	0.926415	0.3699
FDI	1.441868	1.557917	-0.925510	0.3704
ER	11941747	-0.631165	0.5381	-7537208.
INF	5686166.	18024778	0.315464	0.0025
IR	27500206	19311059	1.424065	0.0112
<i>R</i> -squared	0.8212	Mean dependent var	4.04E+08	
Adjusted <i>R</i> -squared	-0.083545	<i>SD</i> dependent var	3.00E+08	
S.E. of regression	3.12E+08	Akaike info criterion	42.17448	
Sum squared resid	1.36E+18	Schwarz criterion	42.42302	
Log likelihood	-395.6576	Hannan-Quinn criter.	42.21654	
<i>F</i> -statistic	0.653035	Durbin-Watson stat	1.600892	
Probe ( <i>F</i> -statistic)	0.634280			

In the above table significant value of FDI are 0.0404 which is less than 0.05 it indicates that have significant connection with Stock Return. The coefficient value of FDI shows the connection of FDI with Stock Return is positive. ER ratio has insignificant association with Stock Return market because significant value of ER is 0.5381 which is greater than 5%. The coefficient value of ER is -7537208 which shows that there is linear relationship between ER and stock Return. The significance value of IR is 0.0125 which is less than 0.05 it indicates that IR have significant connection with stock Return. Coefficient value of IR is 27500260 indicate that have statistically positive link with stock Return. The *p* value of inflation is in the table is 0.0025 which is less than 0.05 it implies that inflation has insignificant relationship with stock return. Coefficient value of inflation is 5686166 shows negative relationship with stock market Return prices.

Table 4 *AUTO CO-RELATION VEC RESIDUAL CORRECTION*

<i>F</i> -statistic	1.248683	Prob. <i>F</i> (2,12)	0.3216	
Obs* <i>R</i> -squared	3.273004	Prob. Chi-Square(2)	0.1947	
Variable	Coefficient	Std. Error	<i>t</i> -Statistic	Prob.
C	-6.89E+08	1.35E+09	-0.510227	0.6191
ER	5982622.	12619132	0.474091	0.6439
FDI	0.409277	1.613009	0.253735	0.8040
INF	6228460.	20270169	0.307272	0.7639
IR	-14584151	21956577	-0.664227	0.5191
RESID(-1)	0.170023	0.346240	0.491056	0.6322
RESID(-2)	-0.523855	0.354542	-1.477554	0.1653
<i>R</i> -squared	0.172263	Mean dependent var	6.27E-09	
Adjusted <i>R</i> -squared	-0.241605	S.D. dependent var	2.75E+08	
S.E. of regression	3.06E+08	Akaike info criterion	42.19595	
Sum squared resid	1.13E+18	Schwarz criterion	42.54390	
Log likelihood	-393.8615	Hannan-Quinn criter.	42.25483	
<i>F</i> -statistic	0.416228	Durbin-Watson stat	2.132510	
Prob ( <i>F</i> -statistic)	0.854483			

We applied regression model and find out the  $t$ -test and  $p$  value. We find out Durbin-Watson value with help of LM Serial Test. Durbin Watson results shows that there is no auto co-relation in the model so our model is good fit for analysis. In the above model ER shows positive impact over stock market prices. We study earlier in theoretical background that if there is any changes occur in ER so it will enhance the purchasing power of buyers. Stock market and inflation have negative relationship because if there is 1 percent increase in Inflation as a result 0.8 percent decreases stock market prices. IR is also key variable for stock market if there is negative trend of IR in the economy all the investors move the investment from stock market to bank deposits and enjoy maximum gain from investment and vice versa. Table 4 shows that  $p$  value is greater than 5 percent so then we can accept alternative hypothesis because in 1st lag  $p$  value is 0.6191 and in 2nd lag  $p$  value is 0.6439. So we can reject null hypothesis and accept alternative so our model is good fit in above model.

Table 5 HETEROSKEDASTICITY BRASH PAGAN GODFREY TEST

$F$ -statistic	1.822679	Prob. $F(4,14)$	0.1806	
Obs* $R$ -squared	6.506290	Prob. Chi-Square(4)	0.1644	
Scaled explained SS	2.020612	Prob. Chi-Square(4)	0.7320	
Variable	Coefficient	Std. Error	$t$ -Statistic	Prob.
C	4.20E+17	2.98E+17	1.410385	0.1803
ER	-2.64E+15	2.77E+15	-0.951347	0.3576
FDI	-5.37E+08	3.62E+08	-1.485286	0.1596
INF	-6.65E+15	4.18E+15	-1.589132	0.1344
IR	5.42E+15	4.48E+15	1.209491	0.2465
$R$ -square	0.342436	Mean depend var	7.16E+16	
Adjusted $R$ -squared	0.154561	S.D. dependent var	7.87E+16	
S.E. of regression	7.24E+16	Akaike info criterion	80.70010	
Sum squared resid	7.33E+34	Schwarz criterion	80.94863	
Log likelihood	-761.6509	Hannan-Quinn criter.	80.74216	
$F$ -statistic	1.822679	Durbin-Watson stat	1.702887	
Prob ( $F$ -statistic)	0.180579			

Results shows that the findings of model of PSE is explain by macroeconomic variables such as Inflation, IR, FDI, ER in regression equations. The above figure shows that macroeconomic variables which are ER, IR and FDI have positive impact on long term returns of the PSE while other hand inflation has negative impact over long term. The study period of all macroeconomic variables was 2006 to 2018. I take observe  $R$ -square and  $p$  value 0.1644 which mean that we can't reject null hypothesis rather we accept null hypothesis it mean that there is no hetroskedasticity in the residual so the model is desired.

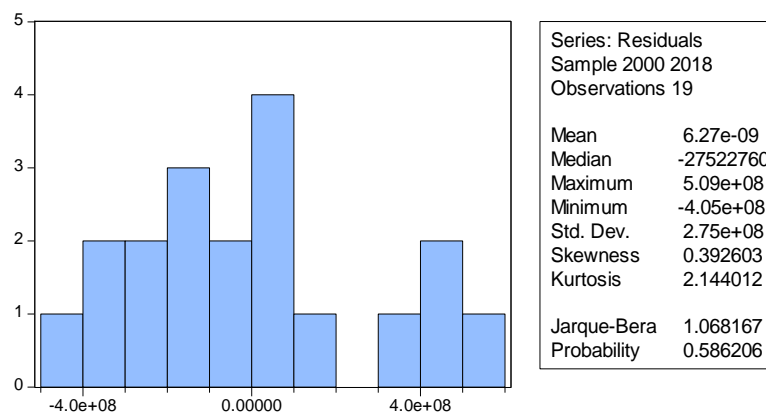


Figure 2 Normality Test

In the Figure 2 the value of jorque Bera is 1.068167 and the  $p$  value is greater than 5 percent then we accept null hypothesis. It means that residual is normally distributed.

## CONCLUSION AND RECOMMENDATIONS

The man purpose of this research was to check the impact of macroeconomic variables over stock market return for which we used PSE data.

### *Main Findings*

Over all models run with OLS Model the finding are below.

- The model shows that there is positive linkage between FDI, IR, inflation, ER with stock market return.
- Model shows that there is co-integration between macroeconomic variables and stock market return so it means that there is strong relationship.
- Study also show that there is long term as well as short term relationship between macroeconomic variables with stock exchange return.
- All macroeconomic variables have positive and significant relationship while only inflation has negative relationship with stock market return.

This study was conducted on fluctuation of PSE with macroeconomic variables. The finding shows that there is link between macroeconomic variables with stock market return. It is empirically find out that Stock market is a great opportunity for investor to invest their money. In this study we find out the impact of macroeconomic variables over stock market return. All macroeconomic variables such as FDI, IR and ER has positive significant relationship with stock market while we find out that inflation has a negative association with stock market prices in Pakistan.

### *Recommendations*

Economic condition of Pakistan is very worst. If there are any small or big shocks in the economy it reacts sensitively in the stock market. The stock market is also unreliable so it is suggested to authority body should play their role in this stare to make it reliable.

- It is suggested that Government should lowered restriction over FDI because it open up more opportunities in host country like increasing of income, open new jobs creation, privileged wages, experiences, increase exports, skilled management, and greater productivity through new technology in Pakistan.
- According to the results it needed that it is very important to implement practical macroeconomic policies in sort out for a country to put on utmost remuneration from stock market. If a country want advantage from stock market it need to enable capital market in general and stock market in fastidious. Another advantage of this opportunity and muddle through with challenges macroeconomic variables such as IR and inflation must be reduced.
- It is suggested that to implement monetary policy to makes ensure macroeconomic variables stable.

In developing country like Pakistan most important contribution of this study is to emphasis on macroeconomic variables over stock market performance.

The study also gives the avant-garde in turn of the stock market and preferred macroeconomic variables.

### *Future Research Area*

The study is not only related to Pakistan but it also useful for other developing as well as for developed countries in the world. The future researchers can use more advance analytical techniques. Stock market is a broad area for research and also can use different data for different country and make comparison among both economies. This study is not conclusive one rather it will pave the way to the future research. The whole study is plotted on monthly basis which gives us comprehensive results for the betterment some of researcher used weekly basis data which gives more comprehensive results. Moreover in future the study will be gain more macroeconomic variables.

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