

Fiscal Deficit and its impact on Stock price variation; A Case Study of Pakistan



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Dedication

This work is dedicated to Allah, the Almighty, who is the most merciful and the most beneficent. Furthermore, I would like to dedicate my work to the last prophet of Allah, Hazrat Muhammad (*ṣallā llāhu ‘alayhi wasallam*).

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ABBREVIATION

PSX	sensitivity index of Pakistan stock exchange
FD	fiscal deficit as a percentage of GDP
MS	money supply (broad money)
ER	exchange rate
TXR	tax revenue as a percentage of GDP,
INF	Inflation rate
FDI	foreign direct investment as a percentage of GDP,
UMP	unemployment level
GDP	Gross Domestic Product
CRISIS	Financial Crisis
SBP	State Bank of Pakistan
ARDL	Auto regressive distributed lag
ECM	Error correction model
PP	Phillips-Perron

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ABSTRACT

This study attempts to examine the impact of fiscal deficit, macroeconomic variables, and Crisis on the sensitivity index of stock prices of Pakistani Stock Exchange, Pakistan. The period this study takes to examine the relationship spreads from 1980-2018. This study has estimated the time series model by using the Auto-Regressive Distributed Lag (ARDL) technique. The results of this study show how Fiscal deficit, money supply, taxes, inflation, foreign direct investment, exchange rate, and Crisis significantly affect the prices of the stock exchange in the long run. While the unemployment rate has a negative but insignificant relationship with the stock price variation in the long run. In the short run, the study finding shows that the direction of relationship the variables in the long run and short run are the same. The unemployment in short-run findings is insignificant which shows that the behavior of investors in the short and long run is not bothered by the unemployment rate in the case of Karachi stock exchange which nowadays is called the Pakistan Stock Exchange. It is need of the time that the government should adopt policies appropriate to improve (reduce) fiscal deficit.

1 INTRODUCTION

1.1 Introduction

The stock market in general acts as a very important factor in determining economic development and thereby keeping the economic progress in check (Adjasi, Harvey and Agyapong 2008, Hamrita, Abdalla and Ammou 2009, Pilinkus 2009, Quayes 2010). The Pakistan equity market contributes to economic growth by making the money flow through a well-organized process of disinvestment to reinvestment

The stock market can be seen to react to the change in macroeconomic variables so there is some sort of relation in macroeconomic factors and stock market (Raza et al., 2016). The most commonly used macroeconomic factors in this regard are inflation, exchange rate, money supply, taxes, and unemployment. The investors and the government of a region need to take note of the behavior of macroeconomic factors when they act as investment entities for the stock exchange or when making policy regarding the economic variables and stock market relationship (attari & safdar 2013).

While discussing economic issues in Pakistan it is important to notice the problem existing such as fiscal deficit which is currently debatable in Pakistan and it happens to be our main independent variable. A budget scarcity of a country occurs when the total expenses of the ruling entity exceed the revenue that it gets, except for the money which has been taken as a loan.

The Fiscal deficit has a considerable impact on stock prices which in turn affects the country's economic position. The reason for having low investors' confidence (which

may make the investors to think of converting the current investments into a diverse set of assets in foreign currency and it may head this crisis to increased future exchange rate volatility) and resulting in lower stock prices because of fiscal deficit of a country which may lead to absolute bearish trend in stock market (Roley and Schall 1988). Fiscal deficit indirectly influences stock price variation by having long term effects like expected future taxes (Hall and Taylor 1993).

In contrary to that, Friedman (1988) believed that there exists no clear relationship b/w share price and fiscal deficit. Hardouvelis (1988) was of view that revenues of stocks moves in inverse relation to the elevated levels of real interest rate due to which the discount rate escalates at which the value of cash inflows and outflows is determined followed by higher capital cost which pushes down the real output one is expecting and thus decreasing expected earnings and yields of companies and also future cash flows.

Given Elizabeth Nailantei Nkukuu and Josiah Aduda (2012), a government may have a positive budget balance (also known as negative budget surplus) or a negative budget balance (a positive budget surplus). They believed that the more there exists fiscal deficit the more negative effect will be observed on stock prices. This was explained by the channel that if there are more expenses and fewer revenues then it will be hard for the government to attract investment from outside to support their internal operations by borrowing process and that will result in the uprising of lending rate which further pushes down stock prices.

According to the researchers, the explanation about lending money is given by the trust which investors keep in lending their money to the government because it is thought

to the safest place to invest. However contrary to that the recent acts of governments like those of Greece and others which were not able to keep their honor in paying obligations made investors rethink their investment decisions. In general, the government has always alternative ways to pay and settle their obligations. They pointed out documents claiming that more the expenses as more investment activities are done for development results in the stock value & prices to an upswing. One reason in capital market price movement is increased general price levels and decreased the purchasing power of people which can be observed by noticing fiscal deficit

Finding the connection or link between the deficit budget and prices of the stock market seems to be of great essence for investors to know about the future uncertainties and to make proper decisions about their investing strategies. The knowledge about it is very important as the group with extra money to invest will be interested in knowing how much more uncertainty is associated with a constant raising fiscal budget condition as Grobys (2013) noticed it triggering a decrease in prices of assets. Secondly, a higher fiscal deficit is connected to more loans taken on behalf of the regime which puts mounting pressure on nominal rates which further makes the stock's value fall.

It is also perceived from the research that fiscal deficit also affects the demand and liking for local products in markets across borders. Ball and Mankiw (2005) spotted lowering down of interest rates with a lower budget deficit and detecting the local product to be demanded more worldwide due to decreasing exchange rate value. The value of stocks hiked up due to hoisted demand for the native made product. If we look upon the work of researchers done in other countries like in the African continent then we will realize that the market in the continent is largely controlled by banks (Ndako, 2013).

But presently importance is given to capital markets for running of an active economy due to failure realized on part of the banking sector in playing its role. However, in the last 20 years or so many countries have taken interest in creating and nourishing well-developed capital markets for the sake of a better financial working market with attributes one normally expects. Capital markets are entrusted with raising enough amount of money to be used in keeping the continent in the race of developed nations. Liquidity was also thought to exist in the markets which will make the countries more independent financially in the long run (Adamu and Kabuga 2017, Kabuga and Ismail 2017, Kabuga and Hussaini 2015, Afful and Aseidu 2014).

Samsul (2006) mentioned seven factors that bring volatility in prices of stocks which are; 1) GDP, 2) rate of being jobless, 3) Inflation, 4) Current accounts, 5) fiscal deficit, 6) Interest rate, 7) Exchange rate. According to Ebert and Griffin (2000), the gross domestic product represents the output generated in the nation in a span of one year on behalf of the products and services sectors.

. The real activist relates it by saying that a more increasing trend in prices is due to higher expected profitability which is due to the increased level of economic activity going on in the country. The higher economic activity is observed to be going on due to increased money supply which is mainly because of increased money demand on behalf of the market.

Sellin (2001) worked on whether or not the money supply in the economy shakes the value of the equity holder's shares. He used theories of Keynes & real activity economists. Both of the mentioned groups believed differently. The former proclaimed that both money supply (M2) & equity prices move in trend with opposing attitude while

the later one stated somewhat direct relation between money supply (broad money) & equity movements. Since the current account is adjusted in the exchange rate that's why it is not being mentioned in a separate category as pointed out by Samuelson (2002). He believed that the ups and downs in the exchange rate will continuously occur until and unless the capital account factor and the current account factors get back on a balanced point at a place called equilibrium. Maysami & Koh (2000) observed a significant relationship between interest rate, exchange rate and stock prices in the long run. Kwon and shin (1999) studied the Korean equity market and provided their results having a significant relationship between the exchange rate, dividend yield, oil prices, and money supply and equity market prices.

There were contradicting statements about the role of fiscal deficit on the movement of stock prices. When taking the government budget into account three variables shall be seen firstly which are; loans taken by the government, its spending and its collection of money in form of taxes. Firstly it was highlighted by Feldstein (1986) who made it clear that "the stress point of the money which government uses up on the macro variables solely cannot be judged/determined based on the ruling institution's balances". It was thought that there were no indications of involving government balance when it comes to viewing the changes in interest rate through money collection or spending in the coming time. Bohn (1991) disagreed with the view mentioned. To alter the amount of revenue generated through taxes or the government expenses have a symmetric influence on the economic graph of a nation which results in having an impact on stock market prices.

The model about valuating the equity called "Fed Model" states that the yields on stocks

(ratio of dividends/earnings to stock prices) and returns on nominal Treasury bonds **are** related. Research done previously indicates that the return on bonds is influenced by the rate of inflation. The "Fed Model" also infers that the returns on stocks and stock movements are highly correlated with inflation. In the era 1990's the economists often reasoned that lowering stock returns and increasing stock prices were justified by decreasing the inflation level. Asness (2000, 2003) noticed that the "Fed Model" successfully described the empirical explanation of the movements in share valuation. The most important aspect of the model which narrate the hike in stock returns and movements along with inflation between the years 1970 and early 1980 and the lowering of stock returns during the past 20 years.

opportunities of jobs and boosting transfer of technology and improvement of economic development in host regions. By this argument we can draw three types of conclusions which are (1) Foreign direct investment which plays the role in economic development (2) Economic development initiates the progress of the stock market (3) The Foreign direct investment has its role in stock market movement and its development. Errunza (1983) also supported the fact that the inflow of capital from foreign investors gives direction to stock market progress.

The development of the Economy in a country affects the financial market and financial development. The financial sector development includes the developmental growth of the stock market of the region. In other words, the stock market contributes to the development of the financial system as a whole. Singh (1997) was of view that there exist progressive and significant association between economic growth and development in stock market and most of the literature on the role of foreign direct investment of a

country advocate that foreign direct investment is an important key of capital which contributes in domestic and private investment and is generally connected to creating new jobs. Boyd et al (2005) worked on whether the pattern of share price reactions can be described by the unemployment news which contains the evidence of future interest rates. If the stock prices do respond to the unemployment news then the share and bond prices would react the same way which has been seen less in real markets. As the prices of shares do react to the "unemployment news" at times of economic shrinkages which means that the unemployment news has the info about expected growth and/or equity risk premium in that same phase of the business cycle.

Equity markets quickly react to events occurring nationwide and worldwide which includes events define by stability as well as distasteful events. Share markets are generally considered measuring tools that show the intensity of activities increase or decrease depending on the news about economic, political, international & national environment. Events that involve chaos in any of the mentioned area brings equally negative impact on the performance of the share market and the investor fears of the financial risk involved due to that specific incidence and restrains from investing more due to uncertain future which causes the equity prices (the wealth and asset of the shareholder) to fluctuate. The fluctuations contribute to making decisions about changing the portfolio of assets an investor holds or movements towards plans that involve lowering the risk of the investment (Hameed and Ashraf, 2006).

The crisis which comes in the world also affects the economies of developing countries through a network of trade & finance. The flow of net capital into developing countries from developed countries minimizes due to financial crisis like the global

financial crisis. The crisis inversely affects the direct investment from foreign, exports which the developing nations rely on for earning their comparatively lower profits margins and the portfolio investment (Iqbal, 2010). Stock markets functioning in different countries among other sectors are affected too by the devastating storm of the crisis and results in bringing the economies to the edge of collapse like the effects of global economic crisis seen from January 2008 (Usman, 2010).

The birth of budget deficit in Pakistan is in a variety of ways not much different from other developing regional countries. In the beginning half of the seventies when funds were raised from outside for development projects i-e initially public enterprise investment. This upward movement of expenses confirmed out to be rather permanent and the government was unable to generate the needed amount from the general public. Haque and Montiel (1991), when studied the economy, found out that for more or less 20 years the fiscal deficit of Pakistan was observed to stay at about 7 percent of Gross National Product which was two times on average the amount recorded for other countries in Asian continent (IMF's World Economic Outlook 1990). The budget deficit of each province and the country as a whole was observed to be 6½% of Gross National Product in the 1980's and 7½% 1987 to 1988 fiscal year. To the naked eye the situation of Pakistan, in this case, follows the same general pattern which other countries face. In Pakistan, the common view is that the imbalances recorded on expenses and revenues might affect the fluctuations in financial markets (Asif Idriss Agha and Muhammad Saleem Khan 2006).

The report on Pakistan made by the World Bank states that the long term growth and the efforts to maintain developments have been severely threatened if the fiscal

deficit has not been checked in the 1980s which was seen to be more than 8% of the GDP. The more there is a fiscal deficit, the less it can fulfill the growth and inflation objectives which influences the imports making the budget account situation worse (S. Akbar Zaidi, 2005).

1.2 Research Question

To what extent stock prices move and in which direction when macro variables fluctuate in Pakistan?

1.3 Purpose of Research

To analysis the variation in prices of shares enlisted at Pakistan stock exchange due to movements of macroeconomic variables in the economy specifically fiscal deficit.

1.4 Objective of this Study

The objectives of this study are as:

- I. To find the role and effect of changes in macroeconomic variables i-e money supply, tax revenue, Inflation rate, exchange rate, unemployment and foreign direct investment on values of stocks represented in their prices.
- II. To understand how the financial crisis brought changes in the stock market.

1.5 Significance of the Study

Negative fiscal imbalance means when the government finances its excess expenditure over revenue by means of borrowing. Borrowing leads to depressing capital formation through its impact on interest rates in the country. Therefore, it lowers the long-run steady growth path of the economy.

It has been observed that previously on average the fiscal deficit of Pakistan was seen to stay at about 7 percent of Gross National Product which was two times on average the amount recorded for other countries in Asian continent This study highlights the impact of constant fiscal deficit condition of Pakistan on stock market which acts as indicator of economic prosperity.

1.6 Organization of This Study

This study is organized in five chapters. The 1st chapter mentions the connection between macroeconomic variables and stock prices. The study also possesses the research question, Purpose, Objective of this study and the significance of this study. The second chapter indicates the direction of positive and negative relationships about the topic in the existing literature. The third chapter describes the Data and Methodology. The fourth chapter encompasses the Regression Analysis, Results and Interpretations. The Fifth and final chapter contains the Conclusion and Recommendations of this study.

2 LITERATURE REVIEW

2.1 Introduction

Literature depicts the overall positive & negative effect which the macroeconomic factors have on the share market is symmetric i-e if there is a positive change in macroeconomic variable then it will have symmetric effect on stock market and similarly if there is negative change in behavior of macroeconomic variable then again it will have symmetric impact on stock market. This symmetry assumption in the case of the stock market states that if the positive change in the pattern of macroeconomic variables brings positive (negative) changes in the stock market then a negative trend in macroeconomic factors will bring down (boost up) the stock market by an equal amount.

However, in the risk aversion economy, this situation might not be true. Moreover, the investing entities follow the policy of economy declared and the data to make critical decisions. They feel pessimistic when they expect any loss while they feel optimistic when they expect to profit.

2.2 Theoretical Literature

Chen et al. (1986) noted some of the indicators which were macroeconomic in nature as a systematic influence on the share market. The conclusion drawn by them was consistent with the theory presented by Ross (1976) called “Arbitrage pricing theory” which explains that the returns of stock in the future which is correlated with shares’ price is a Linear Function of macroeconomic variables. The study conducted by them about the impact of economic news on the stock market. Identification of macro factors that can be attained over simple and intuitive financial theory.

Keynes long ago suggested that the government's ability to spend might affect the prices of the stock. This was also called the Traditional Keynesian theory. It stated that the more government spending will generate more income to the units depending on the economic system of a regime which has a number of effects like increasing the average or aggregate demand which in turn raises the general price level, promoting investors to spend further and have considerable effect on the production in the economic system. Keynes mentioned that if the government spending is reduced/removed will push the aggregate demand downwards by shrinking the economy and in turn reducing the stock (asset) prices. Hebous, (2013) found that the magnitude of the effect depends on the wider implementation of the expansionary fiscal policy and exchange rate management of the economy

Wagner's law of increasing State activities proclaims that the government is bound to provide and shoot up the share of the nation's goods in investment. Laopodis (2009) stated that the rise in government money spending increases the volume of income level encouraging the investors to put their money more into the markets where the capital is traded thus raising the demand of stocks and eventually pushes up the price which takes us to a point to believe that spending on government behalf has a substantial relationship with prices of the stock

The point of view of fundamentalist retrieved was that each and every stock has an intrinsic value and that this value is affected widely by the policies implemented on the government's behalf. Stock prices are one of the most unpredictable market measurements which are very much responding to slight changes in government decision makings. Okafor, (1983) mentioned that fiscal decision made by rulers of a nation affects the price levels in the stock market, which in itself is clipped to the economy's real sector due to the fact that they pressurize the consuming and investing scenarios in the market.

2.2 Empirical Literature

Geske and Roll (1983) in their research used linear regression techniques and got the results of the inverse connection between fiscal deficit and stock price variation. In the same way, Laopodis (2006) used "Granger Causality and Vector Auto Regression" (VAR) and realized the budget deficit unfavorably affects the prices of stocks. Asaolu and ogunmuyia (2013) worked on data between 1986 and 2007 and clarified that their results support the opposite movement of stock prices and budget deficit. The studies are also supported by research work of (Soley and Schall 1988, Geske and Roll 1983, Gale and Orszag 2004, Engen and Hubbard 2004, Laopodis 2006, osamwonyi 2012).

Quayes (2010) has worked on finding the association between the budget deficit and stock prices but in his research, he involved the factor of inflation and population structure while using "Vector Autoregression" (VAR) for the purpose of Co-integration. The data used was annual in nature for the time span from 1950 to 2005. The model also includes the functions of demand and supply to be taken into account to find the influence the variables like the real Gross domestic product, inflation, changing the demography of variables and fiscal deficit have on Stock Prices. This cointegration

revealed that both the budget deficit and inflation when moves up, the stock prices were seen to decrease and vice versa. The results revealed that fiscal deficit if taken as a percentage of GDP and if it increases by 1% of GDP then the stock market movements were seen to go down below by 75.

Osahon and Oriakhi (2013) on a time duration of 1984 to 2010 worked using Error Correction Mechanism and Vector Autoregression and noticed that the movement in the middle of the budget deficit and stock prices is unlikely to go hand in hand in the same direction. Some of the researchers like laopodis (2009) Ewing (1998) Darrat and Brocato (1994) showed the inefficiency of the Stock Market with detail to predicting future fiscal policy implementations. This type of conclusion is explained further by laopodis (2009) by claiming that money holders do not trust much on the information about the fiscal deficit due to the fact that they have little trust that the deficit can have a negative effect on the stocks.

The arguments and end result of Joshi and Giri (2015) work on the Indian economy on finding the relationship using the ARDL technique suggested that having more expenses than revenues and stock prices might have negative movements in response to each other in a long run. For understanding purpose this argument can be taken as decreasing investors' confidence might make it difficult for firms to nurture capital on encouraging terms like the interest rate rises.

Ardagna (2009) used panel data of countries listed on OECD list and the time span of 1960 to 2002 was taken. He cleared it by founding results declaring an upward drive of Stock Prices when he decided to decrease the expenses and increase the revenues. Darrat (1990) worked on Canadian Stock Exchange and concluded that there is

indeed some relation between fiscal deficit and revenues earned on stocks but one is not sure about its direction that whether this relationship is favorable, unfavorable or uncertain. He studied the monetary and fiscal policy and used Multivariate Granger Causality Test. Darrat (1990) worked on finding out whether the stock market returns fully incorporate the fiscal policy decisions and react to it or not and found out results by working on government decisions by taking quarterly data from 1960 to 1984. He used the Ordinary Least Square method and reached the conclusion that the Fiscal Policy implemented has a considerable effect on the Stock Market. Further to his work, he found that there exist current stock prices and fiscal measures have a significant lagged relationship which makes it clear that fiscal policy brings changes in stock prices.

The literature about Yasir and Saleem (2012) includes the Granger Causality Test and technique of Johanson Cointegration by taking data annually from 1990 to 2010 in two countries including Pakistan and India. He learned that the fiscal deficit and stock prices move in the same direction for the case of Pakistan while they had opposing movements for the case of India when seen in the long-run context.

In opposite to that Van Aarle (2003) had a study conducted using Structural Vector Autoregression. He reached the conclusion about the positive association between Budget Deficit and Stock Prices. Udegbumam and Oaikhenan (2012) were convinced that for some unclear reason the money financed deficit has considerably optimal relation with Stock Prices in the short run when they used duration and convexity model in case of Nigerian stock market. They used secondary data from 1981 to 2006.

The work of such nature is conducted on countries in the developing stage of the economy. In this regard, the work of many researchers is worth mentioning including

those of Abakah and Adusah-Poku (2016) who extended their study by working on Ghana's economic condition. They studied the stock market of the mentioned country and its federal budget deficit using impulse response function. They mentioned in their conclusion that financing developments work on infrastructure and the actuality that this public expenditure might raise the prices in the stock market. The data used was monthly in nature from January 2008 to December 2015 and the test applied included VAR, Granger Causality and Impulse response function.

Some studies like that of Barro's (1974, 1989) statement of Ricardian equivalence proposed that there is no significant relationship between fiscal deficit and stock prices. Such type of statements has been observed previously by works of laopodis (2009), Boothe and Reid (1998) and Evans (1987). Not long ago Mainga's work (2014) also revealed that no connection has been observed so far working on his findings of Nairobi's stock exchange. The answers found were according to the SME hypothesis but it was different from studies conducted previously.

Some of the researchers like Fama (1981) Schwert (1981) Fama and Schwert (1977) Quayes and Jamal (2008), Rapach (2002), Gallagher and Taylor (2002), and Feldstein (1980) believed that in countries having advance industries have trend of showing opposite movements concerning inflation and stock prices. While on the other hand Al-Khazali, Pyun (2004) and Spyrou (2004) believed "for developing countries the theory about inflation and stock prices won't sustain". Still, there are researchers like Pearce and Roley (1985) and hardouvelis (1988) who thought that there is no connection between the two variables. As there is a contradiction between researchers' view in

finding the exact answer about the association between Stock Prices and Inflation, further work and clarity will be required.

Koh and Maysami (2000) on their specific research discovered movements of the same direction between stock returns and money supply changes. They applied various models of vector error correction models on the data taken for eight years. Bailey (2000) was of the view that the index is positively affected by innovating the monetary variable. The same effective result was discovered by Maskay (2007), Bernanke and Kuttner (2005) and Alatiqi and Fazel (2008) who were of believing that the prices of the stock and money supply have an affirmative relationship.

Onshan and Oriakhi (2013) believed that there is opposite behavior existing concerning Money Supply and Prices of Stock. Gan, Yong, Zhang, and Lee (2006) concluded that there is an adverse effect of the money supply on the Stock Index. This was further conveyed by explaining it in a way that in New Zealand the main source of income generation is through foreign investment. Where the rate of interest plays its vital role by decreasing investors' interest who are ready to invest in financial institutions than investing in the uncertain stock market. This was the case when the interest rate was higher than that of one in other countries.

Another scenario will be if the interest rate is on its decreased level still then the investors will choose to put their money in markets other than the stock market. While working on the Bogota Stock Market, the rate of interest which was measured by the interbank loan interest rate have a negative association with Bogota Stock Market and this was found by Arango (2002) and Hsing (2015) who used VAR model. The interest rate was seen to act negatively with stock prices when the conclusion was drawn by

Uddin and Alam (2007). The results of Uddin and Alam's work and those of Oshon and Oriakhi were found to have similarities on this specific subject. There was one researcher that is RIzalito (1994) who studied and got no relation between the composite sectoral tables of Makati Stock Exchange using Data of 6 years (Jan 1987 to August 1993) and 91-day interest rate

Arin et al (2009) studied the effect of policy made for taxes and its impact on Stock Market Returns and reached to revelation that the direct taxes have less influence on stock market returns as compared to indirect taxes. Razin (1987) conducted his study on two countries with a stochastic common Equilibrium model in-order to highlight the Consequences of Government taxes and expenditure policies on the consumption of households, portfolios of assets made and valuing the stocks in the market. The study's result proposed that the effects of the expectations made about future policies and the feature of the global transmission rely on the exactness and accuracy of the policies across states of nature. This says that currently made policies for consumption; saving and prices of stocks are shown to comply closely with the forecasting of the corresponding certainty inter-temporal model.

Maysami & koh (2000) described a noteworthy impact of the exchange rate and Interest Rate between Stock Prices and various Macroeconomic factors in the long run. Kwon et al (1997) also were of the view that the macroeconomic variables like Exchange Rate, dividend yield, oil prices and supply of money has a significant association with Stock Prices. Mukherjee & Naka (1995) tried to find a Relationship between Stock movements and macroeconomic variables. They used the vector error correction model for their regression analysis. They found co-integration relations between 6

macroeconomic variables i-e Exchange Rate, Inflation Rate, Money Supply, Real Economic activity, long term government Bond Rate, call money rate and Stock Prices. Ibrahim & Aziz (2003) worked on finding the association between Industrial Production, Money Supply, CPI, exchange rate and stock prices which are seen to have a positive long-run relationship with consumer Price Index and Industrial production. While On the other hand, stock prices have an adverse relationship with the exchange rate and money supply.

Bailey & Chung (1996) worked on a developing nation i-e Philippines to find the effect of macroeconomic risks on the equity market. The conclusion of the study stated that the exchange rate, financial variabilities and political variations of equity owners cannot describe the Philippine stock movements. Mookerjee & Yu (1997) also worked on finding the association between the equity market and macroeconomic variables. The result of their finding suggested that the prices of shares are co-integrated with Money Supply measures i-e M1 and M2 and Foreign Exchange Reserves. While On the other hand stock prices and exchange rates have no visible connection in the long run.

Azman et al (2009) used data from 91 countries over a period of 1975-2005 to find the role of FDI on growth. They used several robustness checks for regression analysis and found out there exists a positive impact of foreign direct investment on growth only after exceeding a threshold level by stock markets. Borensztein et al (1998) stated in his work on finding the effect of foreign direct investment on economic growth that the impact of foreign direct investment on economic and financial growth depends on the level of capital available in the market. They found that foreign direct investment

increases the overall level of investment hence contributes to having a positive impact on the financial market (stock exchange) and economic growth.

Boyd et al., (2005) worked on finding the association between the stock market movements and labor market news and found out that on average the prices of shares rise on bad labor market news i-e increase in unemployment during expansion and these prices fall on such news during contractions of economy which means that during contractions of the economy the share prices shows negative and significant relationship to rising unemployment.

Rjoub et al., (2009) worked on stock market data taken from January 2001 to September 2005 by using the arbitrage pricing theory (APT) model, the correlation among explanatory variables and portfolio regression. The work done on finding the relationship between Unemployment Rate, Money Supply, Exchange Rate, Risk Premium, Inflation, interest rate, and stock market movements concluded that these macroeconomic factors had a significant relationship on the share market movements.

Chen et al., (2005) worked on the association between non-macro/macroeconomic variables and hotel stock movements in the Taiwan Stock Exchange. Macroeconomic factors included industrial production growth rate, the supply of money, increase, the variation of the unemployment rate, and the yield spread. The non-macroeconomic factors included presidential elections, 2003 Iraqi war, 9/21 earthquake, sports mega-events, the outbreak of SARS, the Asian Financial Crisis and the 9/11 Terrorist Attacks. Among macroeconomic variables, only the unemployment rate and the Money Supply were concluded to have a significant association with the hotel stock movements.

Investors' decisions are greatly affected by the fiscal policy outcomes, with this relationship moving in the opposite direction. Government spending without taxation stimulates domestic-based firms by increasing aggregate demand for services and goods. Fiscal deficit gives an indication of the government's countercyclical policy while responding to economic downturns and guiding the investors' confidence more into the economic cycle' stability of corporate earnings. Future inflation is always expected from the news of fiscal deficits which may turn the flow of investment from bonds to equities. For these reasons and in contrast to investors of bonds, stock market investors may have positive reactions towards fiscal expansion (Santiso 2003).

Lim et al (2008) studied eight stock markets in the Asian continent to see the effect of the financial crisis of Asia which affected markets in 1997. They also worked on finding the situation of markets before the crisis came and the situation of the markets when the crisis was over. The result of the study showed that the efficiency which the Asian stock markets showed before the crisis was declined with time until the crisis existed. They also stated that the stock exchange of Hong Kong was seen to be affected the most from the Asian financial crisis.

Olowe (2009) used the EGARCH model to show the return of the Nigerian stock market and its volatility to the global financial crisis of 2007-08. The findings of the research revealed that the returns of the shares in the capital market and its volatility in the case of Nigeria are independent of the intensity of this crisis. As opposed to this study, Adamu (2010) takes this study by organizing the objective for the share market of Nigeria with conventional methods of statistical analysis which includes standard deviation & variance techniques and then splitting the data into periods of before crisis

situation and after a crisis situation. The interpretation of the results showed that the shocks and volatility in the equity market of Nigeria during the times of crisis raised to a considerable level. Ravichandran & Maloain (2010) mentioned in their specific research about the financial crisis that during the period when the crisis was observed, equity markets of the almost six gulf nations handled negative pressure which the markets absorbed & then regained its strength during periods when the crisis was over.

Ali R and Afzal M (2012) worked on markets dealing in shares and took two markets for this purpose. The Karachi stock exchange was selected from Pakistan and Bombay stock exchange was taken in case of India. They establish the outcome that the global financial crisis had a significant and inverse relationship on returns of shares in the two markets but the coefficient showed that the impact was not so strong. The results for both the market showed that the crisis brought positive volatility in it but the Indian market had hiked effect in the charts as compared to Pakistani markets. The possible reason they gave for their study was that the Indian economy is wider in its operations as compared to its counterpart

This difference between Pakistani and Indian stock markets may be due to the fact that India is a big economy than Pakistan and its stock markets are more open than Pakistani stock markets hence the impact of the global financial crisis is more pronounced on the Indian stock market.

Unlike most studies of announcement effects, the study by Boyd, Jagannathan, and Hu (2001) does not use MMS surveys; instead, the authors proxy market expectations by estimating a forecasting model. They analyze a relatively long time series, reaching back to 1948, but they consider announcements of only a single variable, the unemployment

rate. A cause for concern is that relevant information about labor markets can also reside in the level of total nonfarm employment, which is announced simultaneously with the unemployment rate. Ignoring the announcement of nonfarm employment creates the potential for omitted variable bias. In fact, we find that nonfarm employment is statistically significant in most models, while the unemployment rate is never significant. This finding concurs with those of Krueger (1996) and Balduzzi, Elton,

2.3 Literature Gap

This study focuses on finding the effect on stock market behavior by using extended variables with an extended time span to see a broader view of scenario which in case of Pakistan has not been done to the best of my knowledge.

3 DATA & METHODOLOGY

3.1 Introduction

This chapter includes the introduction of dependent and independent variables, their definition and the estimation tools and techniques to be used for estimating the data which spreads from 1980 to 2018

3.2 Data and Its Source

The variables' data have been taken from the website of state bank of Pakistan. Some of the variables' data is in units while others are in percentage form. The data of dependent variable which is sensitivity index of stock prices taken in units. The independent variables which are taken in unit form are money supply and Exchange rate. The independent variables which contains data in percentage form include the main independent variable fiscal deficit and others like FDI, taxes, unemployment and inflation rate. A dummy of crisis is introduced to observe the effect of financial and economic crisis on the behavior of stock exchange and its data is taken in units

3.3 Definition of Variables and Market Channels

As rising from the revised literature of the preceding section, we can infer that fiscal deficits, can significantly influence stock prices. The relationship and channel through which macroeconomic variables bring changes in stock exchange are also discussed as under.

3.3.1 Sensitivity Index of Share Price

There are three stock exchanges in Pakistan – Karachi stock exchange, Lahore stock exchange and Islamabad stock exchange. Karachi stock exchange is a leading and the

oldest stock exchange which was established in 1947. Lahore stock exchange and Islamabad stock exchange were established in 1970. More than 60 percent trading occurs in Karachi stock exchange (KSE) which makes this a prominent and leading stock market in Pakistan (Zaidi 2009)

The sensitive index of share prices is composed of all the ordinary shares mentioned annually on Karachi Stock Exchange on the last Saturday of June. From 1980 and afterwards the average price quotations of 1980-81 are taken as base period. From January 1996 and onwards the average price quotations of 1995-96 are taken as base period. The method of composing of index is in such a way that the index for one day is calculated as the average market value in percentage of all companies' equity shares which are included in the sample on that day to the average value of equity shares of the same companies prevailing in that market during the base period. (Pakistan Statistical yearbook, Pakistan bureau of Statistics).

3.3.2 Budget Deficit

When the expenses of the government exceeds the revenues generated by it, then the government is said to be in deficit. This deficit is called fiscal deficit or budget deficit. Basically, huge deficits necessitate supplementary risks to the economy which contains a loss in investors' (domestic and foreign) assurance and adverse effects on the capacity of transactions. Specifically, a loss in investor's assurance would cause a transference of portfolio away from home currency assets into foreign currency resources which would limit the capacity of the country to investment its liabilities and increase the country's experience to exchange rate variations. This situation will discourage the investors to

spend capital and will cause the asset prices to decrease which will put the economy in contraction.

3.3.3 Money Supply

Broad money is a process of calculating a country's money stream which includes all the assets that business and households can use to keep as investment in short term such as currency. Bank accounts funds and anything that resembles money in value or that can be used to make payments. The formula for calculating the money supply in different countries is different. Sellin (2001) lays out competing ideas that how money supply can affect the prices in stock market, namely those of the Keynesian economists and the real activity theorists.

Keynesian economists debate that there is adverse relationship in stock prices and money supply while real activity theorists debate that the relationship of the two variables is progressive. The theorist's argument is based on "increase in money supply means the money demand is rising in anticipation of increase in economic activity. When there is more economic activity going on in a country, investors will expect more profits in the future which will also affect the stock exchange and will cause the prices of equity being traded in the stock exchange to rise.

3.3.4 Inflation Rate

The rate at which prices increase over time, resulting in a fall in the purchasing value of money is called inflation rate. It can also be perceived as the overall percentage increase in consumer prices index (CPI) for all services and goods is called inflation rate. It can be

calculated by the following formula;

$$INF_i = \frac{CPI_2 - CPI_1}{CPI_1} * 100$$

Inflation rate is a macroeconomic variable that defines the stock prices behavior. One way to view the transmission mechanism between these two variables is via the budget deficit. Following the Monetization perception, a constant increase in the budget deficit leads to anticipated inflation and a rise in inflation uncertainty. As the budget deficits continues the real rates are pushed up and Central Bank may ease money to shrink these rates, resulting in a rise in inflation and nominal rates. The demand for long-term securities may decline because financial market contributors anticipate a higher rate of inflation or because “uncertainty about such an inflationary policy makes long term securities riskier than short-term ones” (Feldstein, 1986).

3.3.5 Tax Revenue

It is a mandatory contribution to revenue of state, levied by the state on the profits generated by a business and income of workers or added to cost of transactions, services and some goods. The fiscal policy when designed so as to increase taxes thereby lowering the profit margin. When investors forecast less future outcomes in this specific sector they will switch to other investing opportunities and the demand as well as prices of stock will fall. Perotti (2002) argued that “the tax multipliers tend to be negative but minor however there is some evidence for positive tax multipliers”. Net tax shocks seem to have negative and minor effects on prices while estimating the effects of Fiscal policy in OECD countries (European Central Bank working paper 168).

3.3.6 Exchange Rate

When the nominal effect in exchange rate is distributed by a price deflator or cost index, it makes real effective exchange rate. It can also be perceived as the units of a host country which can buy a unit of a given foreign organization. When exchange rate depreciates the foreign currency appreciates attracting the foreign investors to invest in stock exchange of a country. When the investment increases, it increases the demand as well as prices of stocks. There is a negative relationship between rate of exchange volatility and Stock Market Returns a devaluation in the local money leads to an increase in stock market returns in the long run. Where as in the short run it reduces stock market returns (Effect of Exchange Rate Volatility on the Ghana Stock Exchange).

3.3.7 Foreign Direct Investment

The investment through a firm or an individual in 1 country into business interests situated in another country. The increase in investments will increase the demand of stock and whenever the demand of stocks increases, its value also moves up. Shakil Abu Jamal and Tanweer (2012) said that in the United States the financial markets continue to invite foreign investment from both developed and evolving economies so they believed that “it can have positive impact on equity prices.

3.3.8 Unemployment

The unemployment rate can be defined as the percentage of unemployed workers in the total labor force. Workers are considered unemployed if they currently do not work, despite the fact that they are able and willing to do so According to John H. Boyd, Jian Hu, and Ravi Jagannathaon (2005) usually an announcement of increasing unemployment is good news for stocks during (Economic Expansion) and bad news at

times of economic contraction. Thus stock prices frequently increase on arrival of the news of increasing unemployment and thus economy is generally in expansion phase. Unemployment is thought to determine two factors which includes expected interest rate and the dividends of the company to be announced in future and the company's future earnings, all of which are considered important in determining the value that investor should give to a share price. An increase in unemployment normally signals decrease in interest rates, which is thought to be good news for stocks, as well as a degeneration in future trade earnings and dividends which is bad news for equities traded. Nature of bundles and hence the necessity of the two effects have variations over time determined by the condition of economy. For shares combined together in a group and in specific for cyclical stocks, knowing about interest rates leads during expansions and information about future earnings a corporate will get dominates during contractions.

3.3.9 Financial/Economic Crisis

When asset prices see a steep decline in value, businesses and consumers are unable to pay their debts, and financial institutions experience liquidity shortages which is called financial crisis. A financial crisis is often associated with a panic during which potential investors sell off assets or withdraw money from savings accounts because they fear that the value of those assets will drop if they remain in a financial institution. Other situations that may be labeled a financial crisis include the bursting of a speculative financial bubble, a stock market crash, a sovereign default, or a crisis of the currency. A financial crisis may be limited to banks or spread throughout a single economy, the economy of a region, or economies worldwide. A situation in which the economy of a country experiences a sudden downturn brought on by a financial crisis is called economic crisis. (Investopedia, 2019).

3.3 Methodology

The methodology includes the general model and specification of variables in it and the estimation tools used in regression analysis.

3.4.1 Model Specification

The general specification model was used in this study to empirically observe the effect of Fiscal deficit and other fundamental macroeconomic factors on the Stock market.

$$PSX_t = \alpha_0 + \alpha_1 FD + \alpha_3 MS + \alpha_4 TXR + \alpha_5 INF + \alpha_6 ER + \alpha_7 FDI + \alpha_8 UMP + \alpha_9 Crisis + \mu_t$$

Where,

PSX	sensitivity index of Pakistan stock exchange,
FD	fiscal deficit as a percentage of GDP,
MS	money supply (broad money),
TXR	tax revenue as a percentage of GDP,
INF	Inflation rate
ER	exchange rate,
FDI	foreign direct investment as a percentage of GDP,
UMP	unemployment level
CRISIS	Financial Crisis

3.4.2 Estimation Tools

Following are the techniques used on the time series data of this study.

3.4.2.1 Unit Root Test

Phillips and Perron (1988) presented the Test for checking Stationarity, which is most commonly used test beside ADF and others. While testing the unit root of time series

which is generated by the process of heteroscedastic and auto correlated nonsystematic component there often comes a problem of including lag p in the model of regression. Phillips and Perron (1988) came facing this problem and instead of describing the autocorrelation structure of the generating process by the corresponding autocorrelation models they used standard Dickey-Fuller test with nonparametrically modified test statistics.

The main benefit of Phillips Perron Unit root test is a non-parametric test. It's not mandatory to provide specifications of the model or lagged parameter in the regression. Its reason for popularity is that this test is relies on asymptotic theory which means that the design of this test enables it to test unit root for long time series data. Some literature like Pesaran (2015) shows PP and ADF are asymptotically equal and others believe that the Philips perron unit root test uses non-parametrically adjusted test statistics, so compared to ADF test this fact should increase power of tests and improve test results Fedorova (2016).

3.4.2.2 Auto Regressive Distributed Lag (ARDL)

It is used investigate the relationship in long run and to find interaction of sensitivity index of equity prices at Karachi Stock Exchange with the macroeconomic variables, the model is calculated using the Auto Regressive Distributed lag (ARDL) cointegration model proposed by Perasan et al (2001). This technique is considered important due to a number of reasons. The first reason states that the bound test is simpler as compared to other cointegration tools for multivariate models such as one proposed by Johansen and Juselius (1990) allows the connection of Co-integration to be checked by Ordinary Least Square method after selecting of lag order. The second reason for its importance is that

the bound test does not need the factors/variables to go through unit root testing for stationarity different from other tools same as Engle & Granger (1987) and the one proposed by Juselius (1992). The later ones requires the data of variables to be integrated of order I (1) which in other case will lose its predictive power as seen by kim, leybourne newbold (2004), Perron (1989) and Perron (1997). On the other hand Auto Regressive Distributed Lag (ARDL) technique can be applied without consideration of whether the independent variables of model is integrated of order I (0) or I (1). The third reason for ARDL to be considered important is that the Error Correction Mechanism (ECM) incorporates the dynamics for a short time along with equilibrium in long run despite losing information related to long run dynamics. ARDL model used can be depicted as follows.

$$\begin{aligned}
\Delta PSX_t = & \delta_0 + \delta_1 T + \delta_2 FD_{t-1} + \delta_3 MS_{t-1} + \delta_4 TXR_{t-1} + \delta_5 INF_{t-1} + \delta_6 ERT_{t-1} \\
& + \delta_7 FDI_{t-1} + \delta_8 UMP_{t-1} + \delta_9 Crisis_{t-1} + \sum_{i=1}^q \alpha_i \Delta PSX_{t-i} \\
& + \sum_{i=1}^q \beta_i \Delta FD_{t-i} + \sum_{i=1}^q \rho_i \Delta MS_{t-i} + \sum_{i=1}^q \sigma_i \Delta TXR_{t-i} \\
& + \sum_{i=1}^q \varphi_i \Delta INF_{t-i} + \sum_{i=1}^q \omega_i \Delta ERT_{t-i} + \sum_{i=1}^q \gamma_i \Delta FDI_{t-i} \\
& + \sum_{i=1}^q \theta_i \Delta UMP_{t-i} + \sum_{i=1}^q \varpi_i \Delta Crisis_{t-i} + \mu_t
\end{aligned}$$

Where T is time trend and L indicates that variables will be taken in form of Natural logs. First section of the mathematical form with $\delta_2, \delta_3, \delta_4, \delta_5, \delta_6, \delta_7$ and δ_8 points to long run behavior shown in coefficients and the second part with $\alpha, \beta, \gamma, \rho, \sigma, \varphi$ and ω refers to the short run coefficients. The null hypothesis of no co-integration $H_0: \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7 = \delta_8 = 0$ and the alternative hypothesis

H1: $\delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq \delta_6 \neq \delta_7 \neq \delta_8 \neq 0$ implies co-integration among the series i-e the equation. The initial stage in the ARDL model will be to see the above equation to test for existence of a long run connection in variables by noticing an F-value for significance of the coefficients of lagged levels of variables *i.e.*, H0 (Null hypothesis) and against that the H1 (Alternative hypothesis) as stated in the second step, once the Co-integration seems to exist which means independent variables change dependent in long run, the conditional ARDL long run model for PSX will be used.

3.4.2.3 Error Correction Model

In this area of checking behavior we will get the short run parameters by over-viewing an error correction model alongside the long run estimates. This is specified as below:

$$\begin{aligned} \Delta LPSX_t = & \rho + \sum_{i=1}^q \alpha_i \Delta LPSX_{t-i} + \sum_{i=1}^q \beta_i \Delta LFD_{t-i} + \sum_{i=1}^q \rho_i \Delta LMS_{t-i} + \sum_{i=1}^q \sigma_i \Delta LTXR_{t-i} \\ & + \sum_{i=1}^q \varphi_i \Delta LINF_{t-i} + \sum_{i=1}^q \omega_i \Delta LERT_{t-i} + \sum_{i=1}^q \gamma_i \Delta LFDI_{t-i} \\ & + \sum_{i=1}^q \theta_i \Delta LUMP_{t-i} + \sum_{i=1}^q \phi_i \Delta Crisis_{t-i} + \aleph ECM_{t-i} + \mu_t \end{aligned}$$

Where $\alpha, \beta, \gamma, \varepsilon, \theta, \rho, \sigma, \varphi, \omega, \phi$ are short run dynamic coefficients to equilibrium and \aleph is the speed adjustment coefficient.

3.4.3 Descriptive Statistics

3.4.3.1 Descriptive Statistics of all macroeconomic variables

In the table 3.2 the descriptive summary of all macro variables is shown. The largest mean value among the series is of money supply (3474063) followed by the average of

sensitivity index (8088.259), exchange rate (121.5126). The lowest mean is associated with the taxes (11.98513), fiscal deficit (6.081897), and unemployment rate (5.421795). The remaining average value of the variable foreign direct investment is (0.8807692). The standard deviation of variables is given in column 2 of the table 3.2. The lowest standard deviation among the variables is of foreign direct investment which is (0.7702883) followed by standard deviation of unemployment rate which is (1.507073), Fiscal deficit (1.5889), taxes (1.867727). While the largest values of standard deviation are associated with exchange rate (34.47172) sensitivity index (12451.58) and money supply (4432122).

Table.3.1 Descriptive summary of macroeconomic variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Fiscal Deficit	39	-6.081897	1.5889	-8.73	-2.304
Taxes	39	11.98513	1.867727	7.53	14.41
Foreign Direct Investment	39	.8807692	.7702883	.12	3.37
Unemployment	39	5.421795	1.507073	3.1	8.4
Money supply	39	3474063	4432122	92424	1.62e+07
Exchange Rate	39	121.5126	34.47172	93.54	217.56
Sensitivity Index	39	8088.259	12451.58	119.4	45135.9

Source: Author's own calculation

3.4.3.2 Correlation Analysis

The matrix is used to check whether there is any existence of the problem of multicollinearity among the variables or not.

3.4.3.2.1 Correlation matrix

The below table shows matrix for correlation which describes the correlation among variables used in this research work. The data given in the Correlation matrix is data of the variables used in this study. The results displays that most variables given in this

study are not highly correlated with each other. So on the basis of these results we can clearly state that there exists no problem of multicollinearity among most of the variables. The correlation matrix is refuting the existence of multicollinearity between independent variables as all the correlations are less than 0.80 level(Gujarati, 2003).Further, Bryman and Cramer (2001) discussed that multicollinearity exist in model when correlation is exceeds 0.80 or 0.90.

Table.3.2 Correlation matrix of variables

O	FD	TR	FDI	UN	BM	ER	INF
FD	1.0000						
TR	-0.4338	1.0000					
FDI	0.3272	-0.4425	1.0000				
UN	0.5519	-0.5788	0.2427	1.0000			
BM	0.1473	-0.5599	0.1834	0.3055	1.0000		
ER	-0.1930	0.4924	-0.4967	-0.6569	-0.2852	1.0000	
INF	-0.1850	-0.0080	0.2600	-0.1569	-0.1780	-0.0832	1.0000

Source: Author's own calculation

4 RESULTS AND ANALYSIS

4.1 Introduction

In this section this study conducts Phillips-Perron test to check the data Stationarity. It also discusses the regression analysis done through ARDL bound testing and error correction model to find long run and short run dynamics of the data. This chapter also includes the results of tests like serial correlation, stability test, normality test and granger causality test to see the causal relationship between the variables.

4.2 Testing for stationarity

Literature shows that the variables used in time series data can come out to be non-stationary and using such variables in the estimation bring spurious results (Granger and Newbold, 1977). For this purpose variables are tested from time period 1980 to 2018 to find their stationary status.

In this study Phillips-Perron unit root test is conducted to find stationarity. This test is considered better than previous tests for stationarity as it is reliable test for serial correlation and time dependent hetero-skedasticities. Table 1 presents the phillips perron unit root testing results & its statistics $I(0)$ & $I(1)$. It uses the automatic bandwidth selection technique of Newey-West.

The table 4.1 shows one variable is stationary at level while the rest of the variables are stationary at first difference because of which we can say that variable which is stationary at level is integrated of order $I(0)$ and the variables which are stationary at first difference are integrated at $I(1)$ which confirms the possibility of cointegration between the mentioned variables.

Table.4.1 Unit root testing for stationarity

Variables	At Level	At First Difference	Results
Fiscal deficit	-2.674131	-7.968853 (1%)	Stationary (1 st difference)
Money Supply	-1.979134	-4.463401 (1%)	Stationary (1 st difference)
Inflation	-2.996041	-7.523883(1%)	Stationary (1 st difference)
Taxes	-3.251354 (10%)	-----	Stationary (Level)
Exchange rate	-1.163678	-7.301344 (1%)	Stationary (1 st difference)
Unemployment	-1.840181	-5.739791(1%)	Stationary (1 st difference)
Foreign Direct Investment	-1.902073	-3.895895(5%)	Stationary (1 st difference)

Source: Author's own calculation

4.3 ARDL Bound Test

Table 4.2 indicates that the results of Bound test's F statistics which is more than values of I (1) at 1 %, 2.5 %, 5 % and 10 %. Thus the Null-Hypothesis of no Co-integration will be excluded, suggesting Co-integrating relationship in the long run among sensitivity index and other macroeconomic variables.

Table.4.2 ARDL bound testing to find cointegration among variables

F-Bounds Test	Value	Signif.	Null Hypothesis: No levels relationship	
			I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	5.139527	10%	1.85	2.85
K	8	5%	2.11	3.15
		2.5%	2.33	3.42
		1%	2.62	3.77

Source: Author's own calculation

Once it's clear in the conclusion of F Statistics that there exist a long run Co-integrating association among the variables as can be seen from the value of F-Statistics which is greater than the values of I (1) at 1 %, 2.5%, 5% and 10 % level. This study further discusses the long run relationship in table 4.3.

Table.4.3 ARDL test for long run relationship

Variables	Coefficients	T value	P value
Fiscal Deficit	-0.368(1%)	-4.210	0.010
Money Supply	1.544(1%)	19.004	0.000
Exchange rate	0.277	7.534	0.001
Inflation	-1.653	-7.854	0.001
Taxes	-0.453	5.382	0.005
FDI	0.123	5.024	0.007
Financial Crisis	-4.108	6.023	0.019
Unemployment	-0.500	-0.577	0.594

Source: Author's own calculation

Once we conclude that there is a long run Co-integrating connection. The results of long run estimation are presented in table 4.3 which indicates the coefficient of fiscal deficit as negative and significant at 1% level. It means that the budget deficit has a significant and negative relationship with sensitivity index of stock prices of Karachi Stock Exchange. This suggests that fiscal deficit has inverse relationship with the sensitivity index of Stock prices which shows that with the decrease in budget deficit, the stock prices will increase and vice versa. This can be clarified by the fact that with rise in fiscal deficit and means of financing it, effects the supply of money and the interest rate in the economy. Higher level of interest rates indicates high Cost of Capital attained in the industry with profits getting lower and hence decreasing trend in stock prices. These findings are supported by Quayes (2010), Geske and Roll (1983), Laopodis (2006), Asaolu (2011), Saleem et al (2012) while these finding are in contrast to studies conducted by Van Aarle (2003) and Udegbumam & Oaikhenan (2012).

The constant money supply can have positive and significant relationship with Stock market at 1% level. If money supply is increasing means an increase in money demand which means an increase in the economic activity. The more there is an economic activity

in a country, the more investors expect profitability to be in future which makes the stock prices to rise. This result is also supported by Homa and Jaffe (1971).

Inflation coefficients can be seen to be negatively and significantly related to stock market. As fiscal deficit continues to exist, real rates moves up; the state bank (Central bank) may relieve the money in order to bring down the real rates which further encourages the increase in general price levels and nominal rates. In such situation the investor may feel unsecure about long term securities as they will be expecting elevated inflation rate and suspicion about such inflation pattern makes short term securities safer than long term securities in financial market The results of the study are favored by work of (Feldstein 1986), Asness (2000, 2003) The findings of this study are in contrast with the work of the Kessel (1971) and Ioannidis et al (2004).

Exchange rate have been seen to have a positive and significant relationship with Stock Exchange. The higher Exchange rate means the appreciation of domestic currency which increases the investors' confidence to invest in a capital market and hence it increases the stock prices. The study results are aligning with the work of Maysami and Koh (2000), Kwon and shin (1999). This study findings are opposing to those of (Roley and Schall 1988).

The result of foreign direct investment can be seen in their coefficients which shows that FDI have positive and significant relationship with stock exchange. Investment increases when there is an increase in demand and when demand increases the prices also increases. Present study findings are also discussed in study of Shakil, Abu Jamal and Tanweer (2012).

The unemployment results shows that there exist negative but insignificant relationship between unemployment and sensitivity index. This may be due to the fact that more unemployment news in the country when there is contraction of economy as shown by Boyd et al (2005).

The coefficients of taxes shows a negative and significant relationship with stock index. This means that with increase in taxes, the expected profitability reduces which makes investor to switch from current portfolio of investing in stocks to a more risk free and profitable opportunity like bonds or treasury bills. Similar results have also been found by Shafi & Asghar (2015).

The financial crisis of the world have greatly affected the financial markets of the world as well as Pakistan. The coefficient of crisis shows that there exist a significant and negative relationship between financial market and crisis. Kurt et al (2012) in his work stated that the crisis have increasing effect on fiscal deficit. When the fiscal deficit increases it decreases the stock prices. This can be explained by the fact that economic or financial crisis in a country when comes , it worsen the deficit situation of a country, interest rates becomes higher and cost of capital increases making the profitability margin lower which decreases the prices in stock exchange.

The outcomes of the long run coefficients shown in table 4.4 by Error Correction Model confirms that the direction of associations are maintained. The negative and significant relationship are shown by fiscal deficit, inflation rate, taxes, financial crisis and unemployment rate. The unemployment rate is insignificant in short run as can be seen insignificant result of the unemployment in the long run. It shows that the behavior of investor is not explained by unemployment rate in the long run as well as short run. It

may be due to the fact that investors do not bother about noticing unemployment rate while making decisions regarding investment in the stock market. The relationship of money supply, Exchange rate and foreign direct investment have positive association with the stock market index in the short run and long run. The table shows that the coefficient of ECM ($t-1$) is significant at the 1% level, which shows that the speed of adjustment of short run to reach long run equilibrium is significant. The error correction term is -0.57 with estimated sign and suggests that when stock prices are below or above the equilibrium level, it will adjust by speed of almost 57% per year and the full convergence process takes about 2 years.

4.4 Error Correction Model

Table 4.4 Error correction model to find short run dynamics

Variables	Coefficients	T-Statistics	Prob
D(FISCAL DEFICIT)	-0.093939	-5.381201	0.0058
D(MONEY SUPPLY)	0.290033	8.096187	0.0013
D(EXCHANGE_RATE)	0.314253	10.39695	0.0005
D(INFLATION RATE)	-0.994368	-7.336169	0.0018
D(TAXES)	-0.036858	-2.278817	0.0849
D(FOREIGN DIRECT INVESTMENT)	0.043598	7.871180	0.0014
D(CRISIS)	-1.792523	-7.276228	0.0019
D(UNEMPLOYMENT)	-0.022292	-0.074486	0.9442
ECM	-0.571359	-11.04810	0.0004

Source: Author's own calculation

4.5 Serial Correlation Test & Heteroskedasticity Test

The table 4.5 shows that the errors in this model are not serially correlated and there is no problem of heteroscedasticity existing in variables used for this study.

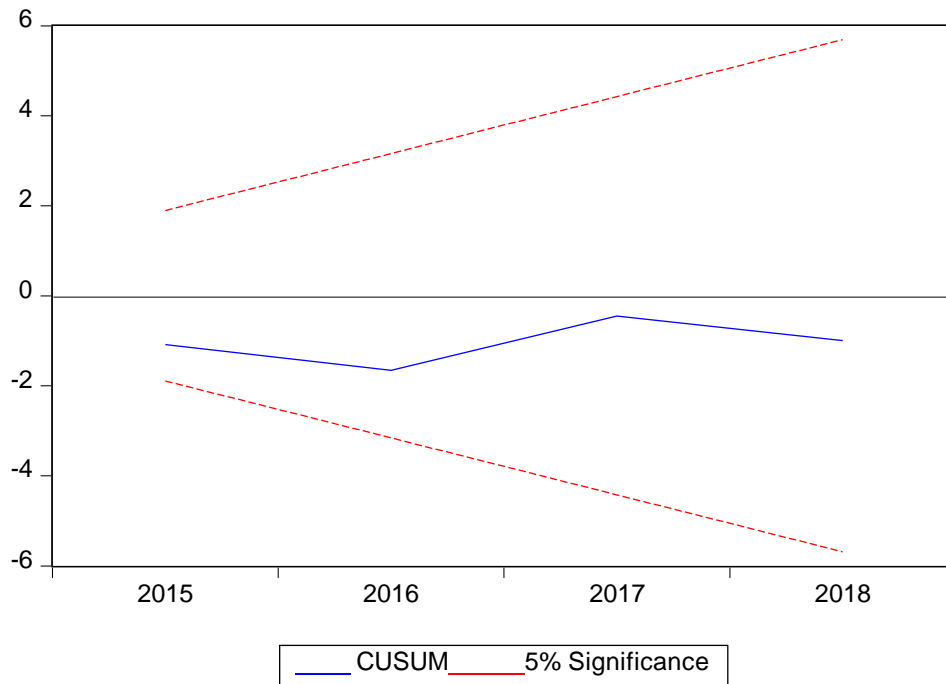
Table.4.5 Serial correlation and Heteroskedasticity test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	2.322796	Prob. F(3,1)	0.4414
Obs*R-squared	31.48215	Prob. Chi-Square(3)	0.0000
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.359883	Prob. F(31,4)	0.9559
Obs*R-squared	26.49905	Prob. Chi-Square(31)	0.6971
Scaled explained SS	0.594763	Prob. Chi-Square(31)	1.0000

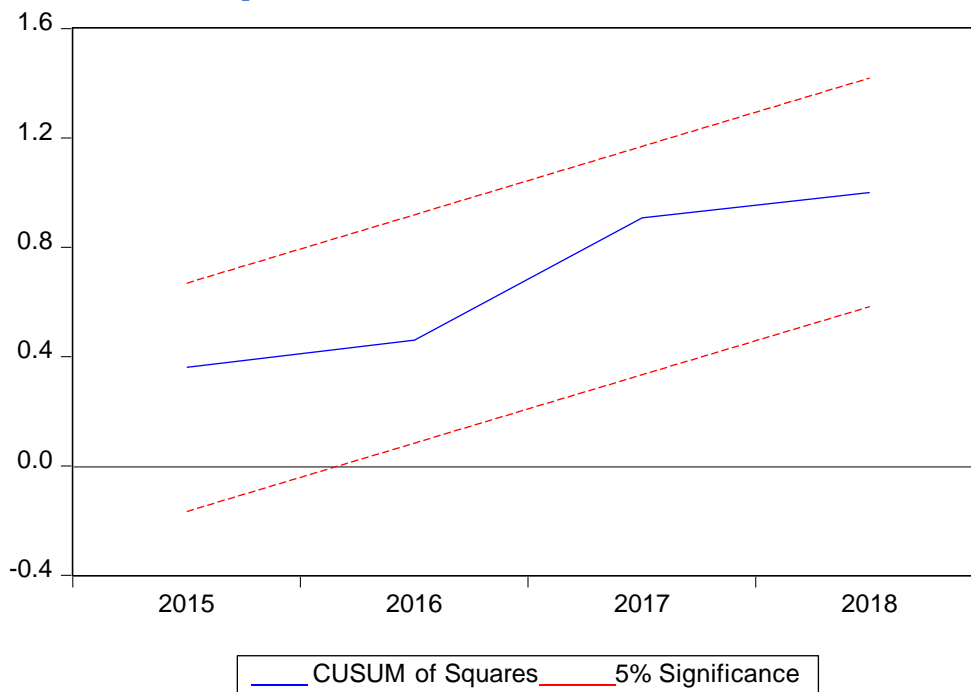
4.6 Stability Tests

The CUSUM i-e (cumulative sum) & CUSUMSQ (cumulative sum of square tests) are conducted in this research to find parameter's short run & long run stability. The CUSUM I-e cumulative sum of square and CUSUMSQ I-e cumulative sum of square plot stays between the boundaries considered critical at level of significance equal to 5%. This result explain that parameters have stability property in long as well as short run which have effect on the stock market index in case of Pakistan. This means that models are stable and in this case appropriate.

4.6.1 CUSUM Test



4.6.2 CUSUM of Squares Test



5 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This work is conducted to find whether budget deficit, some macroeconomic variables, and Crisis have any effect on stock price in Pakistan or not. To achieve this, the study uses annual data of all the variables included in the regression analysis from 1980 to 2018 and a dummy variable to show the effect of the crisis on Stock prices. An Auto-Regressive Distributed Lag (ARDL) bound testing technique is conducted in a way to find Co-integration and to find short-run dynamics this research study uses the Error Correction Model (ECM). The Stationarity of the data is seen in the Phillips-Perron unit root testing technique is used. The unit root tests indicate that no variable in the above study is integrated of order I (2). The bound test in this study confirms that the series and the estimated equation are Co-integrated. The Auto-Regressive Distributed Lag (ARDL) results propose an opposite long run moving behavior and significant relation b/w the equity prices & fiscal deficit which is also true for the short run. Results reveal that when the government is in deficit, then this deficit will negatively affect the stock prices and lowers the confidence of investors so the firms will not be able to get capital on terms that are favorable to them both in the long and short run.

The increase in fiscal deficit increases future taxes, dollar value and interest rates leading to diminishing profits of the corporates because of lower domestic and export revenues. The net sales go down which diminishes the net earnings and thus decreasing prices in the equity market. The fiscal deficit, taxes, inflation, and the crisis were found to have a negative and significant relationship with the sensitivity index of stock prices. The relationship of the unemployment rate was found negative but insignificant in the long & short run. The link to the money supply of Pakistan, foreign direct investment and exchange rate was found to have a positive and significant relationship with the sensitivity index of the Karachi/Pakistan Stock Exchange. The CUSM and CUSMSQ test results state that the policy when changes, regarding the explanatory variables of the stock price equation, will not cause major distortions in Pakistan.

5.2 Policy Recommendations

The implications of the study conducted this time are multifaceted. The results clearly show the negative effect of budget deficit on equity prices in Pakistan. It is need of the time that the government should adopt policies appropriate to improve (reduce) fiscal deficit. A stable governing body with policies stable enough can help in attracting domestic and foreign investors to participate in the economy of Pakistan. If the government takes notice of these variables, the capital market will develop resulting in the development of the financial sector of the country.

5.3 The Way Forward

There are several aspects and avenues on which future research can be conducted to further explore the issue. Some possible areas are:

- To analyses Fiscal deficit, macroeconomic variables and crisis effect on the bond market too along with the stock market in case of Pakistan
- This study can be extended in deferent aspects. An increase in the sample size across several countries can be analyzed to reach a substantive decision about the influence of macroeconomic variables on the stock market to see the trends across the globe as compared to trends prevailing in the case of Pakistan. Further, use more advanced empirical techniques which can allow us a more powerful analysis.

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