



## Impact of Fiscal and Monetary Policies on Stock Market Performance: An Empirical Study of Pakistan Stock Exchange

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**Abstract:** *The purpose of this study is to investigate the impact of fiscal and monetary policies on stock market performance along with the identification of moderating role of political stability in Pakistan. Data of Pakistan stock exchange for last 36 years (1981 to 2016) has been analyzed by applying multiple analytical methods. First, Stationary analysis has been performed through Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) unit root tests. Based on its findings, confirmation of long run relationship has been done through Johansen co-integration analysis. The study has employed ordinary least square method (OLS) of regression analysis to analyze the nature of relationship in long run. Afterwards Error correction model has been used for analyzing short run relationship and Causal relationship has been tested through granger casualty test. The findings of research indicate the existence of long run relationship between both policies and stock market performance, while short run relationship exists only between monetary policy measures and stock market performance. Research also reveals that the Government expenditures, budget deficit and money supply reflect significant positive impact, while tax revenue and interest rate depict significant negative impact on stock market capitalization in the long run. Further, political stability moderates only the relationship between interest rate and stock market capitalization, while other relationships are not moderated by political stability.*

**Keywords:** Stock market performance, fiscal policy, monetary policy, political stability

### Introduction

The development and stability of stock market affect economy as a whole. The roles that stock markets play in the economy are raising capital, mobilizing savings for investments, providing investment opportunities in a well governed and regulated environment, bringing companies and investors together and act as a barometer of economy. According to [Filis \(2010\)](#), stock market is a best gauge of future economic happenings. Considering the role that stock market plays in economic development and growth, its own growth and stability becomes crucial. Therefore, it is very important to look into the forces that drive the stock market performance. By identifying those factors and making strategies, stock market performance can be improved by consequently triggering economic growth. The stock market's performance may be influenced by external as well as internal factors ([Dragnić, 2014](#)). Among other factors, the performance of stock market is also affected by government policies including fiscal and monetary policy ([Asongu, 2012](#)).

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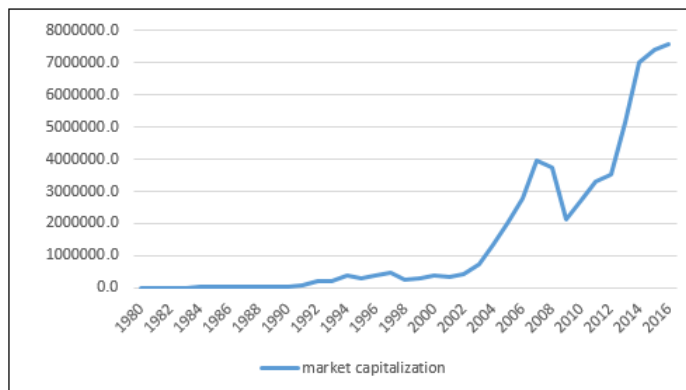
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Government uses these policies for regulating the economy. These policies also influence stock market for being an important part of financial sector, either directly or indirectly. Considering the influence that these government policies may have on stock market performance, there is a need to understand the dynamics of these policies and how these policies may affect the stock market performance.

The magnitude and nature of impact vary from economy to economy depending on specific dynamics of that economy. Before analyzing the impact of government policies including fiscal and monetary policy on stock market performance in Pakistan, specific dynamics of Pakistani market need to be understood along with fiscal and monetary policies as pursued by the government of Pakistan. Karachi stock exchange, Pakistan's first stock market was established in 1947. Only 5 companies were registered with KSE at that time. Later on, Lahore stock exchange and Islamabad stock exchange were established in 1974 and 1997 respectively. In 2016, all three exchanges were merged into one i.e. Pakistan stock exchange. Currently, exchange has 559 companies listed with market capitalization of USD 72.3 billion (PSX). The performance of Karachi stock exchange can be seen through stock market capitalization over the years in figure 1.

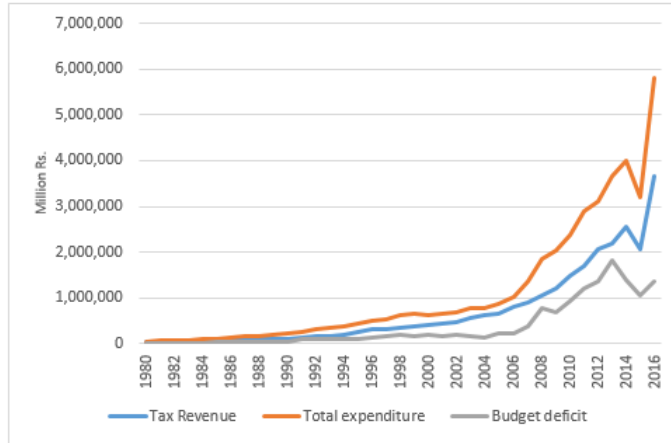
**Figure 1**  
Market capitalization



The stock market capitalization has been on an increase till 2008, when it shows decrease which may be attributed to various sanctions because of atomic tests and global financial crisis. But from 2009 onwards, market capitalization again started to increase.

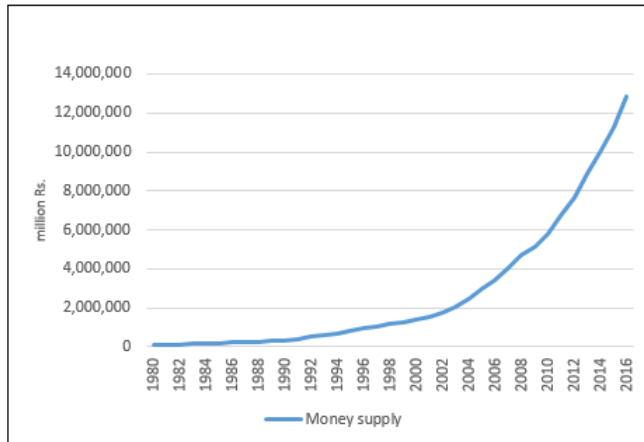
Pakistan's fiscal policy as enacted by the ministry of Finance includes all the gears used by government to control economy through adjustments in government revenue and expenditures. Figure 2 depicts fiscal policy stance of government of Pakistan over the years. Despite increasing trend in the government expenditures and tax revenue over the years, fiscal deficit has always been the character of the fiscal policy in Pakistan.

**Figure 2**  
Fiscal policy



In Pakistan, development and execution of monetary policy is the responsibility of state bank of Pakistan. SBP uses various instruments to control interest rate and money supply in economy with the aim of monetary stability. Pakistan’s monetary policy can be seen through figure 3 and 4. Money supply is depicting an increase, while interest rate is showing fluctuations over the observed period.

**Figure 3**  
Money supply



**Figure 4**  
Interest rate



The purpose of this study is to investigate the impact of fiscal and monetary policies on stock market performance along with identification of moderating role of political stability in the context of Pakistan. Thematically, study covers very important aspect of economics and finance i.e. stock market and government policies. Geographically, study spreads over whole stock market of Pakistan. Given the role of stock market in socio-economic development of country, it is necessary to academically investigate the possible influence of policy decisions on stock market performance. Further, the role that political stability plays in the performance of stock market need to be identified. The findings of such an investigation will help investors and policy makers for better decision making. If the impact of these policies is not researched, it may result in wrong decisions by investors and policy makers. The relationship between monetary policy actions and stock market performance have widely been studied across the globe including Pakistan. However, no research could be found that has attempted to explore influence of fiscal policy and combined impact of both fiscal and monetary policy on stock market performance in the context of Pakistan. Further, influence of political stability on relationship of govt. policies and market performance need to be analyzed, given the continuous changing political situation in Pakistan. This research attempts to fill the void identified.

The layout of the rest of paper is as follows. Introductory section is followed by the theoretical background along with empirical studies in the research area being explored. Third section explains the research methodology employed in the research, followed by fourth section of estimations and results of statistical tools applied on the data. The Final section consists of conclusion of the study and the policy implications derived from the study.

## Literature Review

Theoretical background and empirical studies related to the area of research have been explored for the development of theoretical framework and underpinning of empirical studies to provide the basis of conceptual framework and hypothesis formulation as follows:

### Theoretical Background

The effectiveness of fiscal and monetary policies in economy and determinants of stock market performance has always remained an area of interest for financial economists. Response of the stock market to variations in government policies has got its roots in the “theory of efficient market hypothesis” devised by Professor Eugene Fama. EMH states that asset pricing truly imitates available information. Thus, as per the theory, stock prices fully reflect all existing information including fiscal and monetary policy stances (Fama, 1995). Critics considered this belief among investors as a reason of financial crisis of late 2000s (Fox & Sklar, 2009; Nocera, 2009; Lowenstein, 2011).

The Laissez-faire economist gained popularity in 18th century. They denied the need to complicate business and economic issues through governmental interventions like legislations, policies and restrictions. In such a free economy, there is a little influence of the government policies on stock market performance and stock market performance is depiction of individual investors’ behavior only. However, laissez-faire is not without criticism. Generally, it is criticized for less protection of weaker segment of society. It was largely criticized by a John Maynard Keynes, a famous economist from Britain (Dostaler et al., 2007). He emphasized role of govt. policies in directing the economies. In government controlled economy, stock market is also influenced by government policies (Asongu, 2012).

Economic theories have diverse opinions on possible influence of govt. policies on performance of stock market in an economy. Some theorists argued that the government policy actions have no impact on the stock market performance, while others insisted on the existence of government policies’ effect on performance of the stock market. Former view is Ricardian equivalence proposition, which states that rational individuals is capable of anticipating tax burden, expected because of current and expected deficits, and thus fully utilize it in current decision making (Barro, 1974). So investors would not adjust their investments based on current policy statements, as they are aware of the future increase in taxes based on deficits (Davidson & Froyen, 1982).

Contrary to the Ricardian equivalence Hypothesis, Tobin (1969) and Blanchard (1981) like many claimed that government stances including fiscal and monetary policy affect market performance. General equilibrium approach to monetary theory was presented by Tobin (1969) to support a connection of real and financial sector and explained mechanism of impact of fiscal deficit and money progression on stock returns. Blanchard (1981) maintains that fiscal policy can be influenced by other macroeconomic circumstances. Therefore, all fiscal policy decision cannot be anticipated by the investors contrary to Ricardian proposition and may act as fiscal policy surprises that may influence stock market per-

formance. If at all fiscal policy actions can be predicted by investors, they can still affect stock market performance due to the judgment and application lag.

Monetarists and Keynesians have different opinions on the relative effectiveness of the two policies. Both monetarists and Keynesians agree on the role of aggregate demand in the business cycles but they disagree on the use of either fiscal policy actions or the monetary policy actions to control the aggregate demand and ultimately the economic activity. Keynesians favored government interventions through both fiscal and monetary policies, while monetarists supported only the role of monetary policy (Abel & Ben, 2005). The issue was largely settled in 1980s, when economists largely agreed on the role of central bank for steering the economy. But financial crisis of 2007-08 convinced many for the use of fiscal policy tools together with monetary policy to trigger economy (Henry & John, 2012).

## **Empirical Studies**

Empirical studies on the current area of investigation have been carried out around the world.

Wanjiru (2000) analyzed influence of monetary and fiscal policy actions on performance of Kenyan stock market based on time series data from 1990 - 2000. Growth rate of money and money supply are the monetary policy variables, while growth in budget deficit is fiscal policy variable. NSE-20 Share Index has been used to measure Nairobi stock exchange performance. The empirical results show that monetary policy positively influences stock market, while fiscal policy actions have not affected stock market.

Anderson (2003) proposed to examine financial markets performance as a result of monetary & fiscal policy decisions by comparing 47 countries, focusing on the year 1999. The researcher selected six dependent variables namely market capitalization, turnover, liquidity, private domestic credit, domestic savings and FDI. The independent variables are interest rate, CPI, corporate taxation, and exchange rate. Regression analysis has been performed on all models and results conclude that monetary as well as fiscal policy influence stock markets' performance.

Laopodis (2009) explored the dynamic linkages of fiscal and monetary policy with stock market of United States over the period 1960 - 2004 based. Results suggest that budget deficit affects stock market and stock markets are affected more by changes in taxation as compared to the changes in government spending. An increase in interest rate lowers stock returns, which lowers profits and tax revenue. Results also indicate a positive response to money supply, while taxes revenues are more influential than government spending.

Al-Shiab (2008) investigated influence of monetary and fiscal policies on Amman stock exchange by VAR method based on 20 years annual data from 1978 to 2004. Stock market capitalization, money supply and govt. expenditures have been used to measure stock market performance, monetary and fiscal policy, respectively. Analysis showed that market capitalization is influenced more by money supply as compared to govt. expenditures, although both affect market capitalization positively.

Hsing (2011) analyzed influence of some macroeconomic factors on stock market in

South Africa based on quarterly data over the period 1980 - 2010. Researcher has concluded that GDP, money supply and United States stock market affect stock market in South Africa positively. While, budget deficit, interest rate, exchange rate, CPI, and United States T. bonds return affect stock market index negatively.

[Geraldo \(2011\)](#) explored the impact of fiscal and monetary policies on stock market of Ghana. GSE index has been used as dependent variable. Government expenditure as fiscal policy indicator and lending rate as monetary policy indicator are independent variables. Empirical evidence shows that fiscal policy changes significantly and hence affecting stock market of Ghana, but stock market performance does not affect fiscal policy decisions.

[Antwi, Zhao, and Mills \(2013\)](#) explored efficiency of stock market in Ghana towards fiscal and monetary policy decisions based on data from 1990 to 2010. Focus variables of study are Government expenditure, lending rate and stock index. While, CPI and surplus return are control variables. Analysis indicates that stock market performance is significantly influenced by fiscal policy actions. Similarly, lending rate as monetary policy action show negative relationship with stock market performance.

[Chatziantoniou, Duffy, and Filis \(2013\)](#) explored dynamic association between fiscal and monetary policy actions and stock market. Countries used for current study are Germany, UK and US. Researcher has used ARDL model to analyze data for the period 1991 - 2010. Variables considered in the model are GDP, CPI, government expenditures, money supply, fund rate and equity market returns. Analysis concludes that stock market is influenced both directly and indirectly by fiscal and monetary policy stance.

[Cheng and Sun \(2013\)](#) attempted to measure the effect of fiscal and monetary policy actions on equity markets of U.S., Sweden and China. Aim of researchers was to find out the existence and nature of stock market response towards policy actions and to make comparison of results in case of three countries during the financial crisis of 2007-2009. The results show that stock markets of all countries responded differently to policy adjustments during financial crisis.

[Handoyo, Jusoh, and Ziadi \(2013\)](#) analyzed effect of monetary and fiscal policy on capital market of Indonesia by using both composite and sector indices. Variables used are GDP, government Debt, CPI, interest rate, exchange rate, equity prices in composite and sector indices and oil price. Researcher has determined correlation between monetary policy and stock market as negative, also different sectors depicted different level of response. While, in case of fiscal policy actions and stock market, researchers found homogeneous positive relationship in all sectors and in composite index as well.

[Hsing \(2013\)](#) examined the relationship between fiscal and monetary policy actions and stock market in Poland for the period 1999 – 2012. Findings show that market index in Poland is not influenced by fiscal deficits or government debt, but it is negatively affected by interest rate and positively by money supply. Moreover, stock market depicted a positive association with economic production and markets in Germany and US and negative association with exchange rate and CPI.

[Gowriah, Seetanah, John, and Keshav \(2014\)](#) analyzed impact of monetary and fiscal policy actions on share market in Mauritius for period 1991-2011 by using federal rate, money supply and CPI as measures of monetary policy and budget deficit as measure

of fiscal policy. Findings indicate negative long run impact of interest rate and inflation, while money supply shows a short run positive association with SEMDEX. Short run and long run association was found for deficit and SEMDEX.

Shahbazi, Rezaei, and Abbasi (2014) scrutinized empirical association between fiscal and monetary policies and equity returns of Iranian market based on data for the period 1999-2008. Variables used are tax to GDP ratio, govt. expenditure to GDP ratio, Interest rate, Money supply and Inflation. Analysis shows that stock return is affected by the government expenditures and taxes. Further, lags of money supply have no effect on stock return, while policy rate affects stock return negatively.

Bhatti, Ziaei, and Rehman (2015) explored the impact of monetary and fiscal policy actions on stock market in Malaysia. Variables have been selected through four straits namely global, property, fiscal and monetary policy which are oil and gold price, housing price, govt. expenditures and interest rate and exchange rate. The ARDL results conclude that stock returns are positively influenced by oil prices, while gold is used to minimize the risk associated with stocks. Further, study could not find an impact of govt. spending and policy rate on stock returns.

Hafezi and Shahandeh (2015) explored impact of monetary and fiscal policies on Tehran stock market for period 2006-2012. The impact of money supply and exchange rate as monetary policy tools and government expenditures as fiscal policy tool on stock market was empirically analyzed. Analysis show that money supply negatively impacts stock market index. Further, govt. expenditures have significant influence on stock market index and exchange rate negatively impacts stock market index.

Namini and Nasab (2015) investigated the impact of monetary and fiscal policy on Iran's stock market. GDP, oil revenues, CPI, government expenditure, money supply, and stock exchange index have been used. Data was employed from 1991 to 2010 and Impulse response and variance decomposition model were employed for analysis. Results indicate that monetary and fiscal policies positively affect stock market directly or indirectly.

Mbanga and Darrat (2016) empirically explored the impact of fiscal and monetary policy on US equity revenues both in long run and short run for duration of 1960 to 2010. Researcher measured fiscal policy by federal budget deficit, monetary policy by federal rate and stock returns by S&P 500 index. Results of analysis confirms long run co-integration of equity prices with fiscal deficit, interest rate and industrial production. Monetary base and inflation show no effect on stock return in long run.

Barbić and Čondić-Jurkić (2017) investigated impact of macroeconomic factors on stock returns of EU countries based on data from 2000 to 2012. The association was explored between equity returns and fiscal and macroeconomic variables like government debt, government expenditures, CPI, money supply, interest rate, foreign exchange reserve and foreign direct investments. Empirical analysis found correlation between CPI, interest rate and equity market returns for developed EU stock market. While, emerging markets prove to be more vulnerable to fiscal developments.

Thanh, Thuy, Anh, Do Thi, and Truong (2017) evaluated impact of monetary and fiscal policy decisions on Vietnamese stock market. Analysis has been done using VECM and monthly data of period 2002 to 2015. Variables used are oil price, US stock index, Money supply, interest rate, fiscal expense, fiscal revenue, CPI, fiscal deficit and Vietnam stock

index. Findings confirmed the influence of monetary and fiscal policy actions on equity returns of Vietnamese stock market.

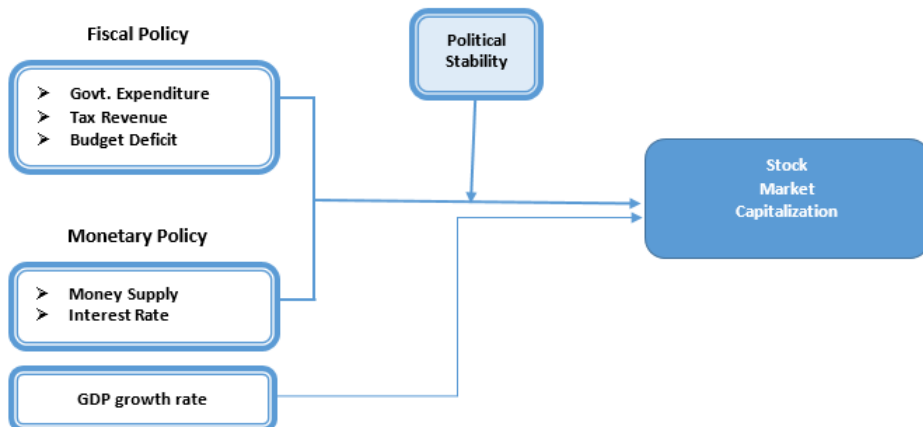
Hu, Han, and Zhang (2018) explored the impact of monetary and fiscal policy shocks on the stock market in China. The researchers have also analyzed the interaction of fiscal and monetary policies. The findings of the research show a negative synchronous relationship between fiscal policy and stock market performance in China, while the impact of monetary policy was found to be dependent on the fiscal policy.

In the context of Pakistan, no research work could be found that has investigated impact of fiscal policy on stock market performance. However, some studies conducted in the context of Pakistan aimed at analyzing the impact of monetary policy on stock market performance. Hasan and Javed (2009) investigated long run association of stock prices with monetary policy. Ahmad, Rehman, and Raouf (2010) analyzed the impact of interest and exchange rate on equity revenues in Pakistan. Qayyum and Anwar (2011) also investigated the connection between monetary policy and stock market in Pakistan. Ali and Javaid (2014) investigated the stock return of the manufacturing sector in Pakistan stock market with respect to shocks in monetary policy. The findings of these research works show that monetary policy decisions significantly affect the stock market of Pakistan. Knowing the effect of monetary policy based on existing studies in Pakistan, there is a need to explore the influence of fiscal policy and combined impact of both fiscal and monetary policy on stock market performance in the context of Pakistan. Further, influence of political stability on relationship of govt. policies and market performance need to be analyzed, given the continuous changing political situation in Pakistan.

### Conceptual Framework

Based on theoretical background and literature underpinning, below is the given conceptual framework has been developed which includes stock market capitalization as depe-

Figure 5  
Conceptual framework



-ndent variable and government expenditures, tax revenue, budget deficit, Interest rate, money supply, GDP growth rate as Independent variable with Political stability as moderating variable.

## Methodology

The research covers the stock market of Pakistan and behavior of Pakistan stock exchange in response to changes in fiscal and monetary policies of the country. It is a longitudinal study of time series type and explanatory by nature. Annual data of 36 years from 1981 to 2016 has been used. Data has been collected through reliable and authentic secondary data sources which include Pakistan stock exchange data portal, SBP data portal, economic survey of Pakistan, fiscal policy statements, Polity IV index and World Bank data portal. Stock market performance has been measured by stock market capitalization, as used by many researchers like [Onyeisi and Anoke \(2016\)](#) [Owederu, Oppong, and Asoaming \(2016\)](#) and [Bayar \(2016\)](#). Monetary policy has been measured by interest rate and money supply as used by [Bhatti et al. \(2015\)](#), [Haitsma, Unalmis, and de Haan \(2016\)](#) and [Barbić and Čondić-Jurkić \(2017\)](#). Interest rate is weighted average rate of return on advances as proxy of policy rate of the state bank of Pakistan and money supply is M2 which includes currency and near money. Fiscal policy has been measured by government expenditures, tax revenue and budget deficit as used by [Foresti and Napolitano \(2016\)](#), [Thanh et al. \(2017\)](#) and [Mumtaz, Theodoridis, et al. \(2017\)](#). Further, for moderating variable of political stability, Polity IV index has been used, as being widely used in political sciences research. Polity IV has implied information on the status of democracy in country and this information is developed on the basis of country's election system for openness and competitiveness, specifications of political involvement and check and balance on the ultimate deciding body. A polity score has been determined by the index for every country for each year. This score was originated by Ted Robert Gurr in 1960s and is now carried on by Gurr's student, Monty G. Marshall (Polity IV).

For analysis, multiple econometric techniques have been applied. Augmented Dickey-Fuller and Philips-Parron unit root tests have been employed to analyze stationary of data series. Johansen co-integration has been used to evaluate existence of long-run association among variables. To analyze nature and extent of relationship, Ordinary least square method of regression analysis has been employed based on the study of [Frazier, Tix, and Barron \(2004\)](#). First, predictive power of independent variables for dependent variable has been analyzed using OLS method of regression analysis. Later on, interacting variables of moderating variable and independent variables have been considered in model to analyze moderating impact of political stability on the relationship of variables. To get interaction terms, first all the variables are standardized. Standardization means that average of each variable is subtracted from all values of that variable and resulting values are divided by standard deviation (Baron et al., 1986). After centering of variables, products of centered moderating variable and independent variables has been calculated individually, thus getting interaction terms. Strength of models has been evaluated using CUSUM and CUSUMQ techniques. Error correction model has been used for short

run co-integration analysis. Further, causal relationship has been analyzed using Granger causality test.

In first step of Hierarchical regression, the following empirical model has been developed:

$$LMCAP = \alpha + \beta_1(EXPG) + \beta_2(TAXG) + \beta_3(DEF G) + \beta_4(INTR) + \beta_5(LMS) + \beta_6(GDPG) + \epsilon \quad (1)$$

Where, LMCAP is log of market capitalization. EXPG, TAXG and DEF G represents government expenditures, tax revenue and budget deficit as % of GDP, INTR is interest rate, LMS is log of money and GDPG is GDP growth rate.

In second step of Hierarchical regression, the following empirical model has been developed:

$$LMCAP = \alpha + \beta_1(EXPG) + \beta_2(TAXG) + \beta_3(DEF G) + \beta_4(INTR) + \beta_5(LMS) + \beta_6(GDPG) + \beta_7(PS.EXPG) + \beta_8(PS.TAXG) + \beta_9(PS.DEFG) + \beta_{10}(PS.INTR) + \beta_{11}(PS.LMS) + \epsilon \quad (2)$$

Whereas, PS.EXPG, PS.TAXG, PS.DEFG, PS.INTR, PS.LMS are interacting variables of political stability with government expenditure, tax revenue, budget deficit, interest rate and money supply respectively.

## Data Analysis

Following are the findings of the techniques applied and their interpretation.

### Stationary Analysis

To find out whether data series are stationary or non-stationary, unit root test has been performed using Augmented Dickey fuller method and Philips-Perron method. Null hypothesis of unit root test is that data series is not stationary. Null hypothesis is rejected if Prob. value is less than 0.1 or t-stats calculated is less than target value at 10% significance level i.e., data for variable is stationary. Stationarity has been checked for all variables at level and first difference including the interacting variables of political stability. Test statistics are given in table 1 and 2 respectively.

The test statistics depict failure to reject null hypothesis for all variables at level i.e., data series are non-stationary at level as significance value for all variables are higher than 0.1 and t-stats calculated are more than critical values. Further, tests results show the rejection of null hypothesis at first difference for all variables. Thus, it can be deduced that variables data show non-stationarity at level and stationarity at first difference. Findings

of unit root test for stationarity of variables allow usage of variables data at level I(0) in regression analysis.

**Table 1**  
Stationarity Test Results

Variables	ADF test statistics							
	I(0)				I(1)			
	t-stats		Prob. Value		t-stats		Prob. Value	
	C	C and T	C	C and T	C	C and T	C	C and T
LMCAP	-1.3174	-2.3636	0.6105	0.3910	-5.6158	-5.6246	0.0000	0.0003
EXPG	-1.2745	-2.1384	0.6303	0.5074	-6.4969	-6.4265	0.0000	0.0000
TAXG	-1.5184	-1.5558	0.5127	0.7899	-6.4065	-6.3771	0.0000	0.0000
DEFG	-2.3813	-2.8407	0.1541	0.1932	-7.7984	-7.7578	0.0000	0.0000
INTR	-1.7795	-1.6900	0.3841	0.7344	-4.9820	-5.0252	0.0003	0.0014
LMS	-0.5357	-2.7860	0.8721	0.2118	-4.3753	-4.3680	0.0015	0.0075
GDPG	-2.1811	-2.4942	0.2166	0.3286	-8.4836	-8.4016	0.0000	0.0000
EXPG.PS	-2.3185	-2.2616	0.1720	0.4427	-6.5935	-6.5593	0.0000	0.0000
TAXG.PS	-2.3371	-2.6711	0.1667	0.2538	-6.5617	-6.4895	0.0000	0.0000
DEFG.PS	-2.2166	-3.1101	0.2043	0.1197	-8.2653	-8.1674	0.0000	0.0000
INTR.PS	-1.9881	-2.7911	0.2901	0.2098	-5.7320	-5.6802	0.0000	0.0003
LMS.PS	-1.9782	-1.7644	0.2946	0.7003	-4.9580	-5.6844	0.0003	0.0002

Note: The critical values for ADF and PP tests with constant (C) and with constant and trend (C&T) at 1%, 5% and 10% level of significance are -3.711, -2.981, -2.629 and -4.394, -3.612, -3.243 respectively.

**Table 2**  
Stationarity Test Results

Variables	Philips Perron statistics							
	I(0)				I(1)			
	t-stats		Prob. Value		t-stats		Prob. Value	
	C	C and T	C	C and T	C	C and T	C	C and T
LMCAP	-1.3182	-2.4478	0.6101	0.3503	-5.6151	-5.6244	0.0000	0.0003
EXPG	-1.2196	-2.1063	0.6548	0.5245	-6.4930	-6.4223	0.0000	0.0000
TAXG	-1.4699	-1.4913	0.5368	0.8135	-6.4082	-6.3784	0.0000	0.0000
DEFG	-2.2492	-2.7370	0.1935	0.2289	-7.7884	-7.7421	0.0000	0.0000
INTR	-1.9957	-1.8943	0.2873	0.6361	-4.9907	-5.0316	0.0003	0.0014
LMS	-0.4961	-2.1315	0.8802	0.5111	-4.3976	-4.3975	0.0014	0.0070
GDPG	2.2024	1.9559	0.9999	1.0000	-8.6302	-8.5559	0.0000	0.0000
EXPG.PS	-2.3170	-2.2493	0.1725	0.4491	-6.5927	-6.5620	0.0000	0.0000
TAXG.PS	-2.5955	-2.4440	0.1034	0.3521	-6.5726	-6.5006	0.0000	0.0000
DEFG.PS	-2.2492	-3.0287	0.1935	0.1392	-8.2713	-8.1852	0.0000	0.0000
INTR.PS	-2.2315	-2.9602	0.1728	0.1573	-5.7319	-5.6801	0.0000	0.0003
LMS.PS	-2.0136	-1.7631	0.2799	0.7009	-4.9547	-5.6841	0.0003	0.0002

Note: The critical values for ADF and PP tests with constant (C) and with constant and trend (C&T) at 1%, 5% and 10% level of significance are -3.711, -2.981, -2.629 and -4.394, -3.612, -3.243 respectively.

Further, results suggest that data series combined may depict long run integration. To implicitly verify the existence of long run integration of variables, next logical stage is co-integration analysis.

## Co-integration Analysis

For analyzing the presence of long-run co-integration between the variables, Johansen and Juselius co-integration method has been employed, as results of stationary analysis fulfills condition of JJ co-integration which requires all variables to be non-stationary at level  $I(0)$ , while stationary at first difference  $I(1)$ . Tests employed for JJ co-integration method are Trace statistics and Maximum Eigen. Null hypothesis of JJ-co-integration analysis is that there does not exist a co-integration among variables in long-run. To test hypothesis, Trace statistics and Max-Eigen statistics are compared with relevant critical values at 10% significance level and if calculated values are greater than these values, null hypothesis is rejected. Table 3 depicts test stats along with critical values.

**Table 3**  
JJ co-integration Test Results

Hypothesized No. of CE (s)	Trace statistics	10% critical value	Prob.	Max-Eigen Statistics	10% critical value	Prob.
None	261.6969	144.873	0.000	93.514	47.5652	0.000
At most 1	168.1829	112.6525	0.000	53.3964	41.5963	0.0042
At most 2	114.7864	84.3781	0.0002	40.5483	35.5812	0.0274

The results of co-integration analysis reject null hypothesis of co-integration at 10% significance level. Thus, long run co-integration is present between the variables. JJ co-integration analysis has confirmed existence of long run relationship between variables, but nature of relationship still remains to be identified. For this, Ordinary least square method of regression analysis has been employed in Hierarchical regression method.

## Regression Analysis

The study has employed Hierarchical regression method in order to analyze impact of independent variables on dependent variable given the moderator based on the study of [Frazier et al. \(2004\)](#). Ordinary least square method (OLS) of regression analysis has been employed in both steps to explore the nature of relationship and to quantify the impact in the presence of moderating variable.

## Regression Analysis without Moderator Effect

In first step of hierarchical regression analysis, ordinary least square method of regression analysis has been performed with the aim to ascertain the predictive powers of independent variables for dependent variable. Table 4 depicts results of analysis along with VIF, Durbin-Watson and serial correlation LM test statistics.

Results depict a significant relationship between dependent and independent variable at 10% significance level. Government expenditure, budget deficit, money supply and GDPG have significant positive impact, whereas tax revenue and interest rate has significant negative impact on stock market capitalization. Value of adjusted r-squared shows that 97.92% of the deviation from mean is captured by regression model i.e., model is

strong fit in predicting association between variables. F-statistics depict significant combined impact of independent variables on dependent variable. VIF statistics for all regressors are less than 10 which eliminate presence of severe multi-collinearity among independent variables.

**Table 4**  
OLS and VIF statistics (without moderator)

Variables	Coefficients	t-statistics	Prob. value	VIF
C	-11.8959	-7.4223	0.000	-
EXPG	0.2457	3.5269	0.0014	8.4138
TAXG	-0.1611	-2.0057	0.0543	7.7815
DEFG	0.3312	3.7881	0.0007	7.8152
INTR	-0.0982	-3.0779	0.0045	1.5151
LMS	1.5525	24.2082	0.000	3.2376
GDPG	0.0759	2.283	0.0299	1.5805
<b>R-square</b>	<b>0.9828</b>			
<b>Adj. R2</b>	<b>0.9792</b>			
<b>F-statistics</b>	<b>276.7846</b>			
<b>Prob. value</b>	<b>0</b>			
<b>DW statistics</b>	<b>1.5025</b>			
Serial correlation LM test				
<b>F-statistics</b>	<b>1.7241</b>			
<b>Prob. value</b>	<b>0.1998</b>			

DW statistics and serial correlation LM test depicted auto-correlation, which has been removed by including variable of GDG in model. Thus, predictive power of independent variables for dependent variable has been confirmed.

### Model Stability Analysis (without Moderator Effect)

The model stability over the sample period has been analyzed through cumulative sum and cumulative sum of squares. The model that shows deviation of more than 5% is considered an unstable model. Figure 6 is the result of CUSUM and CUSMQ tests.

Results of both CUSUM and CUSUMQ tests depict that model statistics are within the interval bands i.e., model to analyze the predictive powers of independent variables is stable.

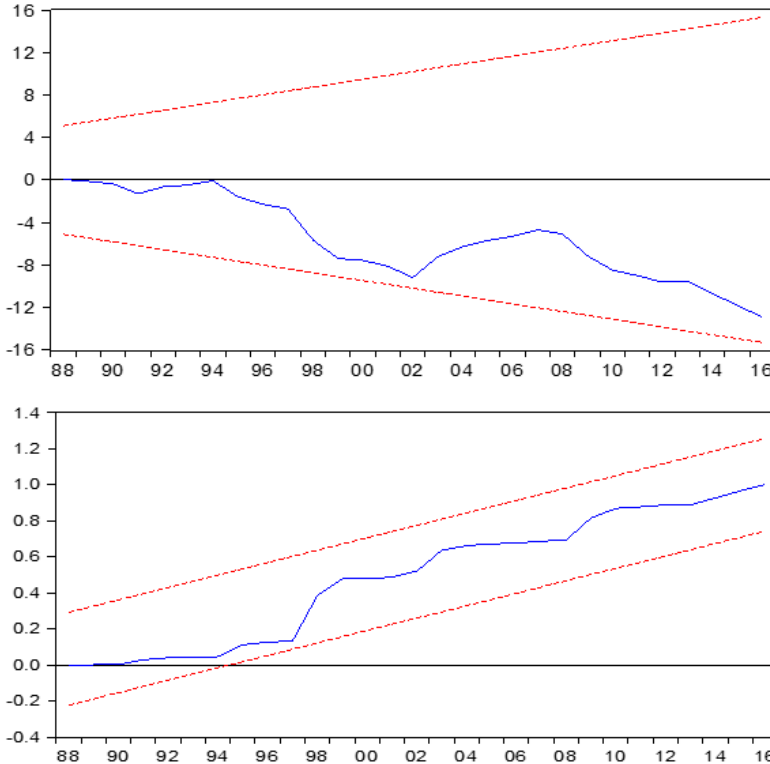
### Regression Analysis with Moderator Effect

In the second step of hierarchical regression analysis, ordinary least square method of regression analysis has been performed after including the interacting variables of moderating variable and independent variables in previous model. The significance of each interaction term confirms the existence of moderation effect of political stability with respective independent variable. Further, it is confirmed by the change in the coefficients of independent variables (Namazi & Namazi, 2016; MacKinnon, 2011). Table 5 depicts results of regression analysis applied after inclusion of interaction terms in model.

Results depict that moderating variable of political stability affects only the relationship of interest rate and market capitalization, while relationship between other variables

of government expenditure, tax revenue, budget deficit, money supply and market capitalization remain unaffected by political stability. Relationship between interest rate and market capitalization has been enhanced by moderating variable of political stability, as coefficient of interest rate has increased as compared to previous model. Further, adjusted R-square has improved, which shows increase in predictive power of the model.

**Figure 6**  
Plot of CUSUM and CUSUMQ tests



VIF statistics for all regressors are less than 10 which eliminate the presence of severe multi-colinearity among variables. DW statistics and serial correlation LM test have not depicted auto-correlation in the model.

**Model Stability Analysis (with Moderator Effect)**

The model stability, over the sample period, after inclusion of interacting variables has been analyzed through CUSUM and CUSUMQ techniques. Figure 7 is the result of CUSUM and CUSUMQ tests.

**Table 5**  
OLS and VIF statistics (with moderator effect)

Variables	Coefficients	t-statistics	Prob. value	VIF
C	-10.3042	-5.5789	0.000	-
EXPG	0.1962	2.5818	0.0164	5.7109
TAXG	-0.1624	-1.8261	0.0803	1.202
DEFG	0.2383	2.4784	0.0206	1.0992
INTR	-0.0668	-2.0268	0.0539	1.9007
LMS	1.5118	21.1742	0.000	4.7116
GDPG	0.0577	1.8027	0.084	1.7206
EXPG.PS	-0.1429	-0.4898	0.6287	3.6521
TAXG.PS	0.1644	0.8327	0.4132	4.4614
DEFG.PS	0.022	0.1221	0.9038	1.1094
INTR.PS	0.1169	1.7346	0.0956	1.7066
LMS.PS	-0.0834	-0.6746	0.5063	6.0613
<b>R-square</b>	<b>0.9879</b>			
<b>Adj. R2</b>	<b>0.9823</b>			
<b>F-statistics</b>	<b>178.1752</b>			
<b>Prob. value</b>	<b>0</b>			
<b>DW statistics</b>	<b>1.7668</b>			
Serial correlation LM test				
<b>F-statistics</b>	<b>0.4914</b>			
<b>Prob. value</b>	<b>0.4903</b>			

**Figure 7**

Plot of CUSUM and CUSMQ tests

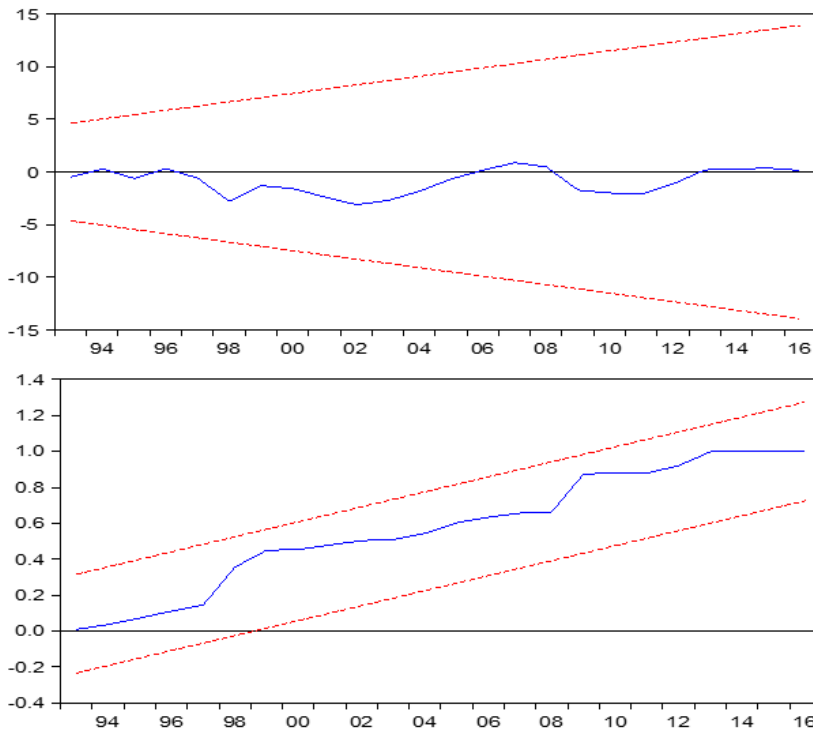


Figure 7 is the result of CUSUM and CUSMQ tests. Results of CUSUM and CUSUMQ

tests depict that the model is stable.

## Error Correction Model

The presence of short run relationship between variables has been analyzed through Error correction model. To analyze short run co-integration, [Hendry \(1980\)](#) approach has been used that moves from general to specific and only the model that fits best is reported. The error correction model not only shows presence of short run relationship of variables, but also the speed with which model returns to equilibrium in case of a short run jerk in model.

The short run coefficients have been estimated using the following model:

$$\Delta(LMCap)t = \alpha + \beta_1\epsilon\Delta(LMCAp t - 1) + \beta_2\epsilon\Delta(EXPG)t + \beta_3\epsilon\Delta(TAXG)t + \beta_4\epsilon\Delta(DEF G)t + \beta_5\epsilon\Delta(INTR)t + \beta_6\epsilon\Delta(LMS)t + \beta_7\epsilon\Delta(GDPG)t + \epsilon(t - 1) + \epsilon$$

The best fit short run model of variables has been shown in table 6.

**Table 6**  
Error correction model statistics

Variables	Coefficients	t-statistics	Prob. value
C	-0.4519	-2.5034	0.0192
$\Delta(LMCAp(-1))$	0.0995	0.5838	0.5646
$\Delta(EXPG)$	0.073	1.1751	0.251
$\Delta(TAXG)$	-0.0832	-1.0985	0.2824
$\Delta(DEF G)$	0.1798	2.8623	0.2584
$\Delta(INTR)$	-0.0839	-2.3597	0.0264
$\Delta(LMS)$	4.7109	3.414	0.0022
$\Delta(GDPG)$	0.0436	2.1534	0.0411
ECT (-1)	-0.7682	-3.8705	0.0007
<b>R-square</b>	<b>0.6407</b>		
<b>Adj. R2</b>	<b>0.5257</b>		
<b>F-statistics</b>	<b>5.5736</b>		
<b>Prob. value</b>	<b>0.0004</b>		

Statistics show a significant short run association of stock market capitalization with interest rate and money supply. Further, money supply shows significant positive impact, while Interest rate shows significant negative effect on stock market capitalization in short run. The coefficient of lagged error correction term is -ve and significant, which shows that model quickly returns to the equilibrium in case of a short run deviation i.e., 76.82% of disturbance from equilibrium is corrected in same year. Thus, error correction model confirmed the existence of short term influence of monetary policy measures on stock market performance, while market performance remains unaffected by fiscal policy measures in short-run.

## Causality Analysis

The causality between variables of the study has been analyzed by granger causality test. As per Jones' (1989) criteria for selection of lag, Ad hoc selection method is considered

more appropriate than statistical methods to find optimal lag value. Thus, for analysis of causal relationship between the variables, lag “1” has been used in Granger causality test. The test statistics at lag “1” are mentioned in table 7.

**Table 7**  
Granger Causality test statistics

Null Hypothesis	F-statistics	Prob. value
EXPG does not granger cause LMCAP	0.743	0.4845
LMCAP does not granger cause EXPG	1.5699	0.2252
TAXG does not granger cause LMCAP	1.1358	0.335
LMCAP does not granger cause TAXG	0.5693	0.5721
DEFG does not granger cause LMCAP	0.5382	0.5895
LMCAP does not granger cause DEFG	0.987	0.3848
INTR does not granger cause LMCAP	4.1276	0.0265
LMCAP does not granger cause INTR	0.0029	0.9971
LMS does not granger cause LMCAP	4.6651	0.0175
LMCAP does not granger cause LMS	1.8305	0.1784
GDPG does not granger cause LMCAP	3.0769	0.089
LMCAP does not granger cause GDPG	0.0904	0.7656

The statistics of test at lag “1” depict uni-directional causality from interest rate, money supply and GDP growth rate towards market capitalization at 10% level of significance. Thus, a uni-directional causal relationship exists between monetary policy and market capitalization. Further, analysis results found no causality between fiscal policy and stock market capitalization.

## Conclusion, and Way Forward

The focus of current study has been to investigate impact of fiscal and monetary policy decisions on stock market performance along with the identification of moderating role of political stability in Pakistan. For this, government expenditure, tax revenue and budget deficit have been identified as fiscal policy measures and interest rate and money supply as monetary policy measures, and impact of both policies on stock market performance has been analyzed using robust econometric techniques on time series data of Pakistan for the period 1981 to 2016. Multiple econometric techniques have been applied. Results of unit root test found that variables data show non-stationarity at level and stationarity at first difference. Findings of co-integration analysis confirm the presence of long run co-integration between variables of study. To analyze the nature of relationship, Ordinary least square method of Hierarchical regression analysis has been employed. The results of first step of hierarchical regression analysis found that all variables of fiscal and monetary policy significantly affect stock market performance. Government expenditures, budget deficit, money supply and GDP growth rate depict significant positive impact, while tax revenue and interest rate depict significant negative impact on stock market capitalization. Second step of hierarchical regression analysis found that political stability moderates only the relationship of interest rate and market capitalization. Other relationships are not moderated by political stability. Presence of short run co-integration between monetary policy measures and market performance was confirmed by error correction

model, but model could not found short run co-integration between fiscal policy measures and stock market capitalization. Further, granger causality test depict uni-directional causality of monetary policy measures towards stock market capitalization at lag "1".

The current study has contributed to existing literature by focusing on unresolved research area in the context of Pakistan. On the basis of finding of current study, there are few implications and recommendations for investors and policy makers. While making investment decisions, investors should keep an eye on government policies including fiscal and monetary policy and recognize possible impact of changes in these policies on stock market performance and ultimately their returns. Investment decision should not be made solely on the basis of company and stock market performance, as it may result in wrong decision making. Any changes in the policies must be observed and their impact must be understood. Moreover, along with current policy stances of the government, previous policy stances should be observed, as monetary policy measures also impacts the stock market performance with lagged time. Further, the policy makers must synchronize their policies with stock market performance, as changes in policies affect the stock market performance and ultimately the economy. Stock market acts a barometer of the economy, therefore to depict a better image of the economic performance, it is necessary to design the policies in the better interest of the stock market. Further, findings of current study direct that monetary policy tool of interest rate can be more effectively used to influence stock market performance in period of political stability, as political stability enhances the association between interest rate and stock market performance. The research findings open a new way of future research. The behavioral aspect of investors associated with the impact of government policies on stock market performance need to be studied. Further, future research may include other moderating variables which may affect the relationship between policies and stock market performance.

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