Taxation, Fiscal Deficit and Inflation in Pakistan

Ghulam Rasool Madni [1]

Fiscal policy has more controversial debate regarding its effectiveness on different macroeconomic activities of an economy. Taxation and government expenditure are two main instruments of fiscal policy. This paper is aimed to analyze and update the effects of different instruments of fiscal policy on inflation in Pakistan economy. The data time span for this study is 1979-2013. The impact of fiscal policy on inflation is analyzed by utilizing the Bounds testing procedure and ARDL approach of co-integration which is a better estimation technique for small sample size. It is found that investment negatively and significantly affect the inflation rate. The outcomes of the study show that both types of taxes (direct and indirect) are causing to increase the inflation level while fiscal deficit is also one of the reasons to increase the inflation in the country. The study proposed that government should decrease the level of expenditure to reduce the level of fiscal deficit and investment have to be promoted to decrease the inflation in the country. Furthermore, it is also suggested to decrease the level of taxation for controlling inflation.

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Introduction
Fiscal policy is comprised of decisions of government spending and taxation. There is a considerable debate over the efficacy of fiscal policy on macroeconomic activities, especially in developing countries. On the theoretical front, however, there are two main strands of literature regarding the role of fiscal policy which are given below.
"A common criticism of this stress on the budget deficit is that the data rarely shows a strong positive association between the size of the budget deficit and the inflation rate." (Blanchard and Fischer, 1989, p.513)
"A well-established theory in macroeconomics is that fiscally dominant governments running persistent deficits have sooner or later to finance those deficits with money creation, thus producing inflation." (Sargent and Wallace, 1981)
"Inflation is always and everywhere is a monetary phenomenon" is more controversial postulation. Many studies argue that inflation is not solely due to seignorage but it is also controlled by the fiscal authority. This argument is known as the "fiscal theory of price level (FTPL)". The FPTL provides a new understanding regarding the role of fiscal policy in determining the inflation. The fiscal theory of price level describes that price level must assure that the real value of nominal government debt equals the present value of expected future fiscal surpluses, assuring intertemporal government budget balance. There are two versions of FTPL: weak form FTPL and strong form FTPL. According to weak form FTPL, inflation is indeed a monetary phenomenon but that money growth is dictated by fiscal authority. On the other side, strong form FTPL argues that even if money growth is unchanged, fiscal policy independently affects the price level and

inflation rate. Upon basis of this theory, fiscal policy or fiscal authority is involved for deviation of inflation.

Whenever government expenditures exceed revenues, it has to face budget deficit. The impact of budget deficit is based upon that how it is financed. It can be financed by borrowing or printing new money. If budget deficit is financed by seignorage then it causes inflation. On the other hand, borrowing may be domestically and externally. Due to domestic borrowing, government increases its demand for available credit and interest rate goes up that causes a fall in private investment so budget deficit "crowd out" productive private investment while external borrowing leads to current deficit and may cause an external debt problem.

There is widely disagreement regarding the efficacy of fiscal policy for inflation. Alesina and Drazen (1991), Cukierman, Edward and Tabellini (1992), and Calvo and Vegh (1999) recognized that in developing countries less efficient tax collection, political instability and more limited access to external borrowing tend to increase the inflation rate. King and Plosser (1985) found no relationship between fiscal deficits and inflation. Haan and Zelhort (1990) analyzed that seignorage is weakly related to budget deficits except during very high inflation episodes. Fisher, Sahay and Vegh (2002) used the data of 94 developing and developed economies and concluded that fiscal deficits are main drivers of high inflation. In this paper, it will be analyzed that whether instruments of fiscal policy like fiscal deficit and categories of taxes affect the inflation or not and what type of measures can prevent inflation in Pakistan.

Over the last two decades, the impact of fiscal policy has generated large volume of both theoretical and empirical literature. However, most of these studies paid more attention to developed economies and the inclusion of developing countries in case of cross-country studies. This paper is aimed to contribute the literature by examining and updating the effects of instruments of fiscal policy on inflation for a

developing economy, Pakistan covering the period from 1979-2013. It is also intended to make policy recommendations in the context of derived results.

Historical Views of Instruments of Fiscal Policy for Pakistan
Tax Revenue

When government is ambitious to increase the social welfare of people by increasing the developmental expenditures, then it has to increase the tax to GDP ratio. But unfortunately, this situation is inadequate with respect to Pakistan. In 1980's, tax to GDP ratio was 13.7% and it was declined to 13.4% in 1990's. This downward trend was continued and it reached to 10.6% of GDP in 2000's. To finance the expenditures, government relied upon the loans. In 2001, tax reforms were introduced to increase the tax revenue and Central Board of Revenue took many steps to improve the condition of revenues. Many schemes like Large Tax Payer Units (LTU), Medium Tax Payer Units (MTU) and Universal Self-Assessment Scheme (USAS) were introduced but it could not increase the tax to GDP ratio.

Figure 1

Trend in Tax Revenues in Pakistan as % of GDP
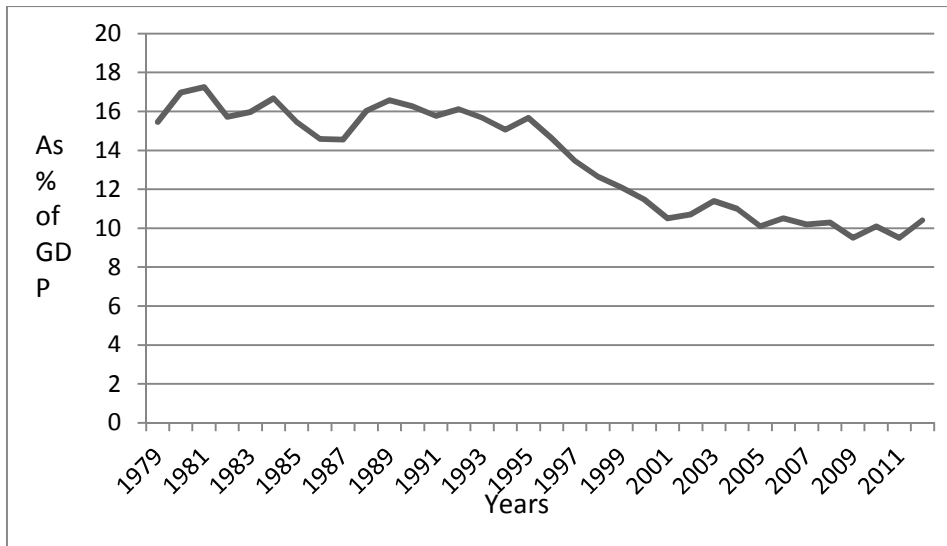
Tax revenue are classified into two sub categories; direct and indirect taxes

Direct Tax Revenues

Taxes imposed on income/wealth and in form of wealth tax, income tax, capital value tax, corporate tax and worker's welfare fund is considered as direct tax. In Pakistan, direct taxes are only 4% of GDP while other developing countries have this ration to 7% of GDP. There is an upward trend in direct taxes as it was 18% of total tax collection in 1990-91 and increased to 38.2% in 2011-12 but it is dire need to improve it.

Figure 2
Trends in Direct Tax Revenues in Pakistan as % of GDP

Indirect Tax Revenues

Custom duties, excise duties and sales tax etc. are counted as indirect taxes. Indirect taxes are not fruitful for lower income groups and affect them broadly while higher income groups are not affected much by indirect taxes. Unfortunately, government hesitates to tax on elite class under severe pressure of powerful groups and to generate more revenues, indirect taxes are imposed. In developing countries as well as Pakistan, a big portion of revenues is gained from indirect taxes. It is true that situation is improving as in 1990-91, share of indirect taxes in total revenue was 82% of total revenue and in 2011-12, it decreased to 61.8% 0f total revenue collection but it is still higher as compared with other developing countries.

Figure 3

**Trends in Indirect Tax Revenues in Pakistan as % of GDP**
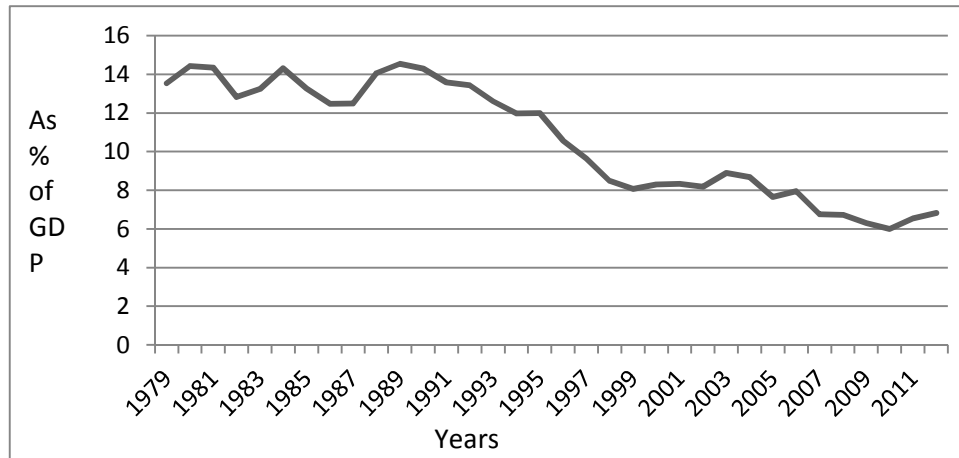
Fiscal Deficit

Fiscal deficit means a situation when government expenditures exceed than its generated revenues. Uzair (2004) concluded that fiscal deficit has got greater attention after Bretton woods, during the last two decades most of the developing countries including Pakistan have faced fiscal deficits and is considered as one of the major source of macro-economic imbalances. But it is also difficult to conclude that whether reduced fiscal deficit causes a positive effect on the economy or not. If there is reduction of developmental expenditures in spite of expansion of revenues, then it has a negative effect on economic growth in long run.

After having a look on Pakistan economy, we come to know that fiscal deficit was only 2.1% of GDP in 1960's and it increased to 5.3% of GDP in 1970's due to 1971's war. After that, it decreased to 7.1% of GDP in 1980's and further reduced to 6.9% of GDP in 1990's due to commitments made with International Monetary Fund (IMF) by Structural Adjustment Program (SAP). In 2000's, fiscal deficit was

reduced to 4.5% of GDP.

Figure 4
Trends in Fiscal Deficit in Pakistan as % of GDP
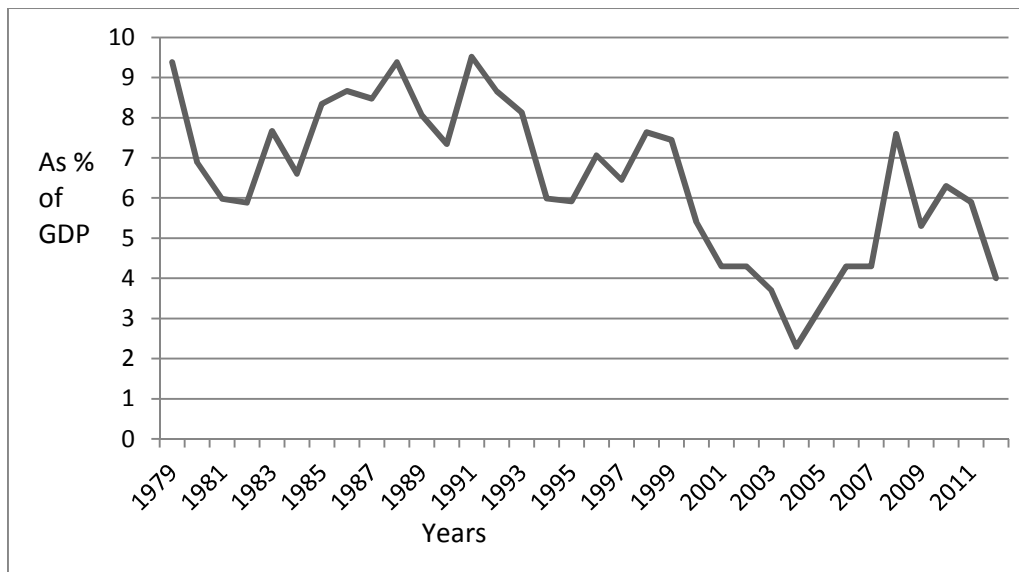
Literature Review

Following literature review provide evidence that fiscal policy has different impacts on inflation in the world as well as Pakistan by using same techniques and methods. There is an ample literature on this topic but most of the studies explored the relationship of fiscal policy and inflation but much attention was not given for instruments of fiscal policy regarding their impact on inflation.

Saleem et al (2013) studied the determinants of inflation in Pakistan for the period of 1990-2011. In this study, inflation rate is dependent variables while fiscal deficit, unemployment, exchange rate, interest rate and gross domestic production are considered as independent variables. Regression results describe that fiscal deficit and unemployment have negative relationship with inflation while interest

rate, exchange rate and gross domestic production positively affect the inflation rate in Pakistan. This study considers the monetary policy as a main instrument of inflation. But on the other side, reduced borrowings and increase in tax levels are advised to control inflation.

Agha and Khan (2006) investigated the relationship between inflation and fiscal indicators in Pakistan using the data from 1973 to 2003. Johansen Co-integration and vector error correction models are applied to determine the behavior of variables. In the study, consumer price index is taken as dependent variable while fiscal deficit, total bank borrowing, real GDP and exchange rate are considered as independent variables. It is found that inflation in Pakistan is mainly attributable to unsustainable fiscal deficit. To finance the deficit from seignorage or borrowing from banking sector affects the general price level. It is also concluded that output growth is positively related to increase in price level. It is suggested that macroeconomic and monetary implications should be considered and coordination between fiscal and monetary authorities is required to achieve their objectives.

Chaudhary and Ahmad (1995) applied 2SLS technique for the economy of Pakistan covering the period from 1973-1992 and suggest that domestic financing of the budget deficit, particularly from the banking system, is inflationary in the long run. The results found a positive relationship between budget deficit and inflation during acute inflation periods of the seventies. They also concluded that money supply is not exogenous; rather, it depends on the position of international reserves and fiscal deficit and it has emerged as an endogenous variable. The general conclusion is that the execution of monetary policy is heavily dependent on the fiscal decisions made by the government. In order to control inflationary pressure, government needs to cut the size of budget deficit.

Samimi and Jamshidbaygi (2011) explored the relationship between budget deficit and inflation in Iran using the quarterly data covering

the period from 1990-2008. In the study, simultaneous equation model including four structural equations for budget deficit, monetary base, money supply and inflation is used. It was concluded that budget deficit has a positive and significant impact on consumer price index. It is also shown that budget deficit positively affect the monetary variables and as result on inflation.

Lozano (2008) used quarterly data from 1983-2007 and applying vector error correction (VER) model explored a mixed relationship of inflation and money growth with fiscal deficit.

Hondroyiannis and Papapetrou (1994) analyzed the Greece economy by using data from 1960 to 1992. They applied the Granger Causality and co-integration test to prove that there is long run relationship between budget deficit and price level.

Rehman et al (1996) applied the co-integration technique for U.S economy and explored the long run relationship between budget deficit and real exchange rate, inflation rate and real exchange rate.

Brown and Yousefi (1996) investigated for ten developing countries namely Pakistan, India, Indonesia, Israel, Mexico, Philippines, South Africa, Thailand, Turkey and Venezuela and found that there is no empirical relationship between budget deficit and inflation.

Easterly and Schmidt-Hebbel (1993) found that there exist a correlation in developing countries between inflation and fiscal deficit when inflation rate is high and government fulfills their expenditures by seignorage.

Haan and Zelhorst (1990) investigated the relationship between government budget deficit and money growth in developing countries but did not find much support for the hypothesis that government budget deficit influences monetary expansion and thus leads to inflation.

Catao and Terrones (2003) estimated for 23 emerging market countries by using data from 1970 to 2000 and found that 1 percent

reduction in the ration of fiscal deficit to GDP causes to lower long run inflation by 1.5 to 6.0 percentage points.

Vieira (2000) explored the relationship between budget deficit and inflation for six major European countries and found a little support for the hypothesis that budget deficit has been an important factor to inflation in these countries over the last 45 years.

Khalid et al (2007) used VAR model for Pakistan over the period of 1965 to 2008 to investigate the fiscal reaction function and transmission mechanism and found that effect of changes in fiscal policy is not significant to inflation.

These results of these studies reinforce the argument that empirical outcomes are likely to differ from country to country and time to time, even by using same techniques and methods. In this paper, efforts are made to analyze the role of fiscal policy and its instruments for inflation in Pakistan.

Model Specification, Data and Methodology
Model specification

There is a notable work to examine the transmission channels of fiscal policy by Baldacci et al (2004). The Generalized Method of Moments was applied and found the total factor productivity channel to be most effective, through which fiscal policy affect macroeconomic activities.

According to Baldacci et al (2004), general equilibrium model can be used to examine the effects of fiscal policy.

$$M = f\,(FP,\,Xt) \qquad (1.1)$$

Where *FP* represents fiscal policy variables, M is for macroeconomic activity like inflation and vector X stands for vector of control variables. To find out the impact of fiscal policy variables on macroeconomic activities, following model is estimated as:

$$M = a_0 + a_1 FP + a_2 X + \mu \qquad (1.2)$$

Where *M* stands for macroeconomic activities, *FP* shows the fiscal components and *X* represents the control variables.

Different studies proved different variables to describe the inflationary process in Pakistan. Theoretically, it is evident that inflation is always and everywhere a monetary phenomenon. But actually, world is not so simple that inflation is due to only increasing or decreasing money supply. To finance the government expenditures, government may borrow from domestic and international resources or may print new money (seignorage). Khan et al (2007) examined the effect of government sector borrowing, real demand relative to real supply, private sector borrowing, import prices in $ term, exchange rate, government taxes relative to nominal value added in manufacturing sector GDP, adaptive expectations and wheat support/procurement price to consumer price index (CPI) in case of Pakistan. Agha and Khan (2006) used fiscal deficit and total bank borrowing as determinants of inflation in Pakistan. Baldacci et al (2003) used fiscal deficit, initial per capita income, term of trade, currency depreciation rate, degree of openness and employment rate as exogenous variables in the inflation equation. To analyze the impact of fiscal policy on inflation in this study, following equation is derived.

INF = f (DT, IDT, INV, MS, FD)   (1.3)

Where *DT* = direct taxes, *IDT* = indirect taxes, *MS* = money supply, *FD* = fiscal deficit and *INV* = investment.

2.   *Data and Variables*

A consequential research requires an adequate and reliable data of all the variables. The data for this study consists of annual observations for the period 1979-2013. The real values of variables are used instead of nominal values for estimation. The data set for the most of variables have been taken from Pakistan Economic Survey (Various

Issues) [2] and Handbook of Statistics on Pakistan Economy[3]. The details about the definitions of various variables are given below:

DT= Direct Taxes as percentage of GDP.

IDT = Indirect Taxes as percentage of GDP.

FD= Fiscal Deficit as percentage of GDP.

INF = Inflation Rate =Consumer Price Index.

INV= Investment as percentage of GDP.

MS=Money Supply=M1+Saving Deposits including MMDA$_s$ (Money Market Deposit Accounts)+ Small Denomination time Deposits+ MMMF$_s$ (Money Market Mutual Funds).

Empirical Analysis and Economic Implications

Augmented Dicky Fuller unit root test is applied in order to determine the order of integration of all variables. Results show that each of the variables is integrated of different order. Some of them are I(0) while some are I(1). In this situation, econometric theory suggests that Bounds Procedure and ARDL approach is the appropriate one in order to determine the dynamics of long run and short run dynamics of the relationship between variables of different order.

After finding the integration order of variables, F-statistics is calculated in order to test the existence of long run relationship. The calculated F-statistics value is 4.87 while the critical Bound values are at 10% level of significance (2.141-3.250), at 5% level of significance (2.476-3.646) and at 1% level of significance (3.267-4.540) so it shows that there is long run relationship among the variables. Before estimating the coefficients, lags are selected via Schwartz Bayesian criterion which is given below.

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[2] Published by Ministry of Finance, Islamabad, Pakistan.
[3] Handbook is Present at the official website of State Bank of Pakistan, Karachi.

Table 1

Lags Defined Through VAR-SBC

VARIABLES LAGS	INF	DT	IDT	MS	FD	INV
0	0.23*	0.78*	0.96	1.10	0.96	2.27
1	0.55	1.69	0.52*	0.60	0.49*	2.07*
2	0.41	2.96	1.74	0.07*	0.73	2.11

NOTE: * Shows minimum Schwarz SBC.

After finding the long run relationship and lag order of variables, coefficients are estimated by using ARDL technique. The mathematical form of ARDL model is as follows;

$$\Delta INF = \alpha_0 + \sum_{i=0}^{n} \alpha_1 \Delta DT_{t-i} + \sum_{i=0}^{n} \alpha_2 \Delta IDT_{t-i} + \sum_{i=0}^{n} \alpha_3 \Delta MS_{t-i} + \sum_{i=0}^{n} \alpha_4 \Delta FD_{t-i} + \sum_{i=0}^{n} \alpha_5 \Delta INV_{t-i} + \beta_1 INF_{t-1} + \beta_2 DT_{t-1} + \beta_3 IDT_{t-1} + \beta_4 MS_{t-1} + \beta_5 FD_{t-1} + \beta_6 INV_{t-1} + \varepsilon_t$$

In this model, inflation (INF) is dependent variable while direct taxes (DT), indirect tax (IDT), money supply (MS), fiscal deficit (FD), and investment (INV) are taken as independent variable. All data is applied after log transformation. The diagnostic tests are also applied to check the efficiency of dat. The estimated results are given in the following table. The results show that both types of taxes have positive and significant impact on inflation. It might be due to reason that imposing taxes increase the cost of production which leads to inflation in the country. It is evident that coefficient of money supply is positive because increase in money printing cause to increase the prices by

excess of demand. Fiscal deficit has also positive impact on inflation. It shows that rising fiscal deficit has impact on aggregate demand. Resultantly, it changes the level of output and the price level.

Table 2

Estimated Long Run Coefficients

Dependent Variable: Inflation				
Regressors	**Coefficients**	**Std. Error**	**t-Statistic**	**Prob.**
DT	0.75***	0.31	2.35	0.08
IDT	0.66**	0.19	3.46	0.04
MS	0.19**	0.18	1.07	0.05
FD	0.20***	0.16	1.26	0.10
INV	-0.92*	0.47	-1.92	0.01
R^2 =0.86 Adjusted R^2=0.80 DW-stat =1.94 Serial Correlation LM Test=0.70(0.42) ARCH Test =0.65(0.49) White Heteroscedasticity =0.79(0.71) Jarque-Bera Test =0.61(0.45)				

Note: *, **and *** shows significance at 1%, 5% and 10% level of significance.

After estimating the long run relationship, the error correction model for short run dynamics is estimated. The ECM form of growth model is following;

$$\Delta INF = \alpha_0 + \sum_{i=0}^{n} \alpha_1 \Delta INF_{t-i} + \sum_{i=0}^{n} \alpha_2 \Delta DT_{t-i} + \sum_{i=0}^{n} \alpha_3 \Delta IDT_{t-i} + \sum_{i=0}^{n} \alpha_4 \Delta MS_{t-i} + \sum_{i=0}^{n} \alpha_5 \Delta FD_{t-i} + \sum_{i=0}^{n} \alpha_6 \Delta INV_{t-i} + ECM_{t-1} + \varepsilon_t$$

The estimated results are shown in table 15. The estimated lagged error correction term ECMt-1 is negative and significant. The significance of error term indicates the presence of long run relationship of variables estimated in the above described model. The feedback coefficient is -0.37 which indicates that 37% disequilibrium is corrected in the short run. The results also show that INV has significant negative effect in short run while DT and IDT have significant positive impact in short run. FD and MS have not a significant effect in short run.

Table 3

Estimated Short Run Coefficients

Dependent Variable: Inflation				
Regressors	**Coefficients**	**Std. Error**	**t-Statistic**	**Prob.**
Δ**DT**	0.26*	0.26	0.99	0.01
Δ**IDT**	0.29*	0.57	0.50	0.01
Δ**MS**	0.45	0.68	0.65	0.90
Δ**FD**	0.13	0.35	0.38	0.42
Δ**INV**	-0.84***	0.41	-2.04	0.09
ECM$_{t-1}$	-0.37**	0.27	-1.37	0.04
R^2 =0.84 Adjusted R^2=0.81 DW-stat =1.88 Serial Correlation LM Test=0.12(0.51) ARCH Test =0.78(0.29) White Heteroscedasticity =0.81(0.39) Jarque-Bera Test =0.55(0.35)				

 Note: * and ** shows significance at 1% and 5% level of significance.

Conclusion and Policy Implications

The basic purpose of this paper is to examine that how fiscal policy is affecting the inflation in Pakistan. The data for empirical analysis is used from 1979-2012. To check the stationarity of data, ADF test is applied and found that all variables are integrated of order one or zero. After finding the integration order of variables, ARDL technique is applied.

It is evident that fiscal policy has two main instruments i.e. government expenditure and taxes. Beside of other reasons, it is found in results that imposing of taxes is causing to increase the inflation in the country. Inflation increases the cost of production that leads to lose the attraction for investors because prices of goods are unable to compete in international market. So inflation is worsening the situation of investment while on the other side, it has proved that investment plays a vital role to decrease the level of inflation in Pakistan. It might be due to increased supply of goods in the market.

To control inflation, government should decrease the level of taxes and printing of new money. The reason behind is that taxes increase the cost of production and demand of goods shrinks To increase the revenues, number of tax payers should increase instead of percentage of taxes.

Fiscal deficit is also a big hindrance in the way of progress. It can be controlled by decreasing the government expenditure and increasing the government revenues. It has to be controlled to encourage investment. Different studies[4] show that government should keep its fiscal deficit in narrow band of 3 to 4 percent of GDP. Behind this limit the unsustainable deficit could have undesirable macroeconomic costs and the government's macroeconomic objectives such as low inflation and high economic growth might be in jeopardy. If the government will control the fiscal deficit by bringing down its

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[4] For details see Ali and Ahmad (2010), Bilquees (2003) and Fatima et al (2011).

unnecessary expenditure then it will get rid of the problem of debt. To sustain the price level, fiscal deficit has to be treated seriously.

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