

The Relative Effectiveness of Monetary and Fiscal Policies on Economic Growth in Pakistan

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Abstract

The function of monetary and fiscal policies in economic growth is discussed in the present study with the help of yearly data from 1973 to 2014 with reference to Pakistan. The inspiration for the study is that there exists financial insecurity and the modifications to improve the circumstances appear necessary in Pakistan. To test the time series characteristics, the DF and ADF methods are used. The ARDL Model is applied to discover the long-term association among fiscal or monetary policy and economic growth. The study concludes that Currency in Circulation (CIR1), Government Development Expenditures (GDE1), Foreign Exchange Reserves (LFER) and Budget Deficit (BD) are imperative components of GDP in case of Pakistan. The result recommends that GDP is inclined by means of the variables Currency in Circulation, Government Development Expenditures and Foreign Exchange Reserves. The relationship between GDP and the Currency in Circulation found to be negative while, Government Development Expenditures and Foreign Exchange Reserves have positive effect on GDP in Pakistan. It means that the two policies are evenly imperative for development in Pakistan.

Keywords: Fiscal Policy, Economic Growth, Monetary Policy, Development Expenditures.

1: Introduction

It is the responsibility of governments to attain and sustain economic growth by means of lower inflation rate. In economic theory a number of mechanisms were developed to attain these goals. The two most important policies to achieve these important goals are fiscal policy and the monetary policy. In the economic theory the role of both policies remained important in the procedure of growth of an economy and its stability. However, monetary policy has lost its significant position in economic literature subsequent to the great depression in 1930s and after the Keynesian revolution the fiscal policy became a more significant instrument to increase output and to decrease unemployment in the country (Nadeem and Farooq 2003).

However, in the mid of the 20th century the monetary policy restored its significant position in the economic literature due to the involvement of Friedman and both the policies were observed as two important mechanisms for economic growth and its stability. In the past two decades fiscal policy became at lower position to monetary policy mutually in developed as well as developing economies (Valmont 2006).

A number of researchers have been involved in assessing the function of both policies participate in developing economies and so several studies have scrutinized the comparative significance of both the policies for economic growth. However, the issue has not reached at a conclusion with reference to the usefulness of both policies. A few researchers are agreed with the Keynesian idea that monetary policy has small consequence on economic growth, whereas some others are with the Monetarist visions that were against the government intervention into the economic activity.

Since its independence in 1947 Pakistan is trying to attain economic growth with stability. The pitiable economic growth of the country during the recent years is sometimes seems to the incompetence of both the policies. The state bank of Pakistan has been criticized for its performance of monetary policy to control inflation.

Then the problem is that implementation of both the policies is improper in Pakistan. Hence, this study seeks at giving an improved understanding of the relations between the two policies and growth of the economy in Pakistan. The research question the study is going to address is that what is the relation of these two policies in the process of economic growth in Pakistan?

This research is principally conducted to examine the short-term and long-term dynamic of the structure which are projected in the VAR structure. The effect of supposed alterations in the two policies on growth of the economy is projected with the help of impulse response functions (IRFs).

1.1 Techniques of Fiscal Policy

The main purpose of fiscal policy is to increase and maintain growth of the economy and hence to produce employment opportunities in the country. On the one hand, the government receives revenue from taxes and on the other hand, the government spends on its employees, defense and debt servicing etc. The revenue can be categorized

as Inland Revenue and custom duties. The government expenditures can be separated into two parts i.e. current and development expenditures. The techniques of fiscal policy have been discussed in this section.

1.1.1 Taxation Policy

There are two main kinds of taxes, direct and indirect, in Pakistan which government uses to collect revenue. The total share of direct taxes was 39.6 percent and indirect taxes 60.4 percent in the year 2008-09. The tax share has improved but still the tax to GDP ratio is about 10 percent which is very low as compared to that of developed countries which is approximately 30 percent of GDP. The international financial organizations have identified agriculture sector, real estate and stock exchange as three large areas for taxation to increase the revenue. The tax structure in Pakistan showed skewness to indirect taxes. However, Pakistan has improved the situation in its tax structure with the passage of time but still there exists imbalance between direct and indirect taxes.

1.1.2 Public Expenditure Policy

Public expenditure plays an imperative character in the development of an economy. The total government expenditure in Pakistan was estimated Rs. 1675.17 billion for the fiscal year 2007-08, out of which a sum of Rs. 238 billion was allocated for public sector developmental programs. For fiscal year 2008-09, the total expenditure was projected Rs. 1624.15 billion out of which Rs. 247 billion were allocated for development. Most of the public expenditure consist of current expenditure in Pakistan. However, Pakistan has converted its expenditure to development with the passage of time but still there exists imbalance between current and development expenditures.

1.1.3 Deficit Financing Policy

If the government expenditures are greater than the revenue received in the form of taxes during a fiscal year, the budget becomes deficit. In developing countries, a government has to face continual discrepancies in the budget. Pakistan has continual massive budget deficits and has been depending upon the deficit financing since 1950's. Rapid increase in the government expenditure, high population growth rate, low savings and fiscal deficit are the main reasons of deficit financing in Pakistan. Inflationary pressure of deficit financing in an economy can be reduced if time lag is short. Due to low level of income, low saving rate and less capital formation, the Government has to depend upon deficit financing in Pakistan (Baig, 2015).

1.1.4 Public Debt Policy

Due to low tax paying capability of the people in Pakistan, the Government of Pakistan is adopting the option of public debt to fund its development expenditure. The debt burden on Pakistan was only 155 billion rupees in 1980, which increased to 8911 billion rupees in 2010. The debt burden increased to 20051 billion rupees in the year 2016. This debt fails to improve the life of common person because large share of this debt used in corruption and un-necessary imports but the common person has to pay this debt through taxes.

1.1.5 Commercial Policy

Commercial policy is an important instrument of federal budget. The history of Pakistan indicates that balance of trade remained deficit except one year when there was war in Korea. The objective of commercial policy is to enhance the exports. The exports of Pakistan have been decreasing for the last two years due to international circumstances. The exports of Pakistan have decreased 14 percent during the last year. The target of exports in new commercial policy is fixed at 35 billion dollars. The diversification of manufactured goods, search of new markets and access to markets are the main objectives of the new commercial policy. Unfortunately, Pakistan's political governments failed to build confidence of investors and business community due to which national capital shifted to foreign countries (Gilani, 2016).

1.2 Techniques of Monetary Policy

Monetary policy is the intended policy followed through the central bank of a state for printing and management of a state's supply of money and supervision of the foreign exchange rates. The main intentions of monetary policy are growth of the economy, lower inflation rate, reduction in unemployment and fixation of interest rate. Currency in circulation is an important determinant of GDP, inflation rate and employment opportunities in Pakistan.

The monetary policy has a very critical and important responsibility in the economic expansion of emergent economies. Conversely, the achievement of the monetary policy is restricted by some issues such as; immature financial markets, financial dualism, lack of teamwork by the commercial banks, low literacy rate, transactions by the barter system and other social hindrances. The role of international donors for example IMF and World Bank is as well important, which dictates the policy in Pakistan. India does not take debt from IMF, which is an important reason of less inflation rate in India. The independent economies convert the policies of IMF according to their own

requirements. Currency in Circulation is an important tool of monetary policy. Currency in Circulation has continuously increasing with the passage of time.

2: Review of Literature

The economic literature suggested a strong relationship between the two policies and GDP (Aigheyisi, 2011; Iyeli, Uda, and Akpan 2012; Nasir, Ahmad, Ali, and Rehman 2010). The Government could choose between the two policies to improve an economy. From the economic theory it was found that both the policies contribute imperative functions to stabilize an economy. In the economic literature, different studies have been carried out to estimate the results of the two policies on growth in different economies. The results of the studies are summarized as under.

Hussain and Siddiqi (2012) examined the connection among the two policies and the economic organizations in Pakistan. The co-integration and the ECM methods were applied to find the long-term association related to the variables under consideration. This study established that the economic institutions had more effective role to increase the GDP and government revenue in Pakistan. The study suggested that the government should pay special attention to decrease the inefficiency in economic institutions of Pakistan.

Jawaid, et al. (2011) scrutinized the relationship among the two policies and economic expansion in Pakistan. The outcome of the study indicates that both the policies had positive while the trade policy had insignificant impact on the economy of Pakistan during the short period. The study used the co-integration and ECM method to find the conclusion. This study discovered that there exists a positive affiliation among the two policies and economic expansion in Pakistan. The study also claimed that the monetary policy had superiority as compare to fiscal policy for the growth in Pakistan.

Nasir et al. (2010) studied the existence of relationship between the two policies in Pakistan, with the help of yearly statistics from 1975 to 2006. This research used VAR and Impulse Response Function methods to find the results. The results concluded that there was very slight relationship between the two policies. The variables congregate to their long period course following the breach of twenty-three years in average. Therefore, this study concluded that little dexterity was exhibited by the policy makers in Pakistan.

Jawaid et al. (2010) examined the relative effectiveness of the two policies for the growth in Pakistan. The cointegration and the JJ methods were used to find long period affiliation amongst the economic expansion and the two policies. The study accomplished that monetary policy had superiority over the fiscal policy for the economic expansion in Pakistan. Moreover, the study accomplished that the long period positive relationship was present among economic expansion and the two policies.

Ali et al. (2008) studied the efficiency of the two policies with the help of data from 1990 to 2007 for the four economies of this region. The countries included are Pakistan, India, Sri Lanka and Bangladesh. This study used ARDL method to test the Monetarist and Keynesian claims. The results of this study demonstrated that there was long period association amongst the variables considered into the model. The results illustrated that monetary policy had a dominant role as compare to fiscal policy to improve economic growth in above mentioned economies.

Alam and Waheed (2006) analyzed the effects of monetary policy on many segments of the economy of Pakistan. The study showed that the variations of the monetary policy lead to variations in many segments of the economy. According to this study, the monetary contraction leads to output decline. The study found that manufacturing, wholesale and insurance sectors were affected from the interest rate in Pakistan.

Fatima and Iqbal (2003) studied the effectiveness of the two policies for the economic expansion at five countries of this region. The countries included into the study were Pakistan, India, Malaysia, Indonesia and Thailand. The cointegration and Johansen and Juselius method were used to find the results. The study found bi-directional causality in Thailand and unidirectional causality between the variables in all other countries. This study concluded that the efficiency of a policy depends upon the nature of the country under consideration.

Rahman (2015) examined the comparative significance of the two policies for changing real production in case of Bangladesh. The VAR structure was used for estimations. The method of variance decompositions and impulse response function was utilized in this study. The monetary and fiscal game' under oligopolistic structure was used for the synchronization and collaboration among the financial and fiscal establishment. The results of this study showed that monetary policy was comparatively efficient as compare to fiscal policy in motivating the actual economic bustle.

Iyeli, Uda, and Akpan (2012) examined econometrically, the proportional competence of the two policies, by means of center of attention on the comparative efficiency of money supply in addition to Government financial deficit by means of their pressure on financial actions that stands for the GDP. The econometric techniques of co-integration and ECM were utilized to ascertain the degree of the quantitative collision and comparative implication. The variables have been examined by performing a unit root test for the yearly data from 1970 to 2001. The study

has concluded that the consequences of monetary policy on productivity enlargement have superiority over fiscal policy as a determinant of stability in productivity. The fiscal policy feature, even though statistically unimportant, and had a pessimistic relationship by the domestic productivity aspect. Consequently, the efforts of Nigerian Government regarding fiscal policy were not optimistic in motivating the productivity increase.

Aigheyisi (2011) examined the proportional competence of the two policies in Nigeria with the help of data from 1981 to 2009. The study utilized the co-integration and ECM method. There exists a considerable association among simultaneous principles of RGDP and GOVEXP and an optimistic association among RGDP and lag value of currency supply. This study found that mutually the two policies were observed because corresponding require managing policies and both must be put into practice in economic circumstances in favor of which the both policies are matched most excellently.

Bontas, Cristina, and Cosmina (2009) demonstrated the instruments by which fiscal policy alleviates the trade cycle, and the particular necessities for fiscal policy in depression; the realistic troubles that could take place in application of an efficient fiscal policy were highlighted. The study emphasized the work of fiscal incentives and strategies taken up accordingly through different economies in addition to their goals. The study concluded that Romania had performed a contradictory and unsuccessful fiscal policy, which had added to the fiscal discrepancy in addition to an enlarged fiscal stress on trade. The study recommended that a medium tenure fiscal structure had to be put into practice, to guarantee efficiency and stability.

Tsoukalas (2008) estimated VAR model to contrast the communication system of the two policies in America and the EMU economies. This study compared the estimation results of NAFTA economies with the EMU economies. The study also incorporated the communication of macroeconomic strategies and the impacts of upsets in financial marketplaces. This study proved that the Americans respond relatively in a different way to both the policies upsets as compare to the EMU economies. The study recommended that fiscal system in monetary unions might be essential for the achievement of a monetary unification.

Mourmouras and Peter (2008) showed that the volume of government increases because of growth of an economy. According to this study, public and private investment must be increased during the growth of an economy. The study explained that increase in taxes and government costs at the beginning phase of development became a hurdle in growth.

Turrini (2008) examined the performance of fiscal policy for European countries using data from 1980 to 2005. The evaluation of fiscal policy response exposed that the common attitude of fiscal policy was expansionary while productivity was higher than potential. The evaluation of response functions for income and spending strategy pointed out that pro-cyclical bias was totally expenses determined incident. The evaluation of fiscal reaction functions in European Union economies with burly and fragile expenses regulations can be supportive to reduce the spending strategy in good times.

Basyal (2006) studied the proportional significance of both the policies in changing actual productivity of Nepal. Through enlarged fiscal extension, the present account discrepancy broadens and the stage of administration liability in percentage to GDP enlarges as a result. Indefensible fiscal discrepancy would promote resources departure, which would depreciate the liability dilemma. Monetary policy inquires about to adjust supply of and demand for money by altering the accessibility and expenditure of credit for manipulating the quantity of collective demand in the financial system and, consequently, price rises. This study concluded that in the rigid exchange rates, merely fiscal policy would be competent to influence earnings. The standard power of monetary policy was misplaced for the reason that the money supply was devoted to retain the exchange rate at the proclaimed rigid stage.

Kimakova (2006) study the effects of increased money supply and controlled exchange rate to attain the objective of stability. The study concluded that both the policies were helpful for each other to stabilize the economy. The study accomplished that accurate and ease access to data was a preliminary condition for a better understanding and implementation of fiscal policy.

Ali, Irum, and Ali (2006) examined the proportional competence of the two policies for South Asia. The study utilized data from 1990 to 2007 to observe the effectiveness of both policies. This study used ARDL and ECM methods to observe affiliations of the two policies. The outcome illustrated that monetary policy was useful to enhance growth in south Asia.

Valmont (2006) theoretically discussed the comparative significance of the two policies. The study accomplished that fiscal policy was beneficial for growth of an economy and to achieve the level of full employment. Fiscal policy generated a gap between government expenses and taxes, which was filled with borrowings. The borrowings affected savings and as a result living standards declined.

Rahman (2005) studied the efficiency of fiscal policy on growth in New Zealand. The study established a good affiliation between fiscal, monetary policies and it found that fiscal stability was a necessary condition to

control inflation and growth. The study concluded that the efficiency of fiscal policy depends upon the formation of expenses and the tariff structure. Fiscal policy might be useful in the situation of liquidity trap when interest rate was very low.

Amanja and Morrissey (2005) investigated the efficiency of both policies in Kenya using data from 1964 to 2002. The study established that nonproductive expenses in addition to unaltered taxes were impartial for economic expansion. The study established that the community and personal investment have a direct connection with the expansion of the income of a country. Hence the study recommends the increase in saving and investment to increase growth.

Muscatelli and Tirelli (2005) examined the efficiency of both the policies using data for the United States and Europe. This study concluded that both the policies were complementary for each other and both the policies can be helpful for growth, stability and achievement of full employment level in the country.

Arestis and Sawyer (2004) investigated the change in the function of monetary policy in stabilization and investigated the function of fiscal policy in this regard. This study observed the two policies under consideration and recommended that the role of monetary policy was relatively inadequate in this investigation. This study concluded that while the investigation was extended to experimental matters and verification the obvious conclusion came out that monetary policy was comparatively ineffective. The role of fiscal policy was measured and the study found that fiscal policy became a dominant instrument for macroeconomic stability in the country.

Aarle, Garretsen, and Gobbin (2003) examined the conduction of both policies in the European countries. This study used structural VAR to estimate the usefulness of both the policies in the European economies. The SVAR representation of the group of EMU countries was evaluated by SVAR representation of the US and Japan. This work out was helpful to evaluate the sound effects of both policies on the group of EMU countries and in addition to include a relationship with two other main countries. Moreover, SVARs were calculated for the individual EMU countries. The study concluded that the individual European Union countries repeatedly respond in quite a different way to monetary and fiscal policy improvements.

Snyder and Bruce (2002) used an error correction and vector Auto-regression method to scrutinize the comparative usefulness of both the policies in the United States. The center of attention of the study was to establish the comparative descriptive power of events of the two policies. This study used broad money (M2), national funds rate, income tax and government expenditure as explanatory variables in elucidation fluctuations in private spending, speculation, and productivity. The results of this study advocated that monetary policy could play comparatively more dominant role in economic stability than fiscal policy.

Clark and Hallerberg (2000) developed a structure to study the communication between the two policies in view of multiple rate of exchange systems and the level of central bank sovereignty. This study tested the model with the help of data taken from OECD economies. The study found verification that the monetary extension happened merely while the exchange rate elastic and central bank sovereignty was little and fiscal extensions took place while the exchange rate was rigid.

2.1 Hypotheses to be Tested

- (i) H_0 : Currency in Circulation (CIR) has no important straight effect on GDP.
- (ii) H_0 : Budget Deficit (BD) has no considerable positive effect on economic growth.
- (iii) H_0 : Foreign Exchange Reserves (FER) have no important positive effect on GDP.
- (iv) H_0 : Government Development Expenditures (GDE) are not significant for economic growth in Pakistan.

2.2: Motivation of This Study

Purpose of this study is to design a monetary policy which is non-inflationary on one side but on other side it is growth supportive and to encourage flexibility of interest rates to respond to market forces. Focus of this study is to check that either monetary or fiscal policy can play its role to the economic expansion in Pakistan. The inspiration for this study is that there exists financial insecurity in Pakistan and the modifications to improve the circumstances appear necessary. In order to decrease the tendency troubles and to construct the variables dependable, the study uses a few determinants of GDP as fraction and other as their expansion rates.

The study differs from the preceding studies in two ways. Initially, the majority of the preceding studies ignored the chance of response consequence by an earlier supposition that Government expenditure is a reason of growth. Secondly, in the study a few special variables are included, which are also imperative to establish the relative effectiveness of the two policies in Pakistan.

3: Data and Methodology

3.1 Sources of Data

The time series data collected from the handbook of statistics, different financial surveys and State Bank of Pakistan yearly bulletins for the period 1973-2014 are used. The data in the study was first investigated in support of the time series characteristics and then other econometric methods are applied.

3.2 Methodology

The study uses the co-integration technique in addition to error correction technique to establish the short run results for the period 1973 to 2014. This study checks the presence of single co-integrating vector, which leads to long run association amongst the variables (Gujarati, 2012).

3.2.1 Unit Root Test

The study utilizes DF and ADF methods to check the unit root. If the mean, variance and auto-covariance are stable then a variable is called stationary. The DF test is appropriate if the (U) are uncorrelated (Gujarati,2012).

3.2.2 Econometric Methodology

A long run relation indicates that the variables progress collectively and hence the short run volatility is acceptable. To discover the co-integration between dependent and autonomous variable the ARDL model is:

$$\Delta LGDP_t = \beta_0 + \sum_{i=1}^p \beta_{1i} \Delta CIR1_{t-i} + \sum_{i=1}^p \beta_{2i} \Delta GDE1_{t-i} + \sum_{i=1}^p \beta_{3i} \Delta BD_{t-i} + \sum_{i=1}^p \beta_{4i} \Delta LFER_{t-i} + \lambda_1 LGDP_{t-1} + \lambda_2 CIR1_{t-1} + \lambda_3 GDE1_{t-1} + \lambda_4 BD_{t-1} + \lambda_5 LFER_{t-1} + \mu_t \dots \dots \dots (3.1)$$

In equation (3.1), the summation symbols stand for the short run and the λ symbols stand for the long run (Wooldrige, 2011).

3.2.3 Auto-regressive Distributed Lags (ARDL) Model

In the ARDL method when Gross Domestic Product (GDP) is dependent variable the following equation is estimated:

$$\Delta LGDP_t = \beta_0 + \sum_{i=1}^p \beta_{1i} \Delta CIR1_{t-i} + \sum_{i=1}^p \beta_{2i} \Delta GDE1_{t-i} + \sum_{i=1}^p \beta_{3i} \Delta BD_{t-i} + \sum_{i=1}^p \beta_{4i} \Delta LFER_{t-i} + \lambda_1 LGDP_{t-1} + \lambda_2 CIR1_{t-1} + \lambda_3 GDE1_{t-1} + \lambda_4 BD_{t-1} + \lambda_5 LFER_{t-1} + \mu_t \dots \dots \dots (3.2)$$

In equations (3.2) the summation symbols stand for short run and the λ symbol stand for the long term association, β₀ the intercept and μ_t the error term (Stock and Watson, 2004).

3.2.4 Error Correction model

When the long run association is present then there exists an ECM. The following ECM is projected. When Gross Domestic Product (GDP) is dependent variable:

$$\Delta LGDP_t = \beta_0 + \sum_{i=1}^p \beta_{1i} \Delta LGDP_{t-i} + \sum_{i=1}^p \beta_{2i} \Delta CIR1_{t-i} + \sum_{i=1}^p \beta_{3i} \Delta GDE1_{t-i} + \sum_{i=1}^p \beta_{4i} \Delta BD_{t-i} + \sum_{i=1}^p \beta_{5i} \Delta LFER_{t-i} + \alpha ECM_{t-1} + \mu_t \dots \dots \dots (3.3)$$

Where:

- LGDP the log of GDP,
- β₀ the intercept term,
- CIR1 the currency in circulation divided by GDP,
- GDE1 the government development expenditure divided by GDP,
- BD the budget deficit,
- LFER the log of foreign exchange reserves,
- U_t the error term.

3.2.5 Vector Autoregression

The VAR technique apparently looks like simultaneous equation technique because we take into consideration a number of endogenous variables simultaneously. However, every endogenous variable explanations

its last period values and there exists no exogenous variables into the model. The word autoregressive is because of the existence of the lagged value of the dependent variable on the right hand part and the word vector is because of the reality that we are dealing with a vector of more than one variable (Stock & Watson, 2004).

To estimate a VAR model, we suppose that every equation includes k lag values. Hence, we can estimate every equation by OLS. In such equations, the u's are the error terms, named impulses in the language of VAR. Before estimation of equations, we have to choose the maximum lag length by using the principles of Akaike or Schwarz and select that model which provides the minimum values of these criteria. The interpretation of coefficients in the models of VAR are usually complicated, the researchers of this technique usually approximate the IRF. The IRF sketch out the reaction of dependent variable in the VAR structure due to distress in the error terms (Rahman, 2005).

3.2.6 Variance Decompositions

The outcomes of VECM point out the exogeneity or endogeneity of the variables under consideration in addition to the tendency of Granger-causality during the period under consideration. Whereas, the method of VECM does not provides the actual characteristics of the system. The investigation of the relative effectiveness of the variables after the period under consideration is constructed with the help of variance decompositions method and impulse response functions method (Boon & Zubaidi, 1999).

3.2.7 Impulse Response Functions

The process of plotting the period multipliers along the vertical axis and lag length along the horizontal axis is called impulse response function. If there are a number of lags in every equation, it becomes difficult to deduce every coefficient, particularly if the signs of the coefficients are alternating. In such circumstances the researchers scrutinize the impulse response function in VAR model to discover that how the dependent variable react to an upset in single or additional equations in the system. It is a fundamental instrument in experimental causal investigation along with policy efficiency investigation (Nasir et al, 2010).

3. 2.8 Residuals

The residuals should fall in a symmetrical pattern and have a constant spread throughout the range. The Sample Regression Function (SRF) to symbolize the sample regression line can be presented as under:

$$\hat{Y}_t = \hat{\beta}_1 + \hat{\beta}_2 X_t \dots\dots\dots(3.4)$$

The sample regression

function can be articulated as under:

$$Y_t = \hat{\beta}_1 + \hat{\beta}_2 X_t + \hat{\mu}_t \dots\dots\dots(3.5)$$

Where μ_t stands for the sample residual.

Assessment of the residuals is an excellent illustration analytical to discover autocorrelation and heteroscedasticity and these residuals are capable to examine the model arrangement inaccuracy for example exclusion of an essential variable. If actually exist these inaccuracies, a plot of the residuals will demonstrate distinctive pattern. The effectiveness of the residual plot is therefore apparent, if there is specification inaccuracy, the residuals will demonstrate conspicuous pattern (Gujarati,2012).

4: Results and Discussion

4.1: Time Series Characteristics of the Data

The Co-integration tests point out that there exist long-term associations among the variables. The regression equations at level believed significant if variables are co-integrated and bogus otherwise.

4.1.1 Unit Root Tests

The outcomes of DF and ADF tests mutually with and with no drift illustrate the presence of unit roots except LGDP and GDE1 in Table 4.1.

Table 4.1

Unit Root Test at Level

Variables	With an intercept but no drift	Critical value 5%	value	With an intercept and a drift	Critical value 5%	value
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	DF	ADF		DF	ADF	
LGDP	-4.56*	-3.26*	-2.93	-4.55*	-3.25	-3.52
LFER	-.543	-1.22	-2.93	-1.94	-2.69	-3.52
CIR1	-1.55	-1.33	-2.93	-2.40	-2.12	-3.52
GDE1	-3.07*	-2.97*	-2.93	-2.63	-2.40	-3.52
BD	-2.94*	-1.98	-2.93	-3.02	-2.08	-3.52

Note. * show the stationarity at 0.05 probability level.

The outcomes of the DF and ADF at level are shown in Table 4.1. The outcomes demonstrate that LGDP and GDE1 are stationary at level with an intercept but not a drift and remaining variables are not stationary. In the first differences, all the variables are stationary at 0.05 percent probability level. Hence, the outcomes show that all variables considered into the model are incorporated of order one, I(1). The outcomes of the tests have shown in Table 4.2. The ADF tests the H₀ of non-stationary against H₁ of stationary.

Table 4.2

Unit Root Test at First Difference

Variables	With an intercept but not a drift		Critical value 5%	With intercept and drift		Critical value 5%
	DF	ADF		DF	ADF	
DLGDP	-7.28*	-5.44*	-2.94	-6.11*	-4.24*	-3.53
DLFER	-6.22*	-5.18*	-2.94	-6.38*	-5.29*	-3.53
DGDE1	-5.15*	-6.38*	-2.94	-5.52*	-8.87*	-3.53
DCIR1	-6.71*	-3.63 *	-2.94	-6.59*	-3.79*	-3.53
DBD	-10.53*	-4.89*	-2.94	-10.51*	-4.89*	-3.53

Note. * show the stationarity at 0.05 probability level.

4.1.2 Co-integration Tests

The outcomes show that the variables incorporated are integrated. The ARDL method is used. If the F value is larger than the upper limit of the table value, then the H₀ is rejected and it can be accomplished that there exists a long term connection amongst the variables. In the ARDL model, we estimate the equation (3.2) at fifth lag by OLS and find the F-statistic

4.1.3 Variable Addition Test

F-Statistic = 4.171

The F-value is 4.171 and the F-critical value with an intercept but not a drift at 0.05 percent probability level is 2.649 to 3. 805. Clearly, the F-value is larger than the upper limit. Thus, H₀ of no long run association among the variables not accepted presenting apparent long term relationship among the variables.

Table 4.3

Estimated Long- term Coefficients

Regressor	Coefficient	T-Ratio	Probability
LFER	1.63***	5.56	[0.00]
GDE1	5.65**	1.41	[0.19]
CIR1	-1.53***	-2.33	[0.05]

BD	-0.26**	-2.37	[0.04]
INPT	-0.08*	-0.08	[0.94]

Note. Dependent variable is LGDP

** show the co-efficient is different from zero at 0.05 probability level.

*** show the co-efficient is different from zero at 0.01 probability level.

The table shows that the variable Foreign Exchange Reserves (LFR) is important at 0.01 percent probability level while, the variables Currency in Circulation (CIR1) and Budget Deficit (BD) are important at 0.05 percent probability level. The variable Government Development Expenditures (GDE1) is significant at 0.1 percent possibility level. The coefficient signs of the variables Foreign Exchange Reserves and Government Development Expenditures are positive indicating that an increase in Foreign Exchange Reserves and Government Development Expenditures enhance the GDP in Pakistan. The coefficient signs of Currency in Circulation and Budget Deficit are negative representing that an enhancement in Currency in Circulation and Budget Deficit reduce the GDP.

4.1.4 Error Correction Model

The ECM shows that how rapidly adjustment restores equilibrium. The ECM explains that how speedily a variable come back to stability and it must be negative as well as significant. The ECM coefficient is negative and significant. The ECM coefficient is -0.45 which verify an average momentum of amendment reverse to long run stability.

Table 4.4

Error Correction Representation

Regressor	Coefficient	T-Ratio	[Probability]
DLFR	0.20***	4.11	[0.00]
dGDE1	-0.76** ***	-2.20 3.540	[0.05]
dCIR1	-0.19*** ***	-3.46	[0.01]
dB	-0.04***	-3.29	[0.01]
dINPT	0.18**	2.48 8.948	[0.02]
ECM(-1)	-0.45***	-2.62 2.5215[.017]	[0.01]
R Squared			0.63
R Bar Squared			0.52
DW statistic			1.95

Note. Dependent variable is dLGDP

** demonstrate that co-efficient is significant at 0.05 probability level.

*** demonstrate that co-efficient is significant at 0.01 probability level.

The adjusted R-squared of the ECM is 0.52; show that 52 percent of the variation in the GDP explained with the help of independent variables. The ECM term, which decides the momentum of alteration to restore steadiness, demonstrate a negative symbol, that long term stability can be achieved. The ECM model shows that the Government Development Expenditures have negative relation with GDP in the short-run. The Foreign Exchange Reserves presented in logarithmic form. Hence, the coefficient of foreign exchange reserves is explaining directly elasticity. The Foreign Exchange Reserves affect the GDP in the short term by means of elasticity 0.20. The Government Development Expenditures affect the GDP negatively in the short term and positively in the long term. This negative association between Government Development Expenditure and GDP is according to Hong and Tang (2010) and Hussain et al. (2008) in Pakistan.

4.1.6 Vector Autoregression Estimates

Because several lags of same variables are included in this vector autoregression estimation, it is difficult that each estimated coefficient will be statistically significant due to the problem of multicollinearity. However,

jointly, these variables might be considerable on the foundation of the usual F-test. The model given in Table 4.5 is the best model in view of the fact that the values of Akaike and Schwarz statistics are lower, the AIC is -10.51 and SIC value is -8.18. We also estimate the VAR up to six lags of every endogenous variable and establish that the values of Akaike and Schwarz statistics were greater than the values given in Table 4.5. Hence, the selection is the model with two lagged.

Table 4.5

The Vector Autoregression (VAR) Estimates at lag 2

	LGDP	LFER	GDE1	CIR1	BD
LGDP(-1)	0.99 (0.16) (6.07)	-0.83 (1.34) (-0.62)	-0.05 (0.10) (-0.52)	-0.67 (2.18) (-0.31)	-0.22 (9.77) (-0.02)
LGDP(-2)	0.02 (0.16) (0.13)	1.26 (1.36) (0.92)	0.03 (0.10) (0.34)	1.26 (2.21) (0.57)	-1.81 (9.93) (-0.18)
LFER(-1)	0.006 (0.02) (0.30)	0.53 (0.18) (2.96)	-0.01 (0.01) (-0.82)	-0.13 (0.29) (-0.47)	1.05 (1.31) (0.80)
LFER(-2)	-0.05 (0.02) (-2.41)	0.12 (0.17) (0.73)	0.01 (0.01) (1.18)	-0.45 (0.28) (-1.57)	1.55 (1.28) (1.20)
GDE1(-1)	0.11 (0.27) (0.41)	2.26 (2.29) (0.98)	0.71 (0.18) (3.97)	1.35 (3.72) (0.36)	-2.50 (16.68) (-0.15)
GDE1(-2)	0.06 (0.36) (0.18)	-0.46 (2.99) (-0.15)	-0.13 (0.23) (-0.58)	-7.18 (4.85) (-1.48)	40.45 (21.74) (1.86)
CIR1(-1)	0.01 (0.03) (0.35)	-0.13 (0.29) (-0.46)	0.02 (0.02) (0.94)	1.01 (0.47) (2.15)	-1.81 (2.11) (-8.5)
CIR1(-2)	0.07 (0.03) (2.20)	0.03 (0.28) (0.12)	-0.02 (0.02) (-0.93)	-0.15 (0.45) (-0.33)	0.43 (2.06) (0.21)
BD(-1)	-0.001 (0.007) (-1.32)	-0.07 (0.06) (-1.14)	0.003 (0.004) (0.681)	0.13 (0.10) (1.34)	-0.16 (0.45) (-0.36)
BD(-2)	0.01 (0.007) (2.275)	0.012 (0.059) (0.219)	-0.001 (0.004) (-0.316)	-0.09 (0.09) (-0.94)	0.44 (0.42) (1.04)
C	-0.04 (0.07) (-0.59)	-0.57 (0.60) (-0.96)	0.12 (0.04) (2.66)	-0.24 (0.97) (-0.25)	1.90 (4.36) (0.43)
R Squared	0.99	0.97	0.83	0.72	0.66
Adj. R Squared	0.99	0.96	0.78	0.62	0.55
Sum sq. Resids	0.008	0.59	0.003	1.56	31.45
S.E. Equation	0.017	0.14	0.011	0.23	1.04
F Statistic	5182.55	117.08	14.96	7.48	5.88
Determinant residual		Cov.		1.20E-12	

Log Likelihood	265.13
AIC	-10.51
SC	-8.18

Note. Standard Errors and t-statistics in parentheses

4.1.8 Impulse Response Functions

In this analysis, four variables taken into consideration from which two are of fiscal side and two other are of monetary side. To observe the reaction of these variables, a shock of one standard deviation established in every one variable. As a result, five consequences for provisional shocks appeared. The response functions are shown in the following graphical form. The pathways of the reactions in different variables to shock in the variable LGDP described in figure 4.1. A shock to the variable LGDP requires two to three years for the variable LGDP to come back to its long-run course. Government may increase GDP through increasing development spending or reducing current spending which will increase productivity and in the long-run convergence attained.

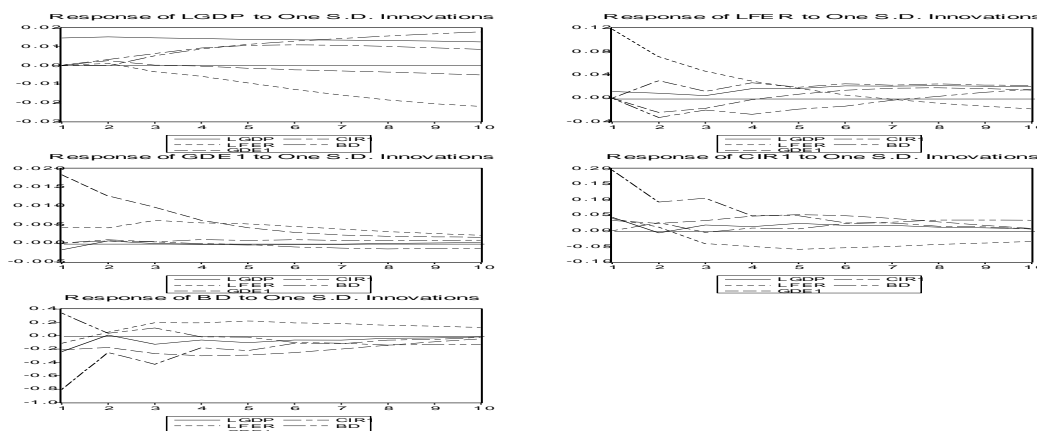


Figure 4.1 Response to Gross Domestic Product (LGDP)

4.1.9 Residuals

Figure 4.2 illustrates the responses of residuals of the variables considered in this model. From this figure when we move from left to right on the one hand the absolute value of residuals become smaller and on the other hand the residuals do not show evidence of the divergent cyclic swings connected with the misfit models. The usefulness of investigation of the residual scheme is therefore that due to specification errors, the residuals will demonstrate conspicuous outlines.

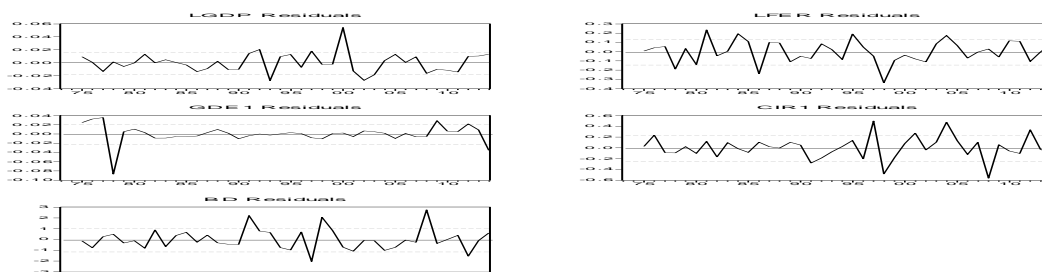


Figure 4.2 Response to Residuals

5: Conclusion and Recommendations

5.1: Conclusion

The objective of this study is to create an essential mechanism for the two policies. This study uses yearly data from 1973 to 2014. The two economic policies are adapted to assurance that the country arrive at stable economic growth with no rapid inflation. The study finds that currency in circulation (CIR1), development expenditures (GDE1), Foreign Exchange Reserves (LFR), Indirect Taxes (IDT1) and Budget Deficit (BD) are imperative determinants of GDP in Pakistan. The results recommend that GDP is inclined by means of the variables Currency in Circulation, Government Development Expenditures and Foreign Exchange Reserves. The relationship between GDP and the Currency in Circulation found to be negative while, Government Development Expenditures and Foreign Exchange Reserves have a positive effect on GDP. It means that the two policies are evenly imperative for development in Pakistan.

5.2: Recommendations

Pakistan should implement the methods to promote and manage development expenditures, which would direct to growth in the country.

Government of Pakistan should diversify indirect taxes for economic growth and stability in current situation of Pakistan.

Both policies need to be originated and accomplished in coordinated approach. Therefore, it might be accomplished that there is small coordination amongst the policy makers. Government of Pakistan may adopt the system of indirect taxes, which is successfully implemented in advanced countries.

6: References

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