Growth Effects of Fiscal and Monetary Policies in Case of Pakistan

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APPROVAL SHEET

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Muhammad Usman

Dedication

To

The most respected and honorable

My parents

Declaration

I certify that research work titled, "***Growth effects of Fiscal and Monetary policy in case of Pakistan***" is my own work. The work has not been presented elsewhere for assessment. Where material has been used from other sources it has been properly acknowledged/ referred.

Muhammad Usman

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List of Abbreviation

ADF	Augmented Dickey Fuller Test
AIC	Akaike Information criterion
BOP	Balance of Payment
ECM	Error Correction Model
ER	Exchange Rate
FBR	Federal Board of Revenue
FP	Fiscal Policy
GDPP	Gross Domestic Product Per Capita
GE	Government Expenditure
GMM	Generalized Method of Moments
GOP	Government of Pakistan
HC	Human Capital
HQC	Hannan- Quinn criterion
MCB	Muslim Commercial Bank
ME	Maximum Eginvalue
MIC	Monetary Condition Index
MP	Monetary Policy
MS	Money Supply
NBP	National Bank of Pakistan
SBC	Schwarz Bayesian criterion
SBP	State Bank of Pakistan
TAX	Taxes Revenue
TFP	Total Factor of Productivity
TT	Trace Test
VAR	Vector Autoregressive
VECM	Vector Error Correction Model
WDI	World Development Indicator

ABSTRACT

Empirical indication on the growth effectiveness of monetary and fiscal policies is still debatable. Hence, this study aims to investigate this inconclusiveness by illustrating depictions by two major schools of thought in economics that is Keynesian and Monetarists. To meet the objective we have empirically estimated both short run and long run dynamics of fiscal and monetary policies. The empirical estimation have been carried out through Johansson Juselius (1990) approach of co-integration in vector error correction model (VECM) setting using time series data of Pakistan sparing from 1972 to 2015. The results of Trace test and Maximum Eigenvalue validate the existence of co-integration among fiscal policy, monetary policy and economic growth in case of Pakistan. The result of impulse response function shows that both fiscal and monetary policies positively affect the growth of GDP per capita in the long run. The interrelationship between fiscal and monetary policy find through impulse response function results shows that fiscal policy has negative response to monetary policy; however, the monetary policy effect is dying within two lag period. The study, softly concluded that monetary policy has negative impact on per capita growth in short term, however in the long time period monetary policy positively affect the per capita growth. The government spending has significant and positively responses in per capita growth both in short term and in long term. In addition, tax rate also has positively affected the per capita growth both in short term and in long term.

Chapter 1

Introduction

1.1 Background of the study

Economic growth is one of those areas in economics literature where extensive theoretical frameworks and empirical indications have been conducted. The reason for this special interest is the fundamental role of economic growth in the development of economic and socio-political well-being of human across the globe. Sustainable economic growth with relatively stable price level is the key objective of policy makers and government in both developed and developing countries.

In 1950s and 1960s economic development was dependent almost exclusively upon growth rates, regardless of their components, distribution or impact. A high pace of economic growth rate was considered economic development of the economy. However, those countries that had weak parameters or priorities and do not struggle for acceptable growth criterion were considered poor achievers, or outright failures. However, 1970s redistribution with growth and social sector performance become important criteria for development of the economy. Currently, country modernization, openness and indices of involvement and participation of private sector have emerged alongside growth and become important criteria for economic development (Zaidi, 2015). All macroeconomic policies including trade policy, fiscal policy and monetary policy play fundamental responsibility for achieving growth process of a nation.

The government fiscal policy in Pakistan has attempted to stimulate the economic growth through different instruments. Traditionally, public expenditure and tax rate are key components of fiscal policy which have been used as an instrument to influence the

economic growth. Government expenditure on public projects can raise the economic growth through raising the aggregate demand of the economy. In addition, government expenditure on public works projects leads to more jobs opportunities, and rise the individual income which create demand Kahar (2011). Furthermore, fiscal policy effects the economic growth through taxes, which attempts to provide equal distribution of income. Tax revenue has immediate impact on unproductive government expenditure which raises long run output Cyrus and Elias (2014), Dungey and Fry (2007). Similarly, Increase in tax revenue will lead to reduce budget deficits, which increases long run economic growth. Martin and Lewis (1956) argued "governments of developing countries need to raise tax revenue to reduce budget deficits". Furthermore, tax rate cuts would raise consumption expenditure, saving, and investing, and also raise income, people receive from their current level of activities, which leads to increase in the aggregate demand and output.

Monetary policy in Pakistan has attempted to stimulate the economic growth through different monetary instruments. Money supply and exchange rate are key components of monetary policy which are used as key tools to influence the economic growth. According to monetarists, increase in money supply leads to interest rate reduction which promotes easy borrowing and consumption expenditure, which leads to increase aggregate demand and output Hussain (1982). Industries acknowledge enhancing by ordering more raw materials and increase their production. When the business will flourish, the demand of labor and capital goods will be increased. Stock market prices increase and firms issue more equity and debt. In long run, rise in money supply leads to misallocation of capital stock and speculation of investment which may

reduce economic growth. People began to expect inflation, lenders demand higher interest rates consumer purchasing power decreases over the life of their loan Alam Ali et al. (2008), Muhammad et al. (2009), Jawaid et al. (2010).

As both the fiscal and monetary policies have acclaimed role in the search of macroeconomic stabilization, however the relative importance of these policies is still under consideration between the two major schools of thoughts that is Monetarists and the Keynesians. For instance, Monetarists argue that the Monetary Policy (MP) employ substantial influence on economic activities, whereas the Keynesian argue that Fiscal Policy (FP) instead of monetary policy employ remarkable impact on economic activities.

MP works under the central bank of an economy that control money supply via settling the exchange rate and interest rate (Exchange rate works in similar way as interest rate and effects market demand through price channel. The variation in exchange rate causes variation in import prices directly). MP is associated with the methods employed to control credit and money supply in the economy, in order to attain high pace of economic stability and growth. Hence, the MP has ability to control the circulation of money as well as costs of borrowing money known as interest rate.

The Keynesians school of thought pointed out several short comings of MP particularly; as soon as economy become stacks in liquidity trap condition they suggest that the feasible approach to get rid of is the fiscal policy. Keynesian school of thought emphasizes the liquidity trap condition as extremely unusual case, whenever MP becomes inefficient[1]. In such circumstances public investment essentially be large enough to make available expenditure equivalent to the level of full employment output.

[1] "In the liquidity trap situation, interest rate reaches its minimum level and further increase in money supply will not lead to the interest rate reduction".

As MP will become in effective to raise investments, hence to bring back full employment level FP will raise the output via increasing government expenditures.

According to Keynesians' view government's fiscal policy influences the level of aggregate demand, full employment level, price stability and economic growth. As the central government has control over fiscal policy, however federal government can change fiscal policy through tax cut or change in public expenditure. The change in public expenditure or tax rate directly affects economic and business activities in the economy. However some studies criticize the Keynesian point view about fiscal policy. For instance, Buiter (1976) argued that, "fiscal policy is considered as less effective or ineffective because of the crowding out[2] effect".

Tesfay (2010), Cyrus and Elias (2014), Awad and Alsowaidi (2000), Ajisafe and Folorunso (2002), Dungey and Fry (2007) analyzing the MP influence on FP, inflation rates along with interest rates can be recognized as direct tools used for communication. Volatility and interest rate level have influence on fiscal structure as it directly impacts sustainability of debt and servicing costs. In the same way, public finances are affected by inflation rates. Public finances become more erratic and fiscal planning is enormously challenging, when price inflation contributes to the public expenditures which are increased via salaries for public employees. Furthermore, increased inflation rate decreases the actual value of debt obligations and causes escalation in real tax burden. Numerous studies have investigated the impact of MP on fiscal policy in case of Pakistan for instance Jawaid, et al, 2010; Jawaid, et al. 2011; Chowdhury, et al. 2015 among others.

[2] In Crowding out situation, increase in government expenditure leads to crowd out the private investors and reduce the private investment.

Fiscal policy has responses in monetary policy in two ways either through expansionary or contractionary fiscal policy. For instance, if fiscal policy is expansionary, this increases the aggregate demand and aggregate expenditures via escalation in government spending or through tax cut. Escalation in government expenditures leads to decline in the economic growth level and necessitate having more restrictive MP (Rakic et al. 2013). Fiscal policy constituents as ineffective tax systems and unproductive public projects critically influence the prospective level of economic growth hence; necessitate having more restrictive MP. (Jawaid, et al. 2010). "Monetary and fiscal policies are interrelated in numerous ways, and this puts additional pressure on the monetary and fiscal authorities to pool resources in order to accomplish efficient outcomes".

Keynesian economists consider the liquidity trap situation as central and extremely special case at which fiscal policy is strong instrument to tackle this situation. In the liquidity trap condition, the interest rate arrives at their smallest level and additional rise in money supply will not lead to decline in interest rate. In liquidity situation, the investment will reach at its peak level and provides full employment level of output, otherwise monetary policy become ineffective and fails to provide full employment level of output. In this situation, expansionary fiscal policy works to raise the output and employment level. However, when government adopts expansionary fiscal policy for short time period as a result government spending exceeds than revenues and government finance their deficit from different resources. If such expenditure is taken as growth enhancing then deficit financing indirectly shows the long-run impact on economic growth.

The empirical analyses utilizing monetarist models advocate that monetary action have a substantial influence on economic activities in developed countries however, the Keynesian believes that FP instead of the MP employ considerable impact on economic pursuits. The empirical research has not reached any conclusion concerning both the fiscal and monetary policy with same country.

1.2 Research Gaps

The background of the study shows that widespread work has been done on growth responses through fiscal and monetary policy. From exiting literature it's concluded that both fiscal and monetary policies perform a fundamental role for achieving the financial stability, prices stability, and economic stability in a nation. The effectiveness of these policies for economic development varies from state to state. However, it is concluded from literature that researcher cannot attain single conclusion about which policy is more effective even for single economy.

Even in case of Pakistan numerous studies have been carried out Fatima and Iqbal (2003, Alam Ali et al. (2008), Muhammad et al. (2009), Jawaid et al. (2010), Mahmood and Sial (2011), and Kakar (2011) have analyzed the growth effectiveness of fiscal and monetary policies. However, these studies have not analyzed the responses of these policies to each other. Keeping in view the literature gap, this study investigated the role and relative growth effectiveness of FP and MP. In addition, we analyzed the responses of monetary policy and fiscal policy to each other.

Pakistan specific studies, for example Ahmad and, Malik (2009), Jawaid, et al. (2011), Hussain and Siddiqi (2012) come with the conclusion that MP is more effective than FP. Khan and Qayyum (2007) suggested that MP is more significant for economic

advancement. Khan and Qayyum (2007) come with the conclusion that money supply shocks are dominating the fiscal policy shocks and exchange rate channel is additionally significant as compare to interest rate channel for economic stability and long run economic growth[3]. Alternatively, number of studies Ali and Ahmad (2010), Mahmood and Sial (2011), and Kakar (2011) come with the conclusion that FP is more effective than MP in case of Pakistan.

Our research is focused on the growth effectiveness on FP and MP and their interrelationship. The gap of the research is inconclusiveness among Keynesians and monetarists about the role of FP and MP for economic development. Keynesians economists believe that FP play successive role for economic development but because of government failures like unproductive public spending, corruption, inappropriate funds utilization, political instability, and inefficient public institutions make a reason for fiscal policy less effective. In similar line monetarist, believes that monetary policy play fundamental role for economic development in case of Pakistan.

1.3 Objectives of the Study

- To investigate the relative growth effectiveness of fiscal policy and monetary policy.
- To analyze the interrelationship between fiscal and monetary policies.

1.4 Research Questions

Following are the major research questions of the present study:

- Which policy is relatively more growth effective in case of Pakistan?

[3] In similar line, Ahmad and, Malik (2009) highlight the role of fiscal policy through government expenditure. Government expenditure detrimentally effects the economic growth and remains inefficient in resource allocation.

- Does there exist interrelationship between fiscal and monetary policies?

1.5 Hypotheses

- Fiscal policy has more effectiveness in economic growth than monetary policy and vice versa.
- Fiscal and monetary policy has interrelationship.

1.6 Significance of the Study

The study should prove beneficial for both policy makers and academia as it focuses on the following issues

- The study analyzed the fiscal and monetary policies comparatively work for economic growth, price stability and employment in case of Pakistan.
- The study investigated the interrelationship between tools of fiscal and monetary policy and relative importance of these tools for policy purpose.
- On the behalf of findings, the study will provide some policy implications for government and central bank of Pakistan to implement the fiscal and monetary policy tools in right direction for economic growth.

The government policy has two basic instruments (public expenditure and public revenue), through which government control the financial division. The government can use tax cut policy or change in pattern of expenditure in different sector for better economic growth, price stability, and improve the infrastructure of the economy. In Similar line, the State Bank of Pakistan uses the monetary policy instruments (like, money supply, landing rate, bank reserve ratio, and open market operation) to achieve the stable price level, economic stability, financial stability, and full employment level.

1.7 Organization of the Study

The rest of the study is structured as follows; Chapter 2 presents relevant literature on fiscal and monetary policies and economic growth. Chapter 3 explores the major channels through which fiscal and monetary policies response to economic growth in Pakistan. Chapter 4 presents methodology and data issues. Chapter 5 presents data processing and estimation technique. Chapter 6 presents the conclusion and policy recommendations.

Chapter 2

Literature Review

2.1 Introduction

Recently, a well-established segment of economic literature discussed the interaction between fiscal and monetary policies. The constructive role of government in provoking economic growth have been emphasized by numerous studies however, other challenges (like economic stability, price stability, full employment rate, and other social norms) government intervention, considering monetary policy mainly responsible for economic progress. In this association this session of the study is devoted to present review of existing studies about the coordination of fiscal and monetary policy works of sustainable economic growth.

2.2 Fiscal Policy and Economic Growth

Growth effectiveness of fiscal policy has serious debate among numerous economists. Akanni and Osinow (2013) analyzed the effect of fiscal instability on economic growth in Nigeria. According to findings of the study government capital spending and government total spending both are negatively treated to economic growth whereas recurrent government expenditure cause positively to the growth. In addition, the findings of Akanni and Osinow (2013) shows that labor force and trade openness had positive and significantly involve in growth progress.

In similar way, Macek and Jankv (2015) investigated economic growth of OECD countries affected through fiscal policy shocks. Macek and Jankv (2015) collected

balanced panel data varies from the period of 2000 to 2012. The study comparatively analyzed two groups of cross sections from OECD countries. For panel estimation, study used pooled OLS and Hausman test. In case of OECD countries, the results of the study showed that capital stock and HC has positive and major contribution to promote the economic growth. In OECD countries taxation has more negative impact on economic growth rather than developed countries. In case of OECD, first group of countries government expenditure significantly affected the economic growth in positive direction whereas in case of second group government expenditure affects the economic growth negatively.

Similarly, Kahar (2011) empirically investigated the fiscal policy instruments effect on growth in Pakistan. kahar (2011) executed the Johensen test, ECM and Engle Granger causality on annual data which comprises from 1980 to 2009. The results of Johensen test confirmed the existence of long run co-integration relationship among fiscal policy instruments and economic growth in Pakistan. The result of causality test indicated the unidirectional and bidirectional causality between fiscal policy instruments and growth of GDP. It is suggested that economic growth move forward through controlling public spending and interest rate in short run. Kahar (2011) also concluded about fiscal policy variable and says that fiscal policy is long run growth phenomena instead of short run.

In addition, Joharji and Starr (2010) analyzed the Saudi Arabian economic growth effects of fiscal policy. For empirically analysis, the Joharji and Starr (2010) used annual data from 1969 to 2005. The result of Johansen test showed the existence of co-integration among fiscal instruments and economic growth. Findings of VECM specified

that government spending has significant and positive relationship with non-oil GDP. However, government revenue has negatively related with non-oil GDP and technological progress has significant positive impact on non oil GDP of Saudi Arabia.

In similar line, Benos (2009) analyzed the relative importance of fiscal policy for long run economic growth in case of Europe union countries. For empirical analysis, the study used unbalanced panel data varies from 1990 to 2006. The study comparatively analyzed the fourteen cross sections from EU countries. The cross sectional estimation carried out through pooled OLS, Arellan and Bover (1992), and Bluuned and Bond (1998) proposed system GMM. The results of both pooled OLS and GMM showed that the government spending on infrastructure and property safeguard wield significant and positive shocks on per capita growth . However, public expenditure in favor of HC and society protection has negative impact on per capita growth. Benos (2009) also found that non-stationary taxation (taxes on income, capital taxes, wealth taxes, and actual social contributions) depressed the per capita growth in case on EU countries.

In another study, Ali et al. (2010) empirically investigated the effectiveness of fiscal strategy on Pakistan's economic growth. The study collected the annual data varies from the period of 1972 to 2008. The study used the 2SLS instrumental variable technique and ADRL model for long-run coordination among fiscal policy instruments and growth. Results of ARDL model indicated the existence of long-run co-integration connectivity among fiscal policy and growth. Study outcome of fiscal deficit showed significant and negative impact on GDP growth which indicates the occurrence of expansionary fiscal contraction in Pakistan. The results of 2SLS showed that up to some threshold level there is positive relationship among fiscal deficit and economic growth

while away from threshold level fiscal deficit has negative effect on growth. However, the result of ECM indicated that short run effect of fiscal deficit on GDP growth is positive.

In Similar line, Agv et al. (2015) studied the fiscal policy shocks effect on economic growth in case of Nigerian economy. Study used the OLS estimation technique containing data from 1961 to 2010. Estimation results showed that the public spending has colossal return in economic stability and economic development of the society. The study suggested that budgetary share to public needed to enhancement for economic stability and growth.

In relevant study, Shihab (2014) analyzed causal effect of economic growth due to fiscal policy shocks in Jordan. The study adopted the Granger causality test for empirical estimation study used annual data for the period of 2000 to 2010 and the study found that the economic growth does cause the budget deficit but converse does not caused economic growth. Empirical analysis suggested that the government must reduce unproductive expenditure which reduced the fiscal deficit by facilitating the private investor.

2.3 Monetary Policy and Economic Growth

Monetary policy is crucial to control credit and money supply in the economy and plays fundamental role for economic growth. Khan and Qayyum (2007) empirically estimated monetary policy shocks in Pakistan. In this association, the study applied the Monetary Condition Index (MCI) for calculation of weighted sum of short term changes in exchange rate and interest rate comparative to value of base year [developed by Bernanke and Mihov (1998)]. An individual Coefficient of estimated results of MCI

executed to enhance both the Summarized MCI coefficient and Bernanke and Mihov (1998) measure proposed for overall estimation. The analysis concluded that MCI perform crucial role in detecting output production and inflation as soon as the country is not influenced through the supply shocks. In addition, the study found that in case of Pakistan supply shocks are dominated, and exchange rate control has vital role rather than interest rate control.

In relevant study, Epstein and Heintz (2005) empirically investigated the role of monetary policy and role of financial sector in employment generation and poverty reduction in case of Ghana. The secondary source data were used for GDP growth, exchange rate, inflation, price of oil, interest rate and money growth. For estimation study used the VECM test to explore long term and short term behavior of variables and for fundamental effects Engel Granger causality test were used. The results of VECM model indicated the existence of is long term significant and positive relationship among monetary strategy instruments and GDP growth. The causality test indicated that money supply, an exchange rate, and t-bill rate does cause economic growth. Study found that monetary policy instruments are direct indicator for economic growth which makes reason for employment creation and reduction in poverty.

Similarly, Precious and Palesa (2014) adopted the Johanson and Juselius (1990) approach to investigate the economic growth effects in monetary policy in case of South Africa. For empirical investigation the study used annual data which varies for the period of 2000 to 2010. The outcome of VECM model shows that monetary policy provides stable and significant role in economic growth. Overall the money supply and repo rate

has positive insignificant, while inflation has positive significant impact on economic growth.

In similar line, Alavinasab (2016) empirically estimated the monetary policy of Iran impact on economic growth. For instance, the study adopted the Johanson cointegration and ECM to investigate the long period and the short period behavior of monetary policy instruments. The study used the yearly statistics for the time of 1971 to 2011 and GDP, exchange rate, interest rate, broad money and inflation rates were used as proxies for growth and monetary policy. The results indicated that the money supply significantly and positively affected the long period economic growth whereas exchange rate and inflation both significant and negatively changed the economic growth. However, both exchange rate and money supply has significant and positively affected the economic growth in case of Iran.

On the other hand, Anowor (2016) investigated growth effectiveness of monetary policy in case of Nigerian economy. The study used the Johansson co-integration and VECM test to examine behavior of monetary policy tools on growth. The yearly data collected for the period of 1982 to 2013 to investigate the behavior of gross domestic product, and interest rate, cash reserve ratio, monetary supply rate as proxies of economic growth and monetary policy respectively. The results indicated that cash reserve ratio is superior tools than money supply for monetary growth, whereas broad money is not good instrument for economic growth in case of Nigerian economy.

In addition of monetary policy literature, Apere and Karimo (2014) examined the growth and inflation effectiveness of tools of monetary policy in case of Nigeria. The study used annual time series data for empirical analysis, data ranges from the period of

1970 to 2011. The analysis used interest rate, broad money and consumer prices as proxy of monetary policy and GDP as growth indicator. The study applied VAR model for empirical analysis, the finding showed that the in short run money supply and expected output are key indicator for economic growth but in the long-run interest rate with price index channel is more important for economic growth. The study softly concluded that monetary policy is long-run phenomena rather than short-run for economic development in case of Nigerian economy.

Similarly, Gul et al. (2012) empirically investigated the economic growth and monetary policy instruments in case of Pakistan. The study applied the ordinary least square (OLS) test on yearly data varies from 1995 to 2010 to get empirical outcome. The analysis found that interest rate negatively affected the economic growth; the study suggested the tight monetary policy cannot work for economic growth is case of Pakistan. In other words, the money supply channel has positive impact on economic growth which leads to loose monetary policy. The study also suggested that the money supply channel is more effective for economic in Pakistan than exchange rate channel because exchange rate has negative impact on GDP growth.

On the other hand, Kamaan (2014) analyzed the growth effects of monetary policy in case of Kenya. The study used the VAR estimation to find the responses of monetary shocks on output. An empirical result shows that monetary shocks do not responses to output. Under monetary policy action, to control the inflation rate the interest rate control is more effective than exchange rate channel.

In addition, Ditimi et al. (2011) examined the monetary policy effect on GDP growth the study of Nigeria economy. Ditimi et al. (2011) used yearly data from 1986 to

2009 for empirical outcome. For estimation study adopts the Ordinary Least Squared method and for co-integration study adopts the Johansen and Engle-Granger techniques. The finding showed the long-run co-integration relationship among monetary policy and growth. Empirical results of Engle Granger test indicated that there money supply does cause in exchange rate but does not cause price level (inflation). In similar line money supply don't cause GDP while GDP does cause money supply. The coefficient of money supply showed that the money supply negatively affect growth of GDP. The study also recommended that for sustainable economic growth and price stability there is need for greater flexibility in monetary policy.

2.4 Fiscal Policy, Monetary Policy and Economic Growth

The one comprehensive work has been carried out by Ahmed and Malik (2009). The study used the GMM estimation method to estimate the dynamic model for panel data. The study concluded that financial sector progress affects GDP per capita; through inefficient resource allocation also estimates shows that the increase in domestic capital accumulation relative to foreign capital is more involved for increasing in output per worker and promoting long run economic growth. In addition, public spending adversely affects the economic growth because of its detrimental impact on allocation of resource efficiently.

In Similar line, Fatima and Iqbal (2003) used the multivariate model for analyzing the panel estimation to find the economic growth effects of fiscal and monetary policy in selected Asian countries. Johansen and Juselius method were used and multivariate co-integration methodology for long-run relationship among variables. In case of Thailand study found bi-directional causality, while in case of Indonesia, Pakistan, India and

Malaysia the study found the existence of uni-directional causality among fiscal and monetary instruments and growth indicators. They come with the conclusion that the effectiveness of both economic policies differs from state to state depends upon the nature and internal resources of the economy.

In relevant study, Jawaid et al. (2010) examine the comparative analysis of monetary and fiscal policy in case of Pakistan economy. Johansson Juselius (1990) estimation technique was used for long run co-integration relationship among economic growth, fiscal and monetary policies. According to the results, the empirical analysis shows that in Pakistan monetary instruments are more efficient in promoting economic growth rather than fiscal policy. In addition, the co-integration test confirms existence of positive and long term relationship among economic growth, monetary and fiscal policies.

Similarly, Jawaid, et al. (2011) analyzed the nexus among monetary policy, fiscal. policy trade policies and economic growth in case of Pakistan. For empirical analysis, study used annual data and find out that fiscal and monetary policies both has significant share in promoting the economic growth in the short run, while trade policy have no significant effect on GDP growth. The results of cointegration and ECM test revealed both fiscal and monetary policies are positive and directly linked with economic growth of Pakistan. In addition, the study skillfully concluded that in case of Pakistan monetary policy instruments are key determinants for economic development relative to fiscal policy.

In addition, Hussain and Siddiqi (2012) investigated the primary role of institutions, fiscal and monetary policies in Pakistan. According to the cointegration

results the study find out that monetary policy and economic institutions are play vital role to increase per capita growth however, government revenue, social institutions and political institution insignificant role to promote the economic growth. Based on findings of Hussain and Siddiqi (2012), it is recommended that government should take steps for improvement and efficient role of government institution to increase the economic development.

On the other hand, Cyrus and Elias (2014) investigated the growth effect of fiscal and monetary policies by using impulse response function and variance decomposition. Cyrus and Elias (2014) find fiscal policy more effective than monetary policy and play crucial role for Kenya economic output. However, monetary policy has contradiction effect on economic output relevant to fiscal policy shocks.

Similarly, Noman and Khudri (2015) estimated the GDP expansion effectiveness of fiscal and monetary policy in case of Bangladesh. The estimated variable of both the policies perform significant role for economic growth in Bangladesh economy which implies that both policies were balanced and correspondingly contribute in the economic growth of Bangladesh economy. These results are inline with the findings of Chowdhury and Afzal (2015) concluded that both fiscal and monetary policies are relative measure for economic development in Bangladesh.

In similar line, Tesfay (2010) analyzed the growth effectiveness of fiscal and monetary policy on economic growth in case of Ethiopia, with the objective of finding out the relative strength of fiscal and monetary policy on GDP growth. According to study findings, both money supply and government expenditure were found statistically insignificant to influence the real variables such as GDP and export. However, in the long

term, policy variables can only control nominal variables such as inflation and the exchange rate.

Similarly, Ogege and Shiro (2012) analyzed dynamics of FP and MP in case of Nigeria. The study employed real GDP, net trade, T-bill rate, lending rate, government expenditure, tax rate, and political stability. GDP took as explained variable while all other variables took as explanatory variables. Study works on time series data ranges from 1970 to 2010 which collected from CBN Statistical bulletin. The study used Engle-Granger and Johansen and Joselius (1990) test for causality and co-integration analysis respectively. The finding indicated the existence of long period linear association among FP, MP and GDP growth. The causality test shows that unidirectional causality among FP and GDP growth while bidirectional causality involves among MP and GDP growth.

In relevant literature, Awad and Alsowaidi (2000) analyzed the long run FP and MP effect GDP growth in Qatar. For empirical analysis the study used the yearly data for varies from of 1970 to 2000 for investigating the short term and long term FP and MP performance. Finding of empirical analysis shows that monetary policy slowly affects economic growth over time while fiscal policy leads for economic growth. The monetary policy has positive and significant response in economic growth but its response is less than fiscal policy because of large scale oil revenue which positively affected the Qatar economic growth performance. The fiscal policy is more powerful tool for economic growth in Qatar because of government revenue (return on oil exporting). The study concluded that both policies relatively important for economic growth but fiscal policy is more important for long run economic growth.

Cantore et al. (2012) investigated the interaction among fiscal and monetary policy in case of United Kingdom. The study adopted the new Keynesian model and pay particular attention to explore the role of fiscal as well as of monetary policy in determining the outcome of fiscal incentive to government expenditure along with probable interest rate. The study applied the conventional Taylor rule in the form of 'Quasi-empirical' which developed by Smets and Wouters (2007). The study empirically applied the different interactive term to investigate the behavior of government spending and interest rate policies. The study applied the time-consistent policy, welfare optimal policy (Ramsey), conventional Taylor rule and empirical Cobb Deluges based rule. The finding shows that conventional Taylor interest rate policy prescribed immediate and strong response for output gap. The empirical rule response in output performance but it is less affect than Taylor rule. The study found that when the new Keynesian and monetary policy is optimal, the model carries out the fiscal multiplier exceeding one which crowding-in private investors and considered Taylor rule closer to optimal policy determination which determine the higher immediate response in output gap.

In addition, Ajisafe and Folorunso (2002) empirically investigated the effects fiscal policy and monetary policy on economic activities in case on Nigerian economy. The study used annual data for ranges from1970 to 1998 for analysis. The study used Johansen and Joselius (1990) test for co-integration and VECM for the short term and the long term analysis. The estimation results showed that fluctuations in gross national product attached monetary policy rather than fiscal policy, also monetary policy greater effective for growth of GNP in Nigerian economy. The VECM results indicated that the coefficients of monetary policy tools positively and significantly affected the economic

growth, while fiscal policy coefficient less effective for economic growth than monetary policy.

In similar line, Dungey and Fry (2007) estimated the effects of FP and MP shocks on major macroeconomic indicators in New Zealand. The study collected the quarterly data varies from the period of 1982Q2 to 2006Q4 and applied the Structural Vector Auto-Regressive model (SVAR) by using eight endogenous variable and three exogenous variables. The study also applied the Pagan and Pesaran (2007) technique to check the co-integration relationship among the economic growth, fiscal policy and monetary policy. Pagan and Pesaran (2007) test indicates existence of co-integration relationship among macroeconomics policies. Study concluded that fiscal policy has superior affect the growth rather than monetary policy.

On the other hand, Ali and Jayaraman (2001) analyzed the coordination among fiscal and monetary policies and assessment about macroeconomic policies implementation in Fiji. The study comparatively analyzed both fiscal and monetary policy tools and impact of these tools growth of GDP in Fiji. The study concluded that coordination among fiscal and monetary policies promote the expansion in the domestic financial market. The success of policy coordination with economic growth is government be familiar with to low the inflation. The study found that monetary policy is necessary for achieving the long term goals that is higher and sustainable economic growth in case of Fiji. The acceptable level of inflation was attained effortlessly through coordination among fiscal and monetary authorities, which leads to sustainable economic growth.

Laokulrch (2013) examined the fiscal and monetary policies on services sector in Thailand. The study adopted the multiple regression analysis and found that both fiscal and monetary policy does not play any role for increasing employment in services sector. However, the study explored that openness and industrialization played positive and significant role for improvement the services sector employment. The study also found the inverse relationship between minimum wage rate and employment level.

Gowriah et al., (2014) explored the fiscal policy and monetary policy role on stock exchange in Island. For long and short run estimation the study adopted the autoregressive distributive lag model (ARDL) and concluded that monetary policy has positive association with stock prices in the short time period and long run time period. However budget deficit affected adversely to the stock prices than the monetary policy. The study found the unidirectional causality stock prices among and interest rate, whereas the study sure the monetary policy is vital in economic growth than fiscal policy in case of developing countries.

In addition, Adeeb et al., (2014) empirically estimated the fiscal policy, monetary policy and trade policy impact growth of GDP in case of Pakistan. The study used annual data ranges from 1976 to 2012 and adopt the GDP as proxy of economic growth; government expenditure, tax revenue and budget deficit as proxy of fiscal instruments; while interest rate, money supply and inflation as proxy of monetary policy instruments; and trade openness as proxy of trade policy in Pakistan. The results of autoregressive distributive lag model (ARDL) showed that both monetary and trade policies has positive and significant however, fiscal policy insignificantly affected the economic growth of Pakistan. The reason for insignificant impact of fiscal policy was budget deficit and

heavy burden of unproductive government expenditure which leads to slow the economic growth. The study also suggested that government must be focused on development expenditure rather than non-development expenditure which instigate the fiscal policy less effective.

Similarly, Hsing (2013) analyzed the FP and MP impact on stock market in Poland by using the quarterly data from the period of 1999 Q2 to 2012Q4. The study applied the GARCH estimation technique and find out that fiscal policy negatively affected the stock market prices because the coefficients of both government debt and deficits has significant and negative sign. The monetary policy positively affected the stock market prices in both condition either tight or loose monetary policy. The findings indicated that economic growth positively affected by stock market index in Poland.

In addition, Faisal et. al (2015) investigated the banks financial performance in Pakistan. The study analyzed the public and private sector banks comparatively. For empirical analysis, study collected secondary source data of banks profit, bank loss, balance sheet, and other financial statements for the period of 2005 to 2009. Study used different empirical techniques and ratio test as "return on assets, return on equity, debt equity ratio, debt assets ratio". Results of the study indicated that MCB execute better after privatization than NBP. In addition, all measure like "work performance, quality of services, efficiency, financial position, and in market value" MCB performance is superior to NBP. The study also concluded that the assets of both banks grow positively but MCB grow more rapidly than NBP. NBP equity returns decreases for the reason that inefficient use of assets compassion to MCB. In similar line, MCB performance much superior than to NBP in all other measures (like "return on equity, return on assets, debt

assets ratio, and debt equity ratio".) and use their assets more competently and successfully.

In similar line, Rakic and Radenovic (2013) studied the Serbia's fiscal and monetary policy. Study applied the cointegration test on quarterly data varies from 2003 to 2012. Results of integration test showed that both policies have long time association with economic growth. Estimation results indicated that fiscal instruments behave mixed while monetary instruments positively responses to growth of GDP. The study concluded that fiscal instruments have no command to enhancing the economic growth, while monetary instruments have strong and positive achievers of stabile level of growth.

Similarly, Fetai (2013) investigated role of FP and MP in financial crisis in case of selected emerging and developing countries. The estimation applied the OLS through robust test and GMM test on panel data. The study inspected the 83 period and included 66 emerging and developing economies. Results of both robust test and GMM test showed that fiscal and monetary policy narrowing throughout the financial crisis is connected with output loss. It is also concluded that fiscal shocks has small responses in output loss but monetary policy coefficients perform insignificant responses. It is softly concluded that fiscal instruments carry out effective reaction to manage the financial crisis in emerging and developing economies as compare to monetary instruments.

The theoretical literature indicates that widespread works have been done on growth responses through fiscal and monetary policy. From literature it's concluded that both fiscal and monetary policies perform a fundamental role for achieving the financial stability, prices stability, and economic stability in a nation. The effectiveness of these policies for economic development varies from state to state. However, it is concluded

from literature that researchers cannot attain single conclusion that which policy is more effective even for single economy. In similar line, the studies related to Pakistan economy cannot reach any conclusion about fiscal and monetary policy, which policy is more effective for economic development in case of Pakistan.

Our research is focused on the growth effectiveness on FP and MP and their interrelationship. The gap of the research is inconclusiveness among Keynesians and monetarists about the role of FP and MP for economic development. Keynesians economists believes that FP play successive role for economic development but because of government failures like unproductive public spending, corruption, inappropriate funds utilization, political instability, and inefficient public institutions make a reason for fiscal policy less effective.

Chapter 3

Fiscal and Monetary Policies Structure in Pakistan

3.1 Introduction

In the economic progression of developing nations like Pakistan, public spending alongside private sector has a vital role to play. With respect to Pakistan, fiscal policy has parallel microeconomic and macroeconomic goals. (GoP, Finance division (2005).

Enhanced division of earnings and wealth, satisfying the basic necessities of the poor, appropriate utilization of social services, boosting investment in public sector and advancing the productivity of both the public and private sectors to generate goods and services are all inclusive to the microeconomic targets.

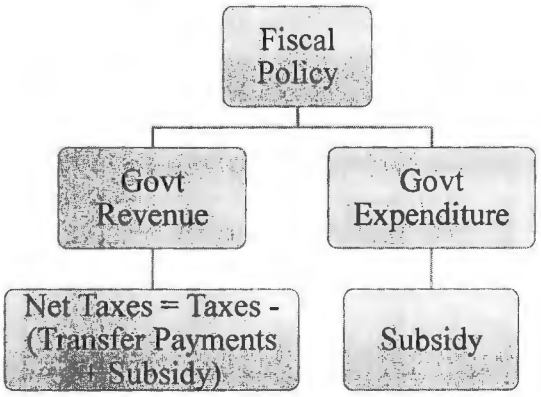
Macroeconomic targets ensure the development of the economy as a whole, national output, inflation jobs, and the balance of payments. Fiscal policy has to ascertain that the stage and structure of taxes support equity and redistribution, and do not obstruct in individuals' investment and consumption decisions. In the similar manner monetary policy plays substantial role in the economy of Pakistan.

Pakistan has experienced cycles in inflation and economic growth in the past. Traditionally, State Bank of Pakistan (SBP) overemphasized on growth targets in preference to focus on inflation and output which demonstrate the pro-cyclical result of SBP. Furthermore, there has been more eccentricity in setting objectives of monetary policy (Malik, Ahmed, 2007).

3.2 Fiscal Policy Structure in Pakistan

In Pakistan federal government budget categorizes in two parts that is public revenue and expenditure. To enhance and sustain economic growth is the key objective of the fiscal policy therefore to reduce unemployment and poverty. By imposing taxes the government receives revenue from the individuals. The government spending take in form of wages to government employees, development expenditure, social security benefits, health, education, defense etc.

Figure 3.2.1: Fiscal Policy Strecture in Pakistan



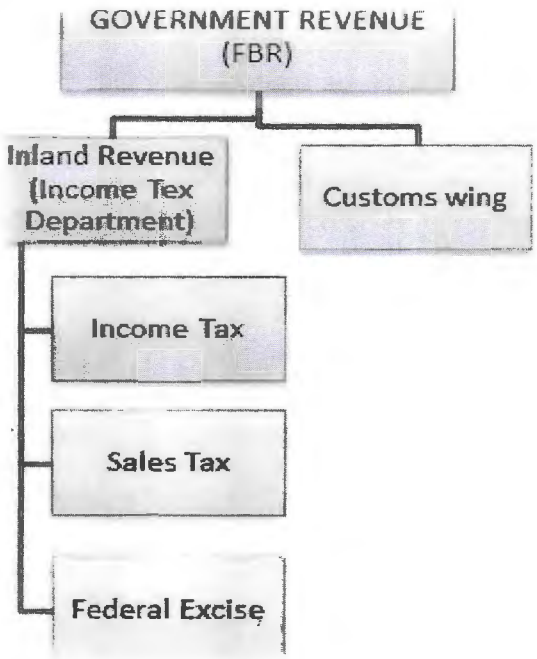
Source: GoP, 2015 Finance Devision.

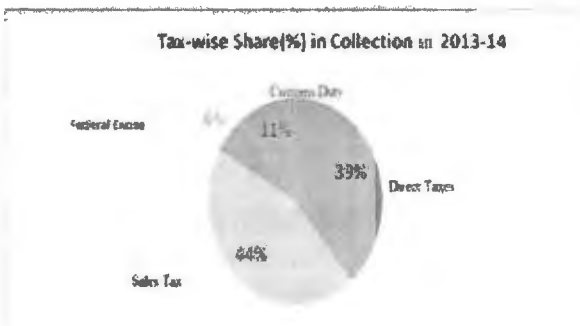
3.2.1 Government Revenue

Accorging to Federal Borad of Revenue (FBR) there are two basic catagories of revenue collection in pakistan's economy. First, Inland revenue which is the major source of revenue, in fiscal year 2014-15, it hold about 54 percent of total revenue collection. Inland revenue has further classified into three catogaries that is income tax, sales tax and federal excise duties. The share of direct tax is 39 perscent, share of sales tax is 44 perscent, where share of federal excise duty is 6 perscent in inland revenue. Second,

Customs Wings in fiscal year 2014-15, the share of custom wings was 11 percent of the total collection.

Figure 3.2.2: Protfolio of Public Revenues





Source: Federal Borad of Revenue; Government of Pakistan (2013-2014)

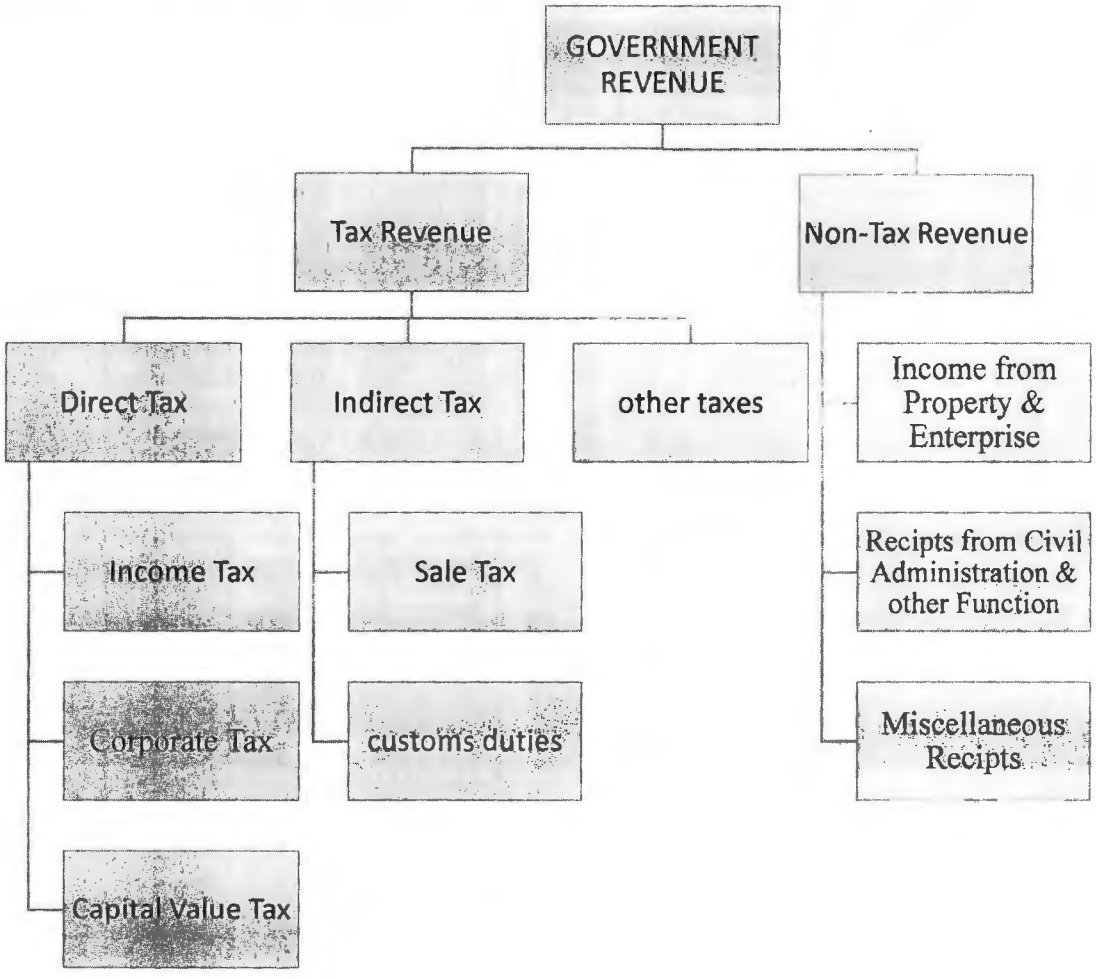
Government of Pakistan gives complete synopsis of fiscal policy 2015-2016. Which offers complete picture of expenditures and revenues budgeted for fiscal year 2015-2016 alongside revised estimates and budget estimates for the fiscal year 2014-2015.Implemented under the New Accounting Model introduced in fiscal year 2004-2005, the budgeting and accounting classification system utilized in the budget persists the same. With experience the Medium Term Budgetary Framework (MTBF) procedure, initiated in the fiscal year 2009-2010has been strengthened. Tax revenue in financial year 2014-15 is about 73% of total revenue and non-tax revenue in same year is 27% of total revenue collected by financial sector of Pakistan.

Table 3.2.1: Tax and Non-Tax Revenue Collection

Year	Rs.(M)	Inland Revenue (%)	Tax Revenue (%)
2005-06	1,077,000	33.9	66.1
2006-07	1,163,000	38.74	61.26
2007-08	1,545,500	40.86	59.14
2008-09	1,783,602	33.82	66.18
2009-10	2,051,944	27.72	72.28
2010-11	2,235,889	24.9	75.1
2011-12	2,536,752	20.2	79.8
2012-13	2,836,562	25.1	74.9
2013-14	3,597,142	30.12	69.88
2014-15	3,952,472	26.37	73.63

Source: Government of Pakistan (2015), Finance Division.

Figure 3.2.3: Protfolio of Public Revenues According to Finance Division

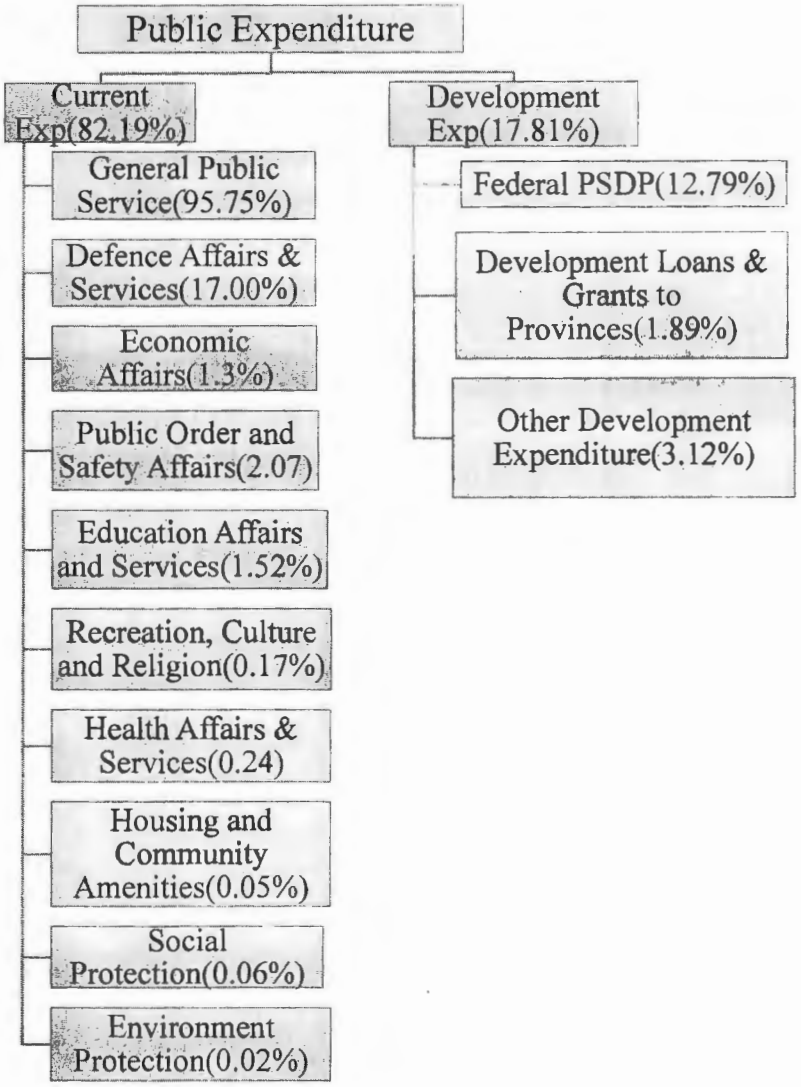


Source: Government of Pakistan (2015), Finance Division.

3.2.2 Government Expenditure

In Pakistan public expenditure is broadly divided into two parts that is current expenditure, and development expenditure. The share of current expenditure in total public spending is 82.19 percent and development spending is 17.81 in fiscal year 2014-15. The major parts of total public spending are general public service which is 59.75 percent, defense is 17 percent, and Public Sector Development Program (PSDP) is 12.79 percent. However, the two major sectors (education and health) hold just 2 percent of total public spending.

Figure 3.2.4: Portfolio of Public Expenditure in Pakistan

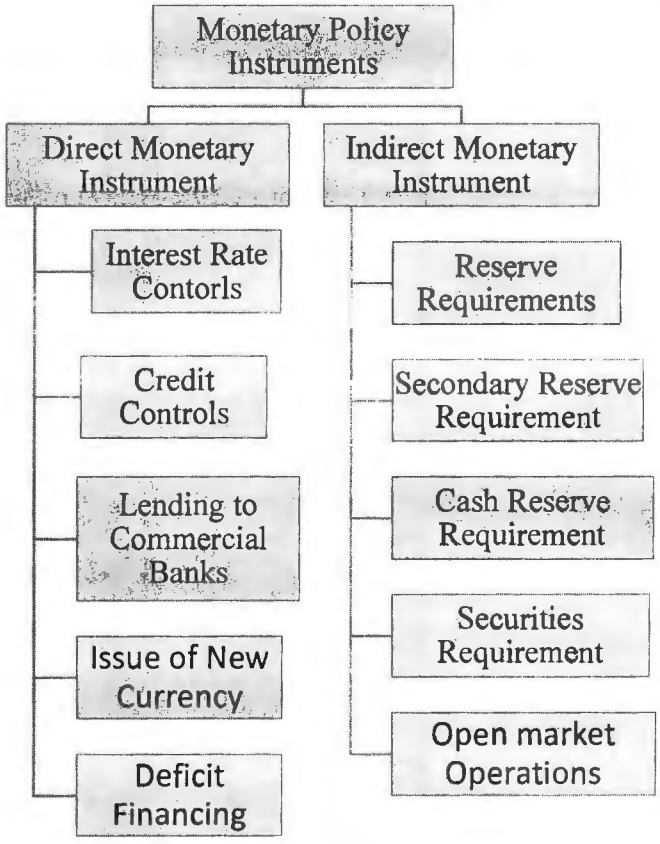


Source: Government of Pakistan (2015), Finance Division.

3.3 Structure of Monetary Policy in Pakistan

Monetary policy is the technique by which the supply of money is regulated by the monetary authority of a nation, often aiming a rate of interest with the intention of stimulating economic stability and growth. In Pakistan, the State Bank of Pakistan has the authority to adopt the tight, neutral or loose monetary policy. The fundamental goals of monetary policy to enhance the economic development of a nation are balance level of exchange rate, price stability, BOP equilibrium, redistribution of income, full-employment level, and credit control.

Figure 3.3.1: Monetary Policy Structure in Pakistan



Source: SBP, 2015.

3.3.1 Direct Monetary Policy Tools

Monetary policy direct instrument to control the financial sector in the economy are liquidity ratio, interest rate, direct credit. However, all these instruments control the banks' credit, interest rate and lending of money to commercial banks as last resort, the State Bank of Pakistan rapidly use these monetary policy tools to achieve its targets.

3.3.2 Indirect Monetary Policy Tools

Compare to direct monetary policy tools, indirect monetary policy instruments are utilized more extensively, indirect policy instruments seek to modify liquidity condition of money. The direct monetary policy tools are managed through sale and purchase of government securities under open market operation. For printing new money, central bank needs to hold some reserves in the form of cash, gold or other metals. Reserves ratio, and exchange rate are also indirect instruments of monetary policy. The central bank also uses the flexible exchange rate to determine the long term supply of money and reserves. The main factors included in monetary instruments are lending rates, money supply, exchange rate, and open market operation and inflation rate.

Chapter 4

Methodology and Data

4.1 Introduction

The prevailing chapter illustrates the issues of data and methodology for investigating the growth effectiveness of fiscal and monetary policies in Pakistan. To elucidate the mechanism behind growth and policies implemented by the government and the central bank over the course of time is the core objective. It is widely accepted fact that the accurate policies at the appropriate time are favorable for sustainable economic development. Numerous economic and non-economic aspects have grave impact on the economic growth and development.

The chief economic constituents are government revenue, government expenditure, money supply, subsidies, inflation rate, lending rate, bank reserves, money multiplier, capital stock, saving rate, and trade openness whereby non-economic aspects comprise law and order conditions, political insecurity and global environment. However, the prevailing study emphasized on the economic aspects exclusively associated with the fiscal and monetary policies that have grave influence on the economic growth.

4.2 Theoretical Framework

Mercantilists thought were associated with "the state wealth and development of a nation which was determined through its precious metal reserves and nation act in response for improvement of capitalistic system". In contrast to the mercantilists thought, the classical economists emphasized the significance of real factor which determine the state wealth and stressed the optimizing propensity to free markets rather than of state control. The classical economists thought is related to economic development of a nation which in turn was associated to the result of increase in stocks of real production factors

and advancement in production process (technique). Money plays only a role in making easy transactions as a means of exchange and money itself neither contribute to economic growth. In 16^{th} to 18^{th} centuries, the economic thoughts of Mercantilists and practices were common in Europe which promoting government regulation and trade in order to promote domestic industries.

Mercantilist argued that higher amount of money in the society would leads to raise the commodities demand that would stimulate output production as well as employment in short run. On the other hand, Classical economists anxious the importance of real factors relative to monetary factors in stimulating the output production and employment level in the society also stressed the role of self-adjustment propensity of the economy. Government strategies guaranteed to adequate the output demand was considered by classical school of thoughts to be redundant (unnecessary) and usually harmful.

As classical economists argued that growth of an economy is determined by the increase in the stock of real factors, hence formularized the production function as follows;

$$Y = F(K, N) \quad \text{.....4.2.1}$$

In this notation, Y, K and N representing the output, capital accumulation and labor force respectively. The production function shows that output of the firm/economy by utilizing the amount of inputs in the form of capital stock and labor force. The classical economists considered that capital is fixed in short run and output production directly depends on labor force performance. Since the supply of labor force has direct

and positive relationship with real wage rate which is determined through demand for labor and supply for labor also the performance of labor (marginal productivity of labor).

The outstanding characteristic of this representation is that supply creates the level of output and employment. This property leads to aggregate supply curve vertical, which is the representation of classical assumption to the labor market. In classical approach the market structure explains sharp classical movements in output, and supply side shock effect the output. The oil-price shock in 1974 petroleum exporting countries leads all classical economists, but it is still controversial because of financial crisis of 2007-2008.

The classical economists also explain the aggregate demand which is determined through the quantity of money by Irving fisher (1922). The Quantity Theory of Money is represented by the money supply and output equation as following.

$$MV=PY \qquad 4.2.2$$

Here, M represents money supply, V represents money velocity, P represents level prices and Y is national income (output production). The quantity theory of money has essential assumption about the amount of money was that the monetary authority exogenously controlled the quantity of money. Fisher says that money velocity will determine the price levels which in turn determine the payment habits and payment of technology.

After the Irving Fisher (1922) the Alfred Marshall(1926)[4], A. C. Pigou (1933) determined the association among the amount of money and cumulative price level, and argued proportional association among supply of money and aggregate price level. Marshall (1926) focused on individual decision making to keep optimal amount of money hold, for comparison of transaction with stores of value and to meet unexpected obligations. But A. C. Pigou (1933)[5] says, "Currency held in the hand yields no income" since Marshall with further Cambridge school of thoughts assumed that demand for money always existed as a proportion to money income.

$$M^d = KPY \quad \text{.....} \quad 4.2.3$$

In short run, money demand always depends upon the level of transaction, which is stable and optimal, to hold in proportion to income.

$$M\frac{1}{K} = PY \quad \text{.....} \quad 4.2.4$$

This shows that, V is equal to $\frac{1}{K}$ and this formulation is equal to Fisher equation.

After great depression of 1930s in Great Britain it was enormous challenge for economists and policy makers to deal with higher level of unemployment, also it was serious and long term debate among economists and policy makers. Keynes (1936) "General theory of Employment, Interest and Money" argued that high unemployment was the result of deficiency in aggregate demand. A Keynes school of thoughts support fiscal policy and says that first and foremost government expenditure on community work projects stimulates demand. An expansionary fiscal policy action would leads to

[4] Marshall (1926, pp.28) "Quantity theory of money"
[5] Pigou (1917) "value of money" vol.32, pp 38-65 and Pigou (1933) "theory of unemployment"

raise level of output and employment. Government expenditure on public works project directly involves in raising consumer demand trough raising the level of income of those employees who worked in public projects. In similar line, Public expenditure also involves indirectly to raise consumer demand through rising money supply in the society by spending on public projects.

Increase in government spending, if not financed through printing new money or changes in monetary policy, both government spending and monetary policy cannot affect employment level and prices. However, if public projects financed through money creation, then government spending affect prices but not the employment level or output. According to Keynesian model the increase in public expenditure leads to increase in economic growth.

$$Y = C + I + G + Nx \quad \text{.....4.2.5}$$

Here, Y denotes GDP, C is total expenditure, I denotes level investment, G is public expenditures and Nx is net exports (exports minus imports). This model demonstrates the character of fiscal policy in handling collective demand to moderate the balance level of output through transfer the unbalanced investment level.

After the World War II, the Monetarist focused on monetary policy rather than fiscal policy and characterizes a list of proposition about the money supply. The money supply has leading influence on the nominal income; in long time period, the level of output and employment in a nation are determined through real factors rather than monetary factors. In short time period, supply of money does not affect the employment level and output. Money supply is controlling factor which become a reason for cyclical

movement in employment level and output. The monetarists criticize the Keynesian economists and say that volatility in economic activities is first and foremost outcome of government policies. The government destabilizes the financial system through involvement in the private sector by usual adjustment mechanisms, for example price control, wages obvious, rent controls and interest rate.

Friedman in 1970 explains the classical "quantity theory of money", "in the monetary theory the analysis was taken to mean that in the quantity equation taken MV= PT the term for velocity could be regarded as highly stable, that it could be taken as determined independently of the other terms in the equation, and that as a result changes on quantity of money reflected either in price or in output".

Friedman says, "Inflation is always and everywhere a monetary phenomenon". He reasserted the "quantity theory of money" to develop a strong monetarist position as

$$PY = \dot{M}\frac{1}{K} \quad \text{.....4.2.6}$$

Monetarists argued about money supply "money is matter of changes in nominal income and changes in real income for short run. Also a change in the rate of growth of the stock of money is necessary and sufficient condition for appreciable changes in rate of growth of money income".

Monetarists says "Keynesian restrict the channels by which the interest rate affects aggregate demand to an effect on investment by means of change in the cost of borrowing funds". Friedman separately considered bonds, equities and durable goods and did not lump all non-money assets into one category. Monetarists believe that "if a

change in the interest rate is really a change in all these yields its effects go beyond the effects of a change borrowing cost of firm that buy investment goods. In addition a change in the prices of corporate shocks, the prospective return on real estate and holding durable goods as well". Monetarists argued about the fiscal policy. "The state of the budget by itself has no significant effect on the courses of nominal income, on deflation or on cyclical fluctuations".

Friedman wrote "Fiscal policy by itself is largely ineffective, that what matters is what happens to the quantity of money." Monetarists not critically argued about the role fiscal policy and its effectiveness, but say that fiscal policy effect will originate mainly because of change in money supply. As tax cut or increase in government spending is financed through new money printing; however both are monetary policy achievement, which achieve through increase in money supply. Consider an increase in government spending without changes in tax rate, such government consumption financed through selling bonds or printing new money Similarly, tax cut without changes in government spending, the tax revenue must be financed by selling bonds or printing money.

4.3 Model Specification

The theoretical literature on the subject claims that both fiscal and monetary policies explain real business cycle; and argued that economic growth is equally dependent on these macroeconomic policies. Hence, aggregate output model will explain three basic points of views. First, it will be feasible to elaborate the fiscal and monetary policies through economic growth theory. Second, monetary policy and economic growth has possible relationship. Third, how both fiscal and monetary policies explain economic

growth, price stability, economic stability, balance of payment, and acceptable level of employment for the economy.

After the great depression 1930s, a lot work has been carried out on economic growth and its determinants like total factor productivity (TFP), physical capital and labor force. In this regard, notable contributions are that of neo-classical economists Solow (1956), Solow and Swan (1957), Ramsey-Cass-Koopmans (1965) argued that "capital accumulation is essential component of economic growth rather than all other factors". These models explain that exogenous technological changes are the key component that determines long run economic growth.

The endogenous growth models pioneer by Romer (1986), Lucas (1988) argued for the endogenously determinations of the component in carrying long run economic growth. These growth models emphasize on the endogenous determination of human capital and technological progress. These theories also explain the positive externalities and spillover effect on growth determent.

The economic fluctuations are equally performed in production function, in which output depends on available physical and human capital and technological changes. Production level of physical goods and services depends upon the amount of input variable, like capital stock, labor and productivity of inputs. The relationship between output and inputs is described by aggregate production function. The model below is considered for empirically analyzing the characteristic of fiscal policy and monetary policy in promoting long term per capita growth by means of growth of Total Factor of Productivity (TFP). The Hicks-natural production function is given as,

$$Y_t = A_t(K_t L_t) \quad \text{.....(4.3.1)}$$

Y_t represents the aggregate output, K_t represents capital accumulation, L_t represents labor and A_t represents the Total Factor of Productivity (TFP) (or Technological Changes). The Cobb Douglas specification takes the form,

$$Y_t = A_t K_t^{\alpha}, L_t^{\beta} \quad \text{..... (4.3.2)}$$

Where α is share of capital stock, 'β' is share of labor force, and the econometric model built for economic growth based on fiscal and monetary policy presented Ahmad and Paul (1998), Ahmad (1999), Ahmad and Malik (2009) and Akanni and Osinowo (2013). Dividing both side of production function by L_t, taking log transformation and denoting logs of output per worker, TFP and capital per worker by y_t, A_t, k_t respectively. The intensive form (per worker form) equation 4.3.2 is presented as follows:

$$y_t = A_t k_t^{\beta} \quad \text{..... (4.3.3)}$$

Taking log equation 3 can be written as;

$$Logy_t = LogA_t + \beta \log k_t \quad \text{. . .. . (4.3.4)}$$

Equation 4.3.4 indicates that there are two main roots for economic growth namely TFP growth and capital accumulation. In this study our objective is to investigate the effectiveness of monetary policy and fiscal policy, on these sources of economic growth. The government expenditure can directly intervene into economic activities through government investment in public capital (Akanni and Osinow 2013).

This model was used for empirical analysis of effectiveness of conversion in monetary policy and fiscal policy on the economic growth. Two different ways are used for assembling the growth model which captures the effectiveness of fiscal and monetary policy. First approach is to estimate fiscal and monetary policies variable on each of three variables as appear in equation 4.3.4. The TFP, fiscal and monetary policy accumulations are substituted in the estimated growth equation 4.3.4. The limitation of this equation is that it needed to estimate the TFP separately before regressing the final equation in fiscal and monetary structure. Further approach is to replace the algebraic expression representing the connectivity of TFP with fiscal and monetary policies instruments in growth equation as specified by Ahmad and Malik, 2009. Follow Ahmad and Malik 2009 the linear relationship to determine TFP.

$$a_t = \theta_0 + \theta_1 GE_t + \theta_2 TAX_t + \theta_3 ER_t + \theta_4 MS_t + \in_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.3.5)$$

Where GE_t, TAX_t, MS_t, ER_t, are government expenditure, tax revenue, broad money, and exchange rate respectively while ε_t is residual term.

Thus both fiscal and monetary policies influence TFP, furthermore government expenditure, government tax revenue, money supply and exchange rate are important sources of TFP growth because they are direct indicators for influencing the price stability of the economy (Cyrus and Elias, 2014). Other control variables that affect the TFP are government subsidies to private sector, transfer payment, interest rate, bank reserve ratio, and open market operation. According to Cyrus and Elias, 2014 these variables indicate the macroeconomic stability.

The fiscal and monetary policy variables are included in capital equation and determine the capital accumulation into GDP per capita in Pakistan, which is linear combination of fiscal and monetary policy and control variables.

$$k_t = \gamma_0 + \gamma_1 GE_t + \gamma_2 TAX_t + \gamma_3 ER_t + \gamma_4 MS_t + \delta_1 GDP_{t-1} + \pi_t \ldots\ldots\ldots\ldots\ldots \quad (4.3.6)$$

Here π_t is white noise error term. Substitution of equation 4.3.5 and 4.3.6 into 4.3.4 and simplifying collectively fiscal and monetary policy variables also accumulate the lagged of per capita growth term to confine the per capita growth inertia yields the following equation.

$$GDP_t = \beta_0 + \beta_1 GE_t + \beta_2 TAX_t + \beta_3 ER_t + \beta_4 MS_t + \beta_5 K_t + \beta_6 GDP_{t-1} + \in_t \ldots\ldots\ldots (4.3.7)$$

The above equation 4.3.7 provides an integrated framework for understanding how fiscal and monetary policies effects on long-run per capita growth through capital accumulation and TFP [6]. This framework discussed in development and financial sector economics and considered that capital accumulation along with technological progress is key factor essential economic growth Ahmad and Malik (2009).

4.4 Definition and Constriction of Variables

- **GDP Per Capita (GDP_t)**

GDP (Gross Domestic Product) is the money value of the entire commodities at their final stage produced within a nation or territory in particular time period. GDPP is often used as a measure of a country living standard and it alternative proxy used as economic growth. In this study we used the GDP per capita in 1st difference form as proxy of

[6] Schumpeter's (1934) study of "finance and development", "highlights the impact of financial system on productivity growth through technological knowledge and capital accumulation".

economic growth in Pakistan. The data of GDPP is collected from State Bank of Pakistan, and World Bank (World Development Indicators).

- **Government Expenditures (GE_t)**

Government Expenditures are spending by the government, local or municipality. It covers such spending from federal or provincial government on different sector of the society like development sector, defense, health, education, social services, and etc. The data for GE_t is collected from Finance Division of Pakistan and World Bank (World Development Indicators).

- **Taxes Revenue (TAX_t)**

Taxes are the payments charged by the local or federal government on manufactured goods, consumption goods, income or other activities. The most important use of tax is to finance the public sector. Taxes can also be either direct or indirect. Through tax government covers its revenue for spending on health, education, social services. It is one of the elements that make up the aggregate expenditures for the public sector. The data for TAX_t revenue is collected from World Bank (World Development Indicators) and Finance Division of Pakistan.

- **Money Supply (MS_t)**

For specific time period total collection of domestic currency and other instrument in liquid form is circulated in the economy is called money supply. Money supply may include printed notes, demand deposit and currency in hand of population. The data for

MS_t is collected from World Bank (World Development Indicators) and State Bank of Pakistan.

- **Exchange Rate (ER_t)**

The price domestic currency with respect to foreign currency is called exchange rate. Foreign exchange market determined the exchange rate that is open for large number of buyers and sellers or currency traders. There are number of factors that influence the exchange rate such as trade openness, inflation rate, political stability, trade balance, interest rate, administrators and leaders in financial sector, internal harmony, etc. Exchange rate is divided into two categories i.e. floating exchange rate and fixed exchange rate however; fixed exchange rate is always under the control of central bank while floating exchange rate is decided through market mechanism. The data of nominal exchange rate is collected from World Bank (World Development Indicators) and Finance Division of Pakistan.

- **Capital Stock (K_t)**

The capital formation is used as proxy of capital stock for empirical estimation and data for capital formation is collected from World Bank (World Development Indicators). It is the net addition in physical capital stock, increased within the specific time period in a country or territory. Capital formation includes the savings of financial institutions, public borrowings, capital market development, and private sector financial institutions. Perpetual Inventory Methodology (PIM) is applied for calculating the net capital formation which was developed by Barro and Sala-i-Martin, 2004 by taking the depreciation at 3 percent.

$$K_{it+1} = I_{it} + (1 - d)K_{it} \quad \text{.....4.4.1}$$

In this notation, t representing the time and i represent the industrial sectors in Pakistan. K_{it+1} is net capital stock in manufacturing industries, I_{it} is gross capital stock, and 'd' is deprecation rate. Ara (2005) analyzed the depreciation rate in Pakistan manufacturing sector competitively and highlights the depreciation at 3 percent level so that's why we took depreciation rate at 3 percent. In this study, we calculated the capital stock by using initial value of 1971 capital formation. In other words, the capital stock is absorption of more capital goods such as factories, machines, tools, transport equipments, material, etc. which are directly involve in output production. In broader sense the capital formation also include non-physical capital or human capital which consists of labor health, labor skill, efficiency, etc.

4.5 Data Sources

The information required to measure the comparative analysis toots of fiscal and monetary policies and their contribution for growth of GDPP in case of Pakistan economy and to analyze its pattern. It also requires secondary source and time series data. The annual time series data for Pakistan comprised of time period of 1980 to 2015 collected from the Economic Survey of Pakistan, Federal Bureau of Pakistan, Ministry of Finance Pakistan, "Hand Book of Statistics of Pakistan's Economy 2010 and 2015 published by SBP and from the World Bank, world development indicators (WDI)".

4.6 Estimation Technique

To investigate the relative growth effects of fiscal and monetary policy the study collected yearly data varies from the period of 1972 to 2015. The yearly data required to

check the initial requirements, moreover every time series data has trend and to find the pattern of trend we applied the unit root test, the ADF (1976) is standard unit root test, the ADF test used for stationarity and integration order of given data series.

After sighting the behavior of stationarity, of given variables, we used the Johansen and Juselius (1990) test for cointegration approach which determined the two tests for likelihood ratio. Trace test and maximum eigenvalue test and these both test are superior for small sample (Mukhtar and Rasheed, 2010). Trace test use for joint co-integration and null hypothesis is no co-integration (H_O: r =0) and alternative hypothesis is co-integration (H_1: r >0). The maximum Eigenvalue test find the separately co-integration vector. In Johansen approach, the numbers of co-integration vectors are determined for non-stationary time series and numbers of restrictions are imposed with Vector Autoregressive (VAR) known as VECM.

The selection of lag length is important for VECM. The study used the Akaike Information criterion (AIC), the Schwarz Bayesian criterion (SBC) and Hannan- Quinn criterion (HQC). Brooks, 2008 argued that "SBIC is usually more consistent but inefficient, while AIC is not as consistent but is usually more efficient".

After estimating the VECM model we estimated the Johansen and Juselius (1990) co-integration test and obtain the sum of product of error correction coefficient and eigenvalue coefficient, if sum of product is negative then the co-integration exists in the model. Through the VECM, we concluded about co-integration relationship on the basis of sum of products coefficients.

After developing the co-integration, we used the impulse response function through VAR model after investigating the co-integration behavior among the variables represented in equation 4.3.7. Through impulse response function we trace the responsiveness of per capita growth through the shocks of error term. The shocks of random error were calculated by using the Cholesky approach. The interpretation of Cholesky approach impulse Response Functions is that if a unit shock has been provided then how much time is required for it to die and for how much periods the shock has an effect.

The variance decomposition based on VAR model, which explained how much unanticipated changes of variables are due to endogenous shocks of the other variables. The effectiveness of fiscal and monetary policies on GDP per capita was found through variance decomposition based on VAR model.

Chapter 5

Results and Discussion

5.1 Introduction

As our data set is time series in nature, hence prior to carry out a formal estimation, we require to fulfill the initial requirements of time series annual data for the period of 1972 to 2015. Moreover every time series data has trend and to find the pattern of trend we applied the unit root. Table 5.1 given below, represents the findings of Augmented Dickey Fuller (ADF) test. The null hypothesis of ADF test is (H_0=variable has unit root) variable is non-stationary. Results of Augmented Dickey Fuller test demonstrate that, data is nonstationary and we don't reject null hypothesis at level. In this association given variables in equation 4.3.7 are nonstationary at level. In case of 1st difference we rejected null hypothesis and given variables in equation 4.3.7 are stationary at 1st difference, and the order of integration is I (1).

Table 5.1 Results of Augmented Dickey Fuller (ADF)

Variables	Level		1st Difference	
	With Intercept	Intercept-Trend	With Intercept	Intercept-Trend
$GDPP_t$	2.6542	0.1752	-5.0356***	-5.6271
	(1.0000)	(0.9971)	(0.0002)	(0.0002)
GE_t	-1.5825	-1.5067	-5.3811***	-5.3236
	(0.4827)	(0.8118)	(0.0001)	(0.0004)
TAX_t	0.8984	-1.2729	-6.7148***	-6.9529
	(0.9946)	(0.8813)	(0.0000)	(0.0000)
MS_t	-1.8356	-2.4348	-6.8936***	-6.7167
	(0.6588)	(0.3574)	(0.0000)	(0.0000)
ER_t	0.0237	-1.7638	-4.7956***	-4.7850
	(0.9555)	(0.7047)	(0.0003)	(0.0020)
K_t	-2.1562	-2.4563	-4.9902***	-5.2903
	(0.2247)	(0.3471)	(0.0002)	(0.0005)

***Shows level of significance at 1% level.

5.2 Co-Integration Results

Table 5.1 presenting results of unit root test indicates variables in our model are integrated of order one. Hence, our empirical model (eq. 4.3.7) is estimated the Johansen and Juselius (1990) co-integration approach which determine two likelihood ratio tests. Trace test (TT) and maximum eigenvalue (ME) test and it is more consistent for small size sample (Mukhtar and Rasheed, 2010). Trace test use for joint cointegration, however null hypothesis is no cointegration (H_O: r =0) and alternative hypothesis is co-integration (H_1: r >0). The maximum eigenvalue test finds a separately co-integration vector. In Johansen approach, the numbers of co-integration vectors are determined for non-stationary time series and numbers of restrictions are imposed with Vector Autoregressive (VAR) known as a vector error correction model (VECM).

The choice of lag length is vital in the VECM. For selection of lag length we select the AIC, SBC and HQC criterions. Table 5.2 presents results of AIC and HQC criterions recommend four lag length, while SBC recommend two lag length. On the basis of SBC we included two lag in our vector error correction model (VECM).

Table: 5.2 lag Selection Criterion on the basis of VAR

Lag	AIC	SBC	HQC
0	0.040697	0.294029	0.132294
1	-10.51196	-8.738632	-9.870778
2	-10.20143	-6.908112*	-9.010669
3	-10.96590	-6.152590	-9.225557
4	-12.37060*	-6.037300	-10.08068*

*Shows the number of recommended lag length for VECM.

To support the results of variables in equation 4.3.7 have cointegration relationship, study used the Trace test and maximum Eigenvalue test for short run and long run co-integration. Trace test indicates that 4 Co-integrating vector at 5 percent level and at 5 percent level we significantly reject the null hypothesis, results are given in table 5.3. Therefore results from Trace test statistics show that there exists stable equilibrium association among the considered variables presented in equation 4.3.7.

Table 5.3: Trace Test Results of VECM

Hypothesized No. of CE(s)	Eigen-value	Trace-Statistic	critical value at 0.05	Prob.
None	0.678894	133.4002	94.93847	0.0000**
At most 1	0.535882	86.82485	70.84984	0.0012**
At most 2	0.440491	55.35260	48.98738	0.0084**
At most 3	0.399653	31.54411	30.79743	0.0311**
At most 4	0.223954	10.62393	14.9857	0.2357
At most 5	0.005562	0.228670	4.95885	0.6325

**Shows level of significance at 5%.

Table 5.4 presents the results of ME test which indicates that one error correction term is co-integrating at the level of 1 percent and two error correction terms are co-integrated at the level of 10 percent of significance and we significantly reject the null hypothesis at the level of 1 and 10 percent level of significance. Therefore results from maximum eigenvalue test statistics indicates the existence of stable and long term equilibrium relationship among the variables indicated in equation 4.3.7.

Table 5.4: Maximum Eigen-value of Unrestricted Cointegration Rank Test

Hypothesized No. of CE(s)	Eign-value	Max-Eigen Statistic	Critical-Value 0.05	Prob-value
None	0.678894	46.57540	39.98865	0.0081*
At most 1	0.535882	31.47225	34.44787	0.0943***
At most 2	0.440491	23.80849	28.23434	0.1415
At most 3	0.399653	20.92018	20.98442	0.0535***
At most 4	0.223954	10.39526	13.24423	0.1872
At most 5	0.005562	0.228670	4.456871	0.6325

*, ** and *** shows 1 percent, 5 percent and 10 percent significance level respectively.

After estimating the VAR based VECM model we simply apply co-integration test and obtain error correction co-efficient and Eigen value coefficients, the sum of product of both the error correction coefficient and co-integration coefficient should be negative, given in table 5.5. However results indicate that the sum of product error correction co-efficient and co-integration is negative which indicates that the co-integration exists in the model. Through the VECM, we concluded that all variables have short run and long run co-integration.

Table 5.5: Calculation of Co-Integration through VECM

	Eigenvalue		Error correction co-efficient	CI*EC
None	0.678894	LGDPP	1	0.678894
At most 1	0.535882	LGE	0.670233	0.359166
At most 2	0.440491	LTAX	1.636149	0.720708
At most 3	0.399653	LER	-1.12586	-0.44995
At most 4	0.223954	LMS	-9.93754	-2.22555
At most 5	0.005562	LKF	-6.05247	-0.03366
			Sum	-0.9504

The co-integration relationship among the $GDPP_t$, GE_t, TAX_t, MS_t, ER_t and K_t were investigated by using the Johansen Juselius (1990) approach for co-integration. The Trace test and ME test indicates four co-integration vectors and three error correction terms in given model 4.3.7. It shows that we significantly reject the null hypothesis of no cointegration and accept the alternative in favor of both vectors and equations have co-integration. This indicates that there are four co-integration vectors and three co-integration equations. Hence, this implies that in Pakistan both fiscal and monetary policies have strong long run co-integration relationship with GDP per capita.

5.3 Impulse Response Functions

Figure 5.1 shows results of the impulse response function of GDP per capita ($GDPP_t$), government expenditure (GE_t), tax rate (TAX_t), exchange rate (ER_t), money supply (MS_t), and capital stock (K_t). The impulse response function was calculated through VAR model after investigating the co-integration behavior among the variables by using the Johansen and Juselius (1990) co-integration approach. Through impulse response function we trace the responses of dependent variable to the shocks to the error term.

These random error shocks are calculated by using the Cholesky (1924) approach which shows the dependency behavior of the given variables. The interpretation of Cholesky (1924) approach Impulse Response Functions can be explained as unit shock which has provided that how much time is required for it to die and for how much periods the shock has an effect.

The results of Impulse Response Function presented in figure 5.1, shows that relative growth effectiveness of fiscal and monetary policies. The results indicate that in

case of Pakistan both fiscal and monetary policies positively affect GDP per capita in the long run. However, all these shocks are normalized after 10^{th} period of time. Our findings are consistent with the outcomes of Mahmood and Sial 2011, Fatima and Iqbal 2003,Jawaid et al. 2010.

The MS_t has insignificant impact on growth of per capita GDP in long time period but it responses negatively in the short time period; our results are similar with the results of Ali et al. (2008) and Muhammad et al. (2009). Mechanical explanation of effects of money supply on economic growth, increase in MS leads to interest rate reduction which leads to easy borrowing that leads to more consumption and positively affects the demand side of the economy and direct to increase in output.

The exchange rate has positive and significant impact on per capita growth in the long time period. Exchange rate effect the per capita growth in long time period, as change in exchange rate cause to change in money reserves which leads to change in bank liquidity ratio which effect the deposit rates and deposit rate directly affect the money supply.

The findings indicates that exchange rate has positive impact on per capita growth in the long time period but have a negative effect on economic growth in the short time period. In addition, money supply shocks are insignificant and have no effect on per capita growth. The government expenditure has substantial and positive impact on per capita growth in short as well as in long time period. Similarly tax rate positively affected the per capita growth in short term and in long term.

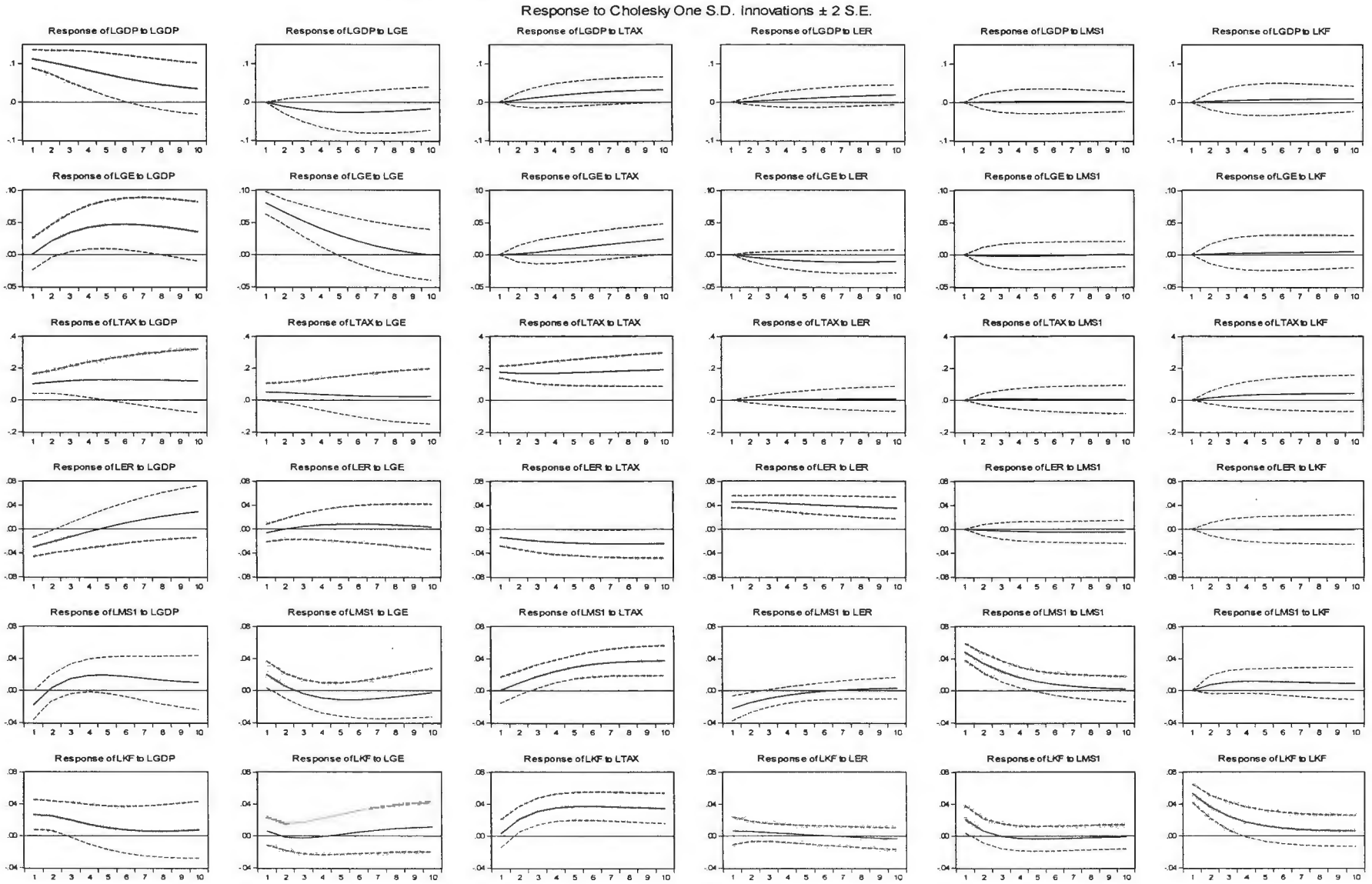
We also check the influence of fiscal policy to monetary policy; which shows that fiscal policy shocks has a negative response to monetary policy however the effect of monetary policy is dying within two periods. The response of fiscal policy into monetary

policy is highly negative because of government expenditure negatively treated both exchange rate and money supply in short as well as in long time period, because the government budget deficit financing through printing new currency or borrowing from external resources (IMF or World Bank or Asian Development Bank, etc). The tax rate affects both the money supply and exchange rate positively however it has a relatively lower effect than government expenditure effect, such that the fiscal policy negatively responded to monetary policy. This may be due to unexpected and unproductive government expenditure in that case the government budget deficit which is financing through borrowing and printing new money, hence negatively affects the exchange rate and money supply.

The monetary policy has no responses to fiscal policy, as of both money supply, and exchange rate shocks effects are very low and hold different signs in different time period. The MS_t has positive effect on tax rate whereas exchange rate negatively affected the tax rate which eliminate the both effect and monetary policy is ineffective to response in fiscal policy. Capital stocks positively affected the per capita growth in short time period as well as in long time period. The effect of capital stock on monetary policy is positive however capital stocks insignificantly affect the fiscal policy both in short and long term.

The impact of government consumption expenditure on monetary policy remains negative this may be due to its unfavorable effects on resource allocation. The co-integration test confirms the long run positive responses of both fiscal and monetary policies in per capita growth. The results of impulse response indicates that the major positive changes in GDP per capita are due to fiscal policy, which is similar with the findings of Kakar (2011) who found that "fiscal policy is very important for sustainable economic growth in Pakistan and fiscal measures are the long run phenomena".

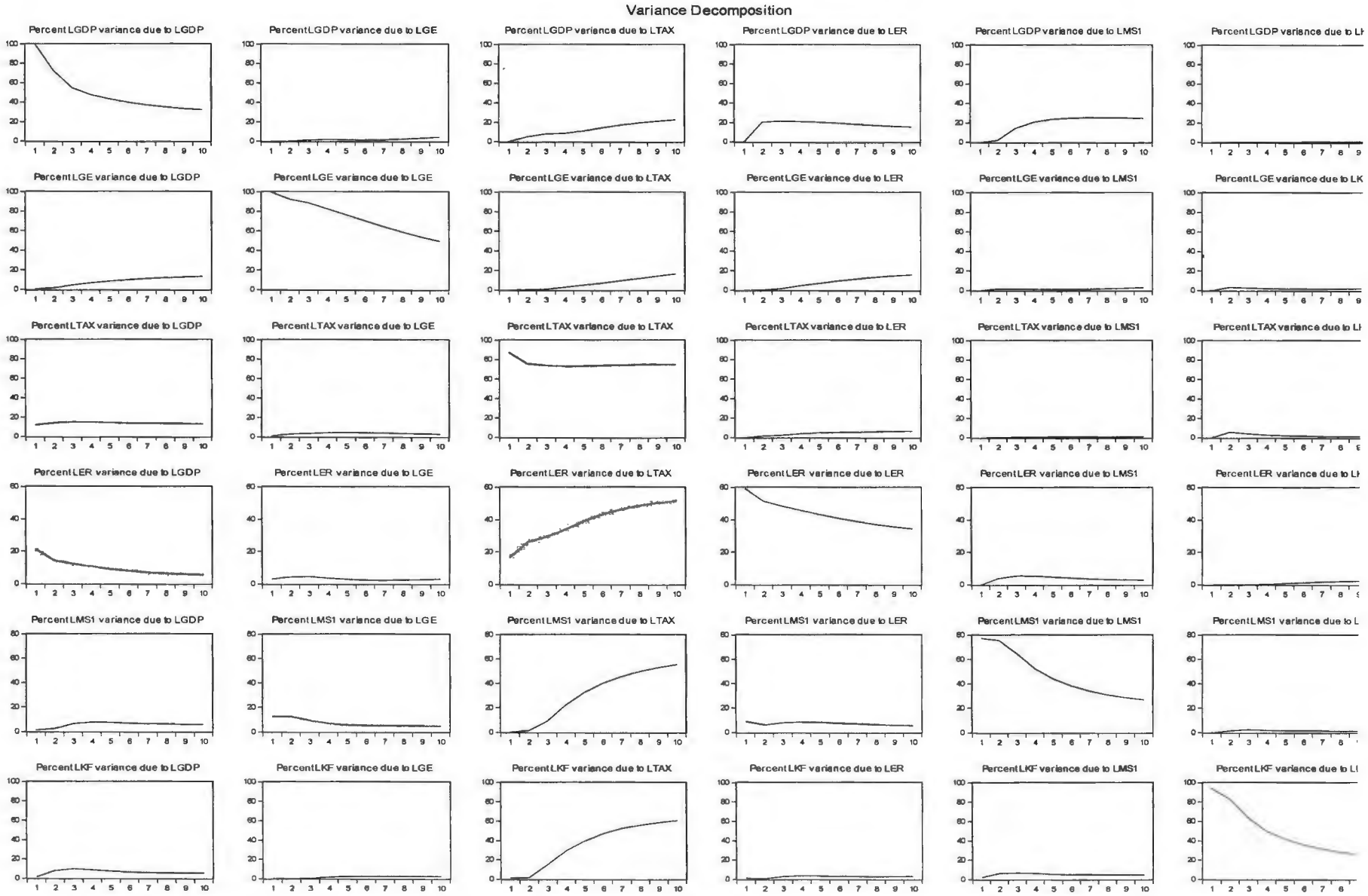
Figure: 5.1 VAR Base Multiple Graphs of Impulse Response



5.4 Variance Decomposition

Figure 5.2 shows the variance decomposition which is based on VAR model, it explains that how unanticipated changes in variables occur due to the endogenous shocks of the other variables. The shocks of government expenditure (GE_t) and tax rate (TAX_t) are representation of fiscal policy shocks whereas exchange rate (ER_t) and money supply (MS_t) are representing monetary policy shocks. All these shocks are normalized after 10^{th} period. Figure 5.2 indicates that GE_t, TAX_t, MS_t, ER_t and K_t explain the changes in GDP per capita are positive and significant, which implies that both monetary and fiscal policies changes caused by an endogenous policy are reflected in to GDP per capita. The one noteworthy result indicates the effectiveness of monetary policy shocks have lower intensity as compare to fiscal policy shocks in the short run.

Figure: 5.2 VAR Based Graph of Variance Decomposition



5.5Vector Error Correction Model (VECM) Results

We use the VECM on the basis of VAR model. The error correction coefficients indicate and measure the long term and the short term movements away as of the equilibrium.

Table 5.6: Long Run VECM Coefficients

Variable	Coefficient	Std. Error	t-Stat
$LGE_t(-1)$	0.630165	0.07653	4.31394
$LTAX_t(-1)$	-0.079921	0.05118	-3.37756
$LER_t(-1)$	0.236406	0.04879	5.94398
$LMS_t(-1)$	-0.083626	0.17219	-0.48154
$LK_t(-1)$	0.053988	.00185	3.01354
C_t	8.179938		

The results presented in table 5.6 shows that both government expenditure (GE_t) and taxes (TAX_t) has significant impact per capita growth in the long time period. The coefficient of government expenditure is 0.6301 which shows elasticity and one percent increase in government expenditure leads to 0.33 percent boost in growth of GDP per capita of Pakistan by increasing the aggregate demand. Similarly tax revenue has negative impact on growth of GDP per capita in Pakistan. As GE_t has positive and significance impact on economic growth which dominates the negative tax revenue affect on economic growth and indicate that fiscal policy participate significantly for boosting the per capita growth process of Pakistan.

The coefficient of MS_t indicates that money supply has no significance impact on economic growth in Pakistan; While coefficient of ER_t indicates that exchange rate has significantly positive effect on per capita growth in Pakistan. Coefficient of exchange rate

indicates the elasticity and one percent increase in exchange rate leads to 0.23 percent increase per capita growth through import channel. On the basis of results it was found that MS_t has insignificant impact on per capita growth while exchange rate has positive impact on per capita growth. Both fiscal and monetary instruments important of economic growth and stability, fiscal policy tools are more important than monetary policy tools. Also fiscal policy tools relatively have greater impact on economic growth than monetary tools. In this association, we concluded that fiscal policy has more effective growth of GDP per capita in case of Pakistan than the monetary policy in long run.

Table 5.7: Short Run Vector Error Correction Coefficients

Variable	Coefficient	Std. Error	t-Statistic
$D(LGE_t)$	0.2239	0.2520	1.9409
$D(LTAX_t)$	0.3987	0.4877	2.7120
$D(LMS_t)$	-0.0672	0.1648	-0.4075
$D(LER_t)$	-0.3722	0.1325	-2.8101
$D(LK_t)$	0.2798	0.1457	1.9214
ECM(-1)	-.4045	0.6209	-2.5183
R^2	0.76		
Adj-R^2	0.69		
S.E. equation	0.234522		
F-statistic	9.34		
Log likelihood	318.6118		

Results presented in table 5.7 shows the short term dynamic association of fiscal policy, monetary policy and per capita growth in case of Pakistan. The value of R^2= 0.76 shows that 76 percent variation in our dependent variable (growth of GDP per capita) is explained by our explanatory variables.

The coefficient of short run VECM (ECM(-1)) are given in table 5.7. The ECM results indicate the pace of adjustment which shows at what speed the dependent variable return to equilibrium. The error correction assists for the disequilibrium condition in short run. The ECM coefficient has significant and negative sign which shows that our model is convergent in nature; also any disequilibrium arising in the economy will be correct in 4^{th} period. In addition, in short run any disequilibrium corrected at the speed of adjustment of 40.4 percent.

The coefficients of both government expenditure and taxes have positive and significantly affected the per capita growth in short time period. Whereas, the coefficient of MS_t has negative sign and insignificant affect on per capita growth in short time period, while coefficient of exchange rate has negatively affected the per capita growth in Pakistan in short time period.

From the results of short run Error Correction dynamics it is concluded that in short time period the fiscal policy positive and significantly involve in per capita growth in short, while in short time period monetary policy has negative impact on per capita growth in Pakistan.

Chapter 6

Conclusion and Policy Recommendations

6.1 Conclusion

The entire goal of the study is to analyze the growth effectiveness of fiscal and monetary policies. In this association we used the VECM, co-integration and impulse response function. To estimate VECM, we used two lag length and calculated the co-integration by using the results of VECM. The sum of product of error correction coefficients and co-integration coefficients is negative which indicates existence of co-integration relationship. To support the existence of co-integration relationship we used the TT and ME test to check the short term and long term co-integration respectively. The Trace test and Maximum Eigenvalue test specify that there are four co-integration vectors and three error correction terms in our empirical analysis which indicates that both fiscal and monetary policies have strong co-integration relationship with GDPp in both short time period and in long time period.

The impulse response function was used to analyze how the fiscal and monetary policies shocks react in per capita growth of Pakistan. The results of impulse response function indicate that both fiscal and monetary policies shocks positively affect growth of GDP per capita in the long run. In addition, it is indicated that all these shocks are normalized after tenth period of time.

The results of vector error correction model show that if any disequilibrium occurred in the economy will be corrected through fiscal and monetary shocks. On the basis of empirical findings, study concluded that money supply has insignificant affect on per capita growth in long time period but money supply has significant and negatively responses in short term. Similarly,

the exchange rate positively responses in per capita growth in long term but negatively responded in short term. Hence, it is softly concluded that monetary policy has negative impact on per capita growth in short term, however in the long time period monetary policy positively affect the per capita growth. The government spending has significant and positively responses in per capita growth both in short term and in long term. In addition, tax rate also has positively affected the per capita growth both in short term and in long term.

Number of economists has agreed with the proposition that high taxes are bad for economic growth. Martin and lewis (1956) argued that government of developing countries needed to raise tax revenue to reduce budget deficit. In contrast, Keynesian multiplier effect, tax revenue has negative effect, while in case of our study tax revenue has positive effect on economic growth in the short run. It may be due to improvement of government economic function and hysteresis of tax multiplier effect is the stage of economic growth.

We also check the responses of fiscal policy to monetary policy; which shows that fiscal policy have a negative response to monetary policy however; the monetary policy effect is dying within two lag period.

6.2 Policy Recommendations

The result indicates that fiscal policy is more and long term phenomena for economic growth rather than monetary policy in case of Pakistan.

Empirical analysis shows that both money supply and exchange rate are major determinant for prices instability (inflationary trend) in Pakistan in short time period. For instance, the monetary authorities should be focused on monetary actions which effects economic growth adversely. Monetary authority should work for favorable changes in money supply and exchange rate which caused to (inflationary trend) prices instability and negative

economic growth. It is a suggestion for SBP to improve liquidity and accountability through identifying the targeted inflation rate for monetary policy.

The fiscal policy negatively responses into monetary policy shocks, it is suggested that coordination among the fiscal and monetary establishment is required and in these circumstances strict adherence to fiscal policy laws along with monetary policy laws should be carried for the sustainable economic growth by reducing and price stability.

Fiscal authorities must be focused on fiscal deficits which financed in domestic capital markets by selling government treasury bills and bonds in Pak-Rupees which effect the money supply in the economy, or deficit financing through borrowing (like IMF, World bank, Asian Development bank) which affect the exchange rate. In addition, government of Pakistan focused on government expenditure which adversely affects both money supply and exchange rate.

However, government spending for public works projects directly affects the private sector. The stability and expectedness of private sector depends upon the government incentive structure which encourage the private investment. An increase in the government expenditure for development sector will lead to the improvement in the economic stability. However, government should focus on consumption expenditure and utilize the budgetary spending for development sectors which leads to increase the real output and enhance long term per capita growth. In addition, government of Pakistan utilized the positive relationship between tax revenue and economic growth to realize efficient government investment expenditure.

6.3 Future Research

- Effectiveness of fiscal policy on exchange rate in case of Pakistan (effectiveness of taxation on real exchange rate)
- Growth Effectiveness fiscal and monetary policy in case of Pakistan through microeconomics channel.

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Appendices

A) Impulse Response Coefficients Results

Period	GDPP to GPPP	MS to GDPP	ER to GDP	GE to GDP	Tax to GDP	KS to GDP
1	0.234522	-0.009331	-0.031907	-0.001960	0.102463	0.009476
2	0.105252	-0.004905	-0.050074	0.005320	0.121419	0.040606
3	0.125667	0.006448	-0.055175	0.015280	0.144242	0.060324
4	0.115650	0.016788	-0.069759	0.025526	0.169257	0.061307
5	0.125051	0.018130	-0.076349	0.026282	0.169450	0.062103
6	0.122735	0.017946	-0.077045	0.028624	0.172781	0.065267
7	0.119373	0.018997	-0.077677	0.030604	0.177745	0.068494
8	0.116153	0.019426	-0.079417	0.031867	0.179112	0.068968
9	0.118484	0.019492	-0.080400	0.032494	0.180117	0.068804
10	0.118444	0.019736	-0.080671	0.032704	0.180499	0.069478

B) VECM results

Vector Error Correction Estimates

Sample (adjusted): 1975 2015
Included observations: 41 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
LGDPP(-1)	1.000000
LGE(-1)	0.630165 (0.07653) [4.31394]
LTAX(-1)	-0.079921 (0.05118) [-3.37756]

LMS1(-1)	-0.083626 (0.17366) [-0.48154]
LER(-1)	0.236406 (0.04879) [5.94398]
LKF(-1)	0.053988 (0.001825) [3.01354]
C	8.179938

Error Correction:	D(LGDPP)	D(LGE)	D(LTAX)	D(LMS1)	D(LER)	D(LKF)
CointEq1	-0.404549 (0.62948) [-2.51831]	0.223918 (0.25205) [1.94871]	0.398787 (0.48779) [2.71204]	-0.067164 (0.16484) [-0.40746]	-0.372256 (0.13247) [-2.81010]	0.279866 (0.14566) [1.92142]
D(LGDPP(-1))	-0.404280 (0.49818) [-0.81152]	-0.131453 (0.19947) [-0.65900]	-0.182696 (0.38604) [-0.47325]	0.048426 (0.13045) [0.37121]	0.259562 (0.10484) [2.47580]	-0.098132 (0.11527) [-0.85128]
D(LGDPP(-2))	-0.136817 (0.27377) [-0.49976]	-0.062135 (0.10962) [-0.56683]	-0.111693 (0.21215) [-0.52649]	0.000623 (0.07169) [0.00869]	0.123656 (0.05761) [2.14631]	0.011109 (0.06335) [0.17536]
D(LGE(-1))	0.028382 (0.57334) [0.04950]	0.063668 (0.22957) [0.27734]	0.269714 (0.44429) [0.60707]	-0.027920 (0.15014) [-0.18596]	0.219488 (0.12066) [1.81909]	-0.259111 (0.13267) [-1.95309]
D(LGE(-2))	-0.510899 (0.61062) [-0.83668]	-0.167355 (0.24450) [-0.68449]	-0.820718 (0.47318) [-1.73448]	-0.172436 (0.15990) [-1.07840]	0.256827 (0.12850) [1.99861]	-0.010620 (0.14129) [-0.07516]
D(LTAX(-1))	-0.196403 (0.39081) [-0.50255]	-0.034701 (0.15648) [-0.22176]	-0.321619 (0.30285) [-1.06199]	0.016296 (0.10234) [0.15924]	-0.157610 (0.08225) [-1.91635]	0.008913 (0.09043) [0.09856]
D(LTAX(-2))	-0.187617 (0.28023) [-0.66952]	0.025895 (0.11220) [0.23078]	-0.049631 (0.21715) [-0.22855]	-0.002988 (0.07338) [-0.04073]	-0.033947 (0.05897) [-0.57564]	-0.072270 (0.06484) [-1.11455]
D(LMS1(-1))	-0.148019 (0.69744) [-0.21223]	-0.063102 (0.27926) [-0.22597]	-0.208747 (0.54045) [-0.38625]	0.129782 (0.18263) [0.71062]	-0.418875 (0.14677) [-2.85390]	0.098354 (0.16138) [0.60945]
D(LMS1(-2))	-0.134061 (0.71464) [-0.18759]	0.134576 (0.28614) [0.47031]	0.268077 (0.55378) [0.48409]	-0.281052 (0.18714) [-1.50185]	-0.018320 (0.15039) [-0.12182]	-0.239772 (0.16536) [-1.44999]
D(LER(-1))	-1.813487 (0.92466) [-1.96124]	-0.070472 (0.37024) [-0.19034]	-0.666043 (0.71653) [-0.92954]	-0.090086 (0.24214) [-0.37205]	0.194571 (0.19459) [0.99990]	-0.250359 (0.21396) [-1.17012]

D(LER(-2))	-0.397257	0.065896	-0.035152	-0.279218	-0.213079	-0.224541
	(0.81887)	(0.32788)	(0.63455)	(0.21443)	(0.17233)	(0.18948)
	[-0.48513]	[0.20098]	[-0.05540]	[-1.30212]	[-1.23648]	[-1.18503]
D(LKF(-1))	-0.456599	0.068769	0.408933	0.123314	0.370627	-0.234033
	(0.86961)	(0.34819)	(0.67387)	(0.22772)	(0.18301)	(0.20122)
	[-0.52506]	[0.19750]	[0.60685]	[0.54152]	[2.02523]	[-1.16307]
D(LKF(-2))	0.013962	-0.068811	0.049974	0.151420	0.110810	-0.062886
	(0.89189)	(0.35712)	(0.69113)	(0.23355)	(0.18769)	(0.20638)
	[0.01565]	[-0.19269]	[0.07231]	[0.64833]	[0.59037]	[-0.30471]
C	0.157947	0.005811	0.141923	0.029448	0.071495	0.033414
	(0.10761)	(0.04309)	(0.08339)	(0.02818)	(0.02265)	(0.02490)
	[1.46771]	[0.13485]	[1.70189]	[1.04498]	[3.15695]	[1.34188]
R-squared	0.763702	0.152304	0.391840	0.391037	0.489288	0.601115
Adj. R-squared	0.686966	-0.255846	0.099023	0.097832	0.243390	0.409059
Sum sq. resids	1.485016	0.238083	0.891729	0.101831	0.065768	0.079511
S.E. equation	0.234522	0.093904	0.181733	0.061413	0.049354	0.054267
F-statistic	9.345074	0.373156	1.338172	1.333666	1.989798	3.129897
Log likelihood	9.845524	47.37206	20.30090	64.78274	73.74512	69.85476
Akaike AIC	0.202657	-1.627905	-0.307361	-2.477207	-2.914396	-2.724622
Schwarz SC	0.787780	-1.042783	0.277761	-1.892085	-2.329274	-2.139500
Mean dependent	0.004740	0.004537	0.077282	0.009707	0.057072	0.002460
S.D. dependent	0.245437	0.083794	0.191460	0.064657	0.056740	0.070593

Determinant resid covariance (dof adj.)	8.79E-14
Determinant resid covariance	7.17E-15
Log likelihood	318.6118
Akaike information criterion	-11.15180
Schwarz criterion	-7.390296