The Relative Effectiveness of Monetary and Fiscal Policy on Macroeconomic Stability

By

Muhammad Junaid Nasrullah
29/MPhil-Eco/PIDE/2014

Supervised by

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A Dissertation Submitted to the Pakistan Institute of Development Economics, Islamabad, in partial fulfillment of the requirements of the Degree of Master of Philosophy in Economics

Department of Economics
Pakistan Institute of Development Economics, Islamabad

(2016)

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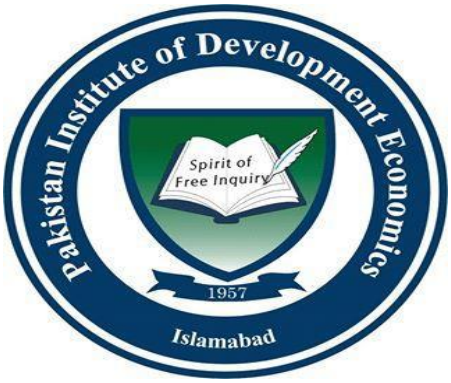

Department of Economics
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Pakistan Institute of Development Economics

CERTIFICATE

This is to certify that this thesis entitled: **"The Relative Effectiveness of Monetary and Fiscal Policy on Macroeconomic Stability"** submitted by Mr. Muhammad Junaid Nasrullah is accepted in its present form by the Department of Economics, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree of **Master of Philosophy in Economics**.

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“This thesis is dedicated to my parents, Muhammad Nasrullah & Tasneem Nasrullah, a wonderful and

supportive parents. Thank you for believing in me.”

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Muhammad Junaid Nasrullah

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ABSTRACT

Fiscal and monetary authorities mainly deal with macroeconomic stability. The study aims to understand links between monetary and fiscal policies with macroeconomic stability and to determine their relative effectiveness in general and relative importance of policy instruments in particular. We have used government total, current and development expenditures, government total and tax revenues and budget deficit represent fiscal policy instruments and interest rate and monetary growth rate from monetary side in our study. Our study is used Impulse Response functions and Variance Decompositions in Vector Autoregressive model. Our findings of impulse response analysis indicate that impact of Call Money Rate, Current Expenditures, Government Total Revenues and Tax Revenues is negative on Output Gap and Inflation rate while Monetary Growth Rate, Budget Deficit, Government Expenditures and Development Expenditures exert positive impact suggests that when positive output gap exist we should use tight monetary and fiscal policies to attain output and price stability and reverse should apply when output gap is negative. Whereas, increasing spending and tax cut stabilize external balance position at current level. Moreover, both policies are important for trade volume and foreign exchange reserves, strong fiscal stance for exchange rate stability and monetary dominance for output stability, price stability and current account balance position. Policy conflicts suggest that monetary instruments are useful for output and price stability whereas fiscal instruments are important for trade volume, foreign exchange reserves and exchange rate stability hence use of both instruments is an important policy combination for macroeconomic stability.

Key words: monetary policy; fiscal policy; macroeconomic stability

INTRODUCTTION

Chapter 1

Macroeconomic stability designates a country less vulnerable to external shocks and keep it on right track that ensures long term sustainable economic development. It behaves like a cushion against interest and currency fluxes in international markets. It is necessary but insufficient condition for economic growth.[1] Whereas, unstable currency, uncontrolled inflation and large burdens of debt cause economic crisis. Macroeconomic stability is emphasized by both the IMF as well as EU[2]. In Maastricht criteria, it is expressed by key indicators as follows; output stability, unemployment at its natural rate, low inflation rate and price stability, interest rate and exchange rate stability, low budget deficit, sound current account balance and foreign exchange reserves.[3]

Output of the economy declines in recessions while in good times, by contrast, the output goes up. Such ups and downs in output are called business cycles. Economists and policymakers are concerned with one thing that current output is how far from long run potential output means that they are not only interested in whether output is increasing or decreasing but also consider its direction whether it is above its potential or below. The difference between actual output and its potential level determines the output gap. The

[1] Global Competitiveness Report of 2006-07, The world economic forum. "there is an overwhelming evidence that in the absence of macroeconomic stability, growth will be anemic or, at best, volatile."
[2] A core requirement for the reform packages of IMF is Macroeconomic stability [Anne Krueger, 1st deputy director of the IMF, in her speech at the IMF].
[3] The agreement on European union is comprehensive paper addressing all features of the European economic community. The Maastricht criteria refers to as macroeconomic criteria essential for all member countries, after the Dutch city that hosted the convention.

maximum amount that an economy can produce most efficiently that is at full capacity is referred to as potential output. The output gap can be positive when actual output is above the potential. This occurs when high demand exists in the economy and factories and workers work above their efficient capacity to meet that demand. Or, it can be negative when economy works under capacity, neither is good. A negative output gap occurs in a result of weak demand when actual output is less than what an economy could produce at full capacity. An output gap advocates that economy is working in inefficient manner either underutilizing or overworking its resources[4].

Lucas (1973) observed trade off among output and inflation. Low inflation and stable prices encourage market demand; however, price instability or high inflation rate threaten economic growth.[5] High inflation amends the worth of long term agreements and contracts. While, Inflation Volatility makes market behavior uncertain and increase risk premiums. Meanwhile various tax rates are adjusted by average inflation hence, inflation volatility severely affect tax revenues of government, individual liabilities and budget deficit. Budget deficit itself affect output, inflation and current account balance adversely[6]. Low and stable interest rate stabilizes the future expectations about inflation while current inflation may be adequately low, consistently high interest rate implies higher inflation to arise[7]. Low and stable interest rate infers that economy is stable and probably remain so.

[4] Employment or unemployment gap behave similar to output gap and both are closely related to each other hence, we take output gap to analyze the policy impact on its stability that we suppose transmit to unemployment as well.

[5] Walter J. Wessels, Economics. North Carolina: Barron's, 1993.

[6] Budget deficit is our policy indicator and assume to be controlled by government officials.

[7] As interest rate is our policy variable thus, we are not concerned with interest rate stability whether we assume that it is controlled by central bank.

A stable economy provides a framework for an improved supply side performance i.e. Stable and low inflation attracts more investment results in non-price competitiveness and improved productivities. Inflation control makes exports price competitive and local businesses become able to compete imports both results in current account balance improvement. Stability breeds more confidence in consumers and businesses maintain spending in circular flow. Output and price stability confirms to keep interest rate low and stable, vital in reducing the borrowing costs of individuals and businesses with loans and mortgages to repay. Both output and prices also cause exchange rate variability and affect current account balance, trade and foreign exchange reserves.

Fiscal and monetary authorities mainly deal with macroeconomic stability along with economic growth. In economics, several macroeconomic policy instruments were developed to facilitate these authorities to pull off their goals e.g. government current and development expenditures, government revenues including tax revenues and budget deficit represent fiscal policy instruments and interest rate and money supply from monetary side that are our concern. For decades, economists have been familiar with participation of both policies in process of economic activities. Since start of twentieth century monetary policy has got its position in economic discussion and analysis. In 1930 with the attack of great depression it nowhere to be found as policy instrument and Keynesian revolution turned attention towards fiscal discipline as a policy device to generate employment and output in economy (Vaish, 2005). Accordingly, in 1940's and 1950's, policy makers deemed monetary policy instrument as relatively impotent (Gordon, 1981). In second half of twentieth century however, believe in monetary policy retained its worth back in literature through the attempts of Friedman and other monetarists. Keynesians-monetarists debate

started and relative potency of fiscal and monetary policy actions on macroeconomic environment arrested intentions of economists. In past two decades, favorable environment for monetary policy put fiscal policy in inferior position in both developed and developing nations. However, fiscal prudence along with debt sustainability considered by government, furthermore, they designed fiscal rules for macroeconomic stability (Blanchard et al, 2010).

Optimal policy mix ensures not only macroeconomic stability but also provide better economic environment for growth and inflation perspectives. Keynesians-monetarists dispute around researchers have remained hot issue and they have shown their interest in estimating the comparative policy relevance in developing countries. However, disagreements about relative potency of both fiscal and monetary policy still exist. Among them some are pro-Keynesian who worn about monetary policy irrelevance and stress to put it on backup to fiscal stance while rest of them believe in monetarists' view worn against government intervention and support monetary policy actions in determining level of output, inflation and external balance.

Pakistan faced stagflation first time in its history in 2009[8]. Persistent instability came to its end and finally macroeconomic environment tunes fine in 2015[9]. Today's economy nicely deals with inflation rate with normal economic growth rate but still it works under capacity. Developing countries' growth rates spike but Pakistan exist at lower end in south Asian region in economic growth context onward 2015[10]. Government inclined expenditures of

[8] Source: The economic survey, issue 2008-09.
[9] Source: The economic survey, issue 2014-15.
[10] Source: The economic survey, issue 2014-15.

health and education, two major indicators of growth play stagnant role due to lack of job creation. Monetary easing at its extreme with fiscal expansion, we missed our growth target and achieved only 0.2 percent reduction in unemployment rate left with limited policy options to grow at 5 to 7 percent growth rate to absorb unemployment rate at its optimum. Fiscal deficit decline but below its target contribute minor to inflation down fall while large downward swing in oil prices in international market and base year revival of price index claim current attractive inflation rate. Debt to GDP ratio not provides efficient guideline for fiscal stance. The problem is underutilization of monetary and fiscal policy for macroeconomic stability. With limited policy options, we need detailed study on policy analysis for instance, instead government expenditures, we should analyze the role of current and development expenditures, total or tax revenues of government and their difference, I mean budget deficit to make economy stable. Schlesinger (1960) narrated that: "By stressing the connections between fiscal policy, monetary policy and the rate of growth, the economist may help to clarify the true policy alternatives which confront the nation's decision-maker". Therefore, this study aims to attempt better understanding of these connections in Pakistan.

1.1 Research Gap

Senbet (2011) used impulse response functions and variance decompositions in Vector autoregressive model to examine the relative effectiveness of monetary and fiscal policy on nominal as well as real output growth for USA

We extend this model for open economy and incorporate the policy role on output stability, price stability, exchange rate stability and external balance position for Pakistan

1.2 Research Questions

Following research questions are formulated to address in the study: What does monetary and fiscal policies play role in macroeconomic stability in Pakistan? Whether monetary or fiscal policy stance relatively more potent to attain macroeconomic stability? Which policy instrument from both policies is more efficient to determine macroeconomic stability.

1.3 Objectives of the study

The study aims to understand links between monetary and fiscal policies with macroeconomic stability indicators and to determine their relative effectiveness. Specifically, study focus on following objectives.

- Compare monetary and fiscal policy impacts on macroeconomic stability in short run and long run analysis.
- Find relative role of each policy instrument on macroeconomic variables.

1.4 Motivation

We do not found any study that is conducted under open economy case that consider both internal and external balance on same page. As we know China Pakistan Economic Corridor (CPEC) is initiated in Pakistan and international economies are getting involved through trade and foreign direct investment in Pakistan through this project indicates that it will affect external balance of Pakistan. Moreover, external balance stability cushion against external shock and ensure internal stability. Hence, we should examine the impact of policies on macroeconomic stability by considering both internal as well as external balance.

1.5 Organization of the study

Chapter 1 is about introduction of the topic in which we discuss issue of the study, find literature gap, formulate research questions, determine objectives of the study and at last motivation. We have done a detailed review of the literature in chapter 2. We have developed theoretical framework, performed descriptive analysis and discussed our data and variables, model and estimation methodology in chapter 3. Results are computed and discussed in details in chapter 4. At the end, we conclude our study and formulate some important policies and entail their implications.

LITERATURE REVIEW

Chapter 2

Economic prosperity is a challenge for policy makers under two policy propositions. In macroeconomic policy framework, fiscal and monetary stance are of huge essence (Ajisafe and Folorunso, 2002). Relative policy importance for macroeconomic stability has been subject to debate for a long time period. Economic history consists of a lot of theories one after another contribute to this debate backing their own view. The debate starts with Keynesian, monetarist propositions and still it goes on. Economists who are in favor of policy irrelevance proposition draw various assumptions to support their conflict of interest about monetary and fiscal policy importance. We have summarized the debate based on theoretical as well as empirical literature.

Classical economists considered monetary policy as an imperative device for macroeconomic stability (Vaish, 2005). Consumption, Investment and savings are determined through interest rate in classical point of view. Economic agents do not spend their whole income instead they save some part of it for future consumption. Higher the interest rate, more they will save for future consumption (Hall, 1988). Thus, higher interest rate derives the current consumption down. Savings that are supply of loanable funds respond positively to interest rate. Firms' demand for loanable funds turn to investment in capital market has opposite relationship with interest rate. Classical proposition of savings equal investment at equilibrium backed by the idea that real market forces and marginal product of capital jointly determines investment implies that interest rate determined consumption and investment both provide room for monetary authority to affect output.

A rise in money supply generates more money balances for households to spend more on goods and services that creates excess demand cause disequilibrium in goods market yield upward swing in price level. Thus, positive monetary shocks inflate prices (Friedman, 1968 and Barro and Gordon, 1983). Moreover, interest rate itself contribute to price change (Fisher, 1930). Central to the classical proposition, aggregate demand only determines price level is an implicit proposition based on quantity theory of money. The quantity theory of money shows proportional association between money and nominal income i.e. with constant real income, changes in nominal income fully adjusted by prices (Walker, 1895). The economic explanation behind this proposition is that if excess money supply is generated, adjustments in demand for commodities cause positive swing in aggregate price level (Scarth, 2014). Modern version of classical proposition is real business cycle theory. Likewise, in real business cycle theory money solely determine price level (Scarth, 2014). However monetary policy is still in game by controlling swings in wages and prices in classical system. Classical school also consider wage rigidities cause unemployment. Hence to avoid fluctuations in propensities to save or investment outlook because of change in wages and prices, based on money supply stability since quantity of money determine price level and aggregate demand (Ackley, 1961). Classical economists argued about self-correcting mechanism and opposed government intervention. Indeed, they are in favor to left the economy alone and equilibrium driven market forces itself define their way and government distortion makes the economy slowdown (Snowdon and Vane, 2005). Classical stance of state intervention cause distortions in economic system also acknowledge the central role of state in holding legal structures and prolong national defense.

Classical economic view was nice-looking ever before the occurrence of greatest crisis of economic history in 1930s called the great depression and post crisis decades take a turn about economic thinking that altered the perspectives of economic agents as well as the economists' thinking that is influenced by the revolutionary book of Keynes "The General Theory of Employment, Interest rate and Money" in 1936 enlightened ground-breaking idea of economics behind why monetary policy fail to remedy depression and give way to fiscal stance such as government taxes and expenditures system as a policy tool against unemployment (Vaish, 2005).

Keynesians believe in nominal rigidities i.e. prices and wages are not free to adjust, investment decisions are far away from savings decisions and marginal product of capital and real forces of thrift does not set interest rate, instead, it is considered as a monetary phenomenon in Keynesian proposition (Snowdon and Vane, 2005). Liquidity preference function constructed from Keynes's theory of liquidity preference proves that real money demand is a function of income and interest rate. In text-book Keynesian model, monetary policy transmission mechanism is indirect in such a way that positive monetary shock derives the interest rate down to stimulate investment and aggregate demand that heat up prices (Taylor, 1995). Therefore, change in investment finally determines the nominal output. The only way money can matter in Keynesian economy is through interest rate channel and interest sensitivity of money demand decides how much effective it is. More interest sensitive demand for money implies less effective monetary policy. In demand side phenomenon, Keynesian framework concentrates on factors of autonomous expenditures; government expenditures, taxes and autonomous investment (Asogu, 1998). Monetary determinants are ignored. Keynesian view support exogeneity of government expenditures

that take part in economic growth. Cyrus and Elias (2014) verified fiscal dominance in economic growth. While Wagner (1890) claimed reverse causation among these variables imply endogeneity of fiscal policy also proved by (Ansari, Gordon and Akuamoah, 1997). Hussain (1992) found monetary dominance and Wagner proposition in Pakistan. Keynesian economics shed light on dominance of aggregate demand in output and employment determination. Thus, Keynesians draw less attention towards monetary importance in economy. Instead, they believe more in fiscal stance for stimulating economic growth (Landreth, 1976).

In mid of decade 1950s monetarist school questioned Keynes's theory about monetary potency through empirical investigation. Monetarists support monetary policy dominance in output determination and fiscal policy actions play minor role on economic activity but the matter is that they are noninterventionists and believe in rule for monetary policy that effectively function in stable economic environment (Scarth, 2014). Monetary policy dominance exerts influence on inflation also support monetary role in achieving stability (Scarth, 2014). Milton Friedman in line with other monetarists showed that money does matter be an evidence for revival of monetary importance (Vaish, 2005). Monetarism originates from classical economics believes in interest insensitivity of money demand implies that changes in aggregate demand directly lead by money supply which alter nominal output. Thus, they believe more in monetary relevance and oppose fiscal interference in a way that if government rises spending through selling bonds to public, thus a rise in interest rate crowd-out private investment. It means public investment crowd-out private investment and makes fiscal discipline ineffective in long run and the only way the economic growth and employment can be generated is forceful push of positive

monetary shock. Neoclassical tradition about crowding out effect on output also challenged Keynesian proposition (Spencer and Yohe, 1970). Monetarist view also against the effectiveness of fiscal stance through crowding out phenomenon of output but it supports monetary stance. Friedman and Meiselman (1963) support monetarist proposition. Consumption correlation with monetary not fiscal policy suggesting that monetary side of economy exerts stronger impact than fiscal stance (Friedman and Meiselman, 1963; Anderson and Jordon, 1968).

Ansari (1996) noted that monetarists used St. Louis equation (i.e. biased towards fiscal phenomenon) to oppose fiscal dominance based on its crowding out and inflationary impacts. Now a days, focus switch from government expenditures to public investment. Complementary public investment for private investment exerts crowding in instead crowding out furthermore, public expenditures in general and public investment particularly stimulate the economy (Aschauer, 1990). Mundell (1962) oppose monetarist view in a way that money play endogenous role in accommodating changes in economic growth. Other monetarists who follow rational expectations mechanism argued that monetary expansion cause inflation and output. Structuralist view on inflation comes from government spending. Inflation persists when government resort to deficit financing to meet expenditure targets causing money supply to increase (Kirpatrick and Nixon, 1976). From literature, we conclude that both policies are important in determining output and inflation however, one is less effective and other is more.

Pakistan's trading partners grow with better outlook which will positively contribute to economy of Pakistan. Macroeconomic policy transmission has been discussed over diverse context in literature. Here, we discuss how these policies directly or indirectly affect

external balance. Dias and Dias (2013) captured the role of trade on macroeconomic policy analysis. Ener and Arica (2012) found positive association among interest rate and current account balance. Output and prices both determine the volume of trade as well as inflation and interest rate instability makes the exchange rate volatile (Ali et al, 2015). Output affect imports while prices decide the level of exports in an economy and both jointly determine trade volume and current account balance and exchange rate. Moreover, exchange rate itself determines the current account balance position, trade openness as well as foreign exchange reserves (Feinberg, 1989 and Shafi et al, 2015). Exchange rate depreciation benefits exports and make imports expensive cause foreign exchange inflow and improvements in trade balance. Twin deficit hypothesis also investigated empirically indicates the role of fiscal policy on current account balance (Enders and Lee, 1990 and Kim and Roubini, 2008). Saibu and Oladeji (2008) verified the implication of efficacy of fiscal and monetary policy with increasing economic openness. They found negative role of degree of openness on macroeconomic policy effectiveness.

Contemporary macroeconomic theories lay emphasis in both disciplines to achieve macroeconomic stability. Modern Keynesians believe that slope of both the IS and LM schedules are in normal range where both monetary and fiscal policies are effective (Scarth, 2014). Modern Keynesians provide room for both supply side role on output and monetary aggregates on demand side process but still give value to the demand side economics in determining level of output (Scarth, 2014). Mundell (1971) emphasized on both policy relevance where monetary policy should deal with inflation dynamics and external matters while fiscal stance should determine supply side of economy aims to safeguard internal stability. In line with Mundell, Schlesinger (1960) in his work "Monetary-Fiscal Policies

and Growth Objectives" stated that "Although some economists may prefer on the basis of value judgments to emphasize fiscal policy, while others would prefer monetary policy, the connection between the two instruments can be ignored by none. Fiscal policy works through its influence on monetary conditions, while the tone of monetary policy is determined by the fiscal situation."

There are very few studies that estimate relative effectiveness of monetary and fiscal policy on economic growth, inflation and exchange rate in Pakistan. To date, by using modified St-Louis single equation model introduced by Anderson and Jordan (1968), Masood and Ahmed (1980), Hussain (1982) and Saqib and Yasmin (1987) found relative monetary and fiscal potency on economic growth, that cause problem of endogeneity. Endogeneity makes the estimates severely biased (Goldfeld et. al., 1972 and Senbet, 2011). Consider all the variables endogenous as Vector-autoregressive (VAR) model do to resolve this issue (Senbet, 2011). To address this problem, Hussain and Niazi (1992) used Granger and Sims causality test to measure relative importance of both policy instruments on economic growth. Granger and Sims test does not incorporate the issue of optimal choice of lag length yield invalid inferences about causality (Fatima and Iqbal, 2003). Fatima and Iqbal (2003) included exports variable in their comparative policy analysis by using Co-integration and Error-Correction-Mechanism (ECM) for five Asian countries including Pakistan. In line with Fatima and Iqbal (2003), Hussain (2014) analyzed this comparison through Advanced Autoregressive-Distributed-Lag (ARDL) with Co-integration and ECM for five SAARC countries including Pakistan. Moreover, Ali et al, (2008) and Mahmood and Sial (2011) applied ARDL to entail above discussion for Pakistan. In their study, Mahmood and Sial (2011) incorporated the role of current and development expenditures on economic growth

as well. In causality testing, applying Co-integration first and then deal ECM or ARDL as regressor create flaw in estimation for two important reasons. First of all, after forecasting Error-Correction term it is used as independent regressor that contributes to generated regressor bias that means the standard deviation that is calculated in next step is not remained valid. Next problem that can arise is existence of more than one Co-integration vectors and their linear combinations are also Co-integrated vectors. Short run and long run dynamics of the system are estimated in research particularly in VAR model. Dynamic impacts of fiscal and monetary policy actions on growth are estimated in VAR model to resolve endogeneity and VAR least likely to suffer with omitted variable biased and avoid simultaneity (Senbet, 2011) and accounts for feedback from economy to policy variables (Kretzmer, 1992).

In developed countries, empirical findings of debate vary country to country (Senbet, 2011). Researchers of developing countries also take part in debate to enrich literature to find relative dominance of two policies (for example; Ansari, 1996). It is clear from literature that relative importance of both policies remains puzzle. To what extend a macroeconomic stability is achieved through prudent fiscal stance like promoting investment, control inflation, job creation, encouraging exports, exchange rate stability and strengthening current account position. Likewise, monetary policy can also participate in economic growth, inflation targeting, stabilizing currency and capturing foreign exchange inflows. Senbet (2011) used impulse response functions and variance decompositions in Vector autoregressive model to examine the relative effectiveness of monetary and fiscal policy on nominal as well as real output growth for USA. We extend this model for open

economy and incorporate the policy role on output stability, price stability, exchange rate stability and external balance position for Pakistan

METHODOLOGY

Chapter 3

3.1 Dynamics of Pakistan's Economy

Central bank has closely monitored the monetary growth to achieve macroeconomic stability. As shown in figure 3.1, it revolves around 25 percent to 7 percent approximately during 1976 to 2010 showing huge instability in itself but variations decline in monetary growth and remain stable around 15 percent from 2011 to 2015. While call money rate shows smoother trend varies 7 to 13 percent throughout from 1976 to 2015 except for 2003-04 where it turns down to 3 percent around, again attain its position back and currently at 10 percent. Figure 3.1 shows that variations in monetary growth never affect the trends in call money rate up to 2001 while both moves opposite onward 2015, means that when monetary growth spike to 20 percent call money rate is in depression at 3 percent in 2003-04.

Figure 3.1

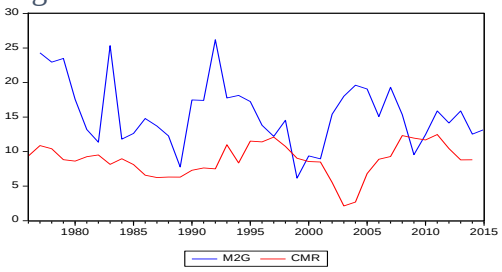
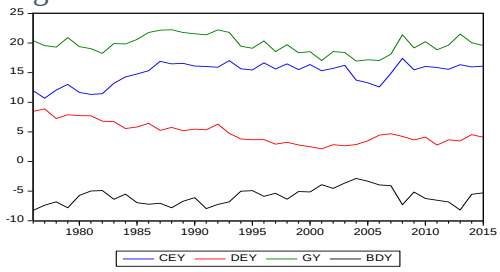


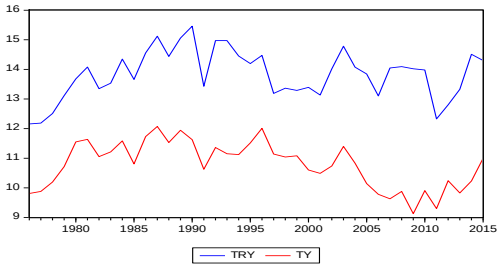
Figure 3.2



Fiscal stance is quite stable and follow similar trends indicates that they are more interrelated as shown in figure 3.2 and 3.3. Current and total government expenditures show similar picture, move around 12 to 17 and 17 to 23 percent of nominal GDP respectively, follow a stable path. Pace of development expenditures slow down over time

from 8 percent of GDP to 4 percent during 1976 to 2001 and after slight increase it is at 6 percent of GDP currently.

Figure 3.3



In figure 3.3, tax revenues and total revenues of government exhibit same patterns, move around 11 and 14 percent of GDP respectively. In 2011 tax and total revenue to GDP ratios decline near to 9 and 12 percent again attain their positions back in 2015. Budget deficit to GDP ratio follows trend similar to government expenditures and opposite to government revenues, moves around 8 to 4 percent throughout and currently at 5 percent.

Figure 3.4 shows more volatility in output gap. From 1976 to 1980 output gap was negative that decreases in 1981 and turns to positive in 1982. Output gap was increasing to its peak with small downturns in 1992, again decreasing towards potential output in 1996 turned to negative and attain its maximum in 2002 in negative region. Output gap was positive in 2007, negative in 2010-11 but close to its potential and again turned to positive. In high monetary growth periods, negative output gap shows decreasing trend while positive output gap shows increasing trend and vice versa. Whereas, decreasing call money rate indicates that negative output gap is declining and when it turns to positive region this gap widens. In 2004 when call money rate is at its lower end, negative output gap starts to vanish in next period as shown in figures. When government expenditures and budget

deficit increases, it cut down negative output gap and generate positive output gap and the case is reverse when expenditures and deficit decline. Graphs suggests that revenue side of fiscal stance exert weaker impact on output gap while expenditures show greater impact. Monetary growth rate and call money rate shows strong impact on output stability. Here, we conclude that both policies are effective, further we examine their relative effectiveness in output stability in empirical analysis.

Figure 3.4

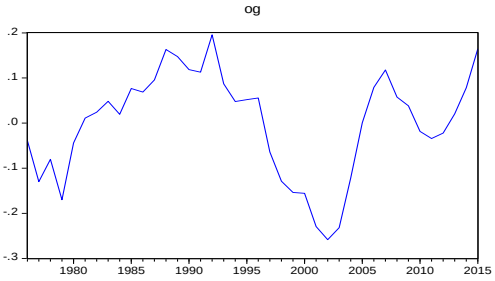
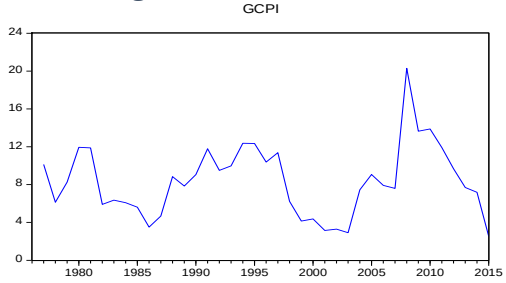


Figure 3.5



Inflation rate became stable at 6 percent during 1982 to 1985 and attain 4 percent level in 1986 that is quite attractive after the oil price shock of 1970s that heated up it to double digit, as shown in figure 3.5. Inflation spiked up again to double digit and remained close to it during 1987 to 1996. It turned down to around 4 and 3 percent in 1997 to 2003, again shouted up to 20 percent in 2008 and frequently slow down to 3 percent in 2015. Inflation rate moves on same path with monetary growth rate, government expenditures and budget deficits but that track goes opposite to the call money rate and revenues implies that both policies play their role but we cannot say which tool is more effective further we test these instruments in empirical analysis.

In figure 3.6, real effective exchange rate start depreciating from 5.4 percent to 4.6 percent up to 2001 and get stable with minute increase and reached at 4.8 percent in 2015. Current

account balance to GDP ratio shows deficit throughout except from 2000 to 2003 and deteriorate to its maximum 2008 and get stable around 1 percent after 2010 to date.

Figure 3.6

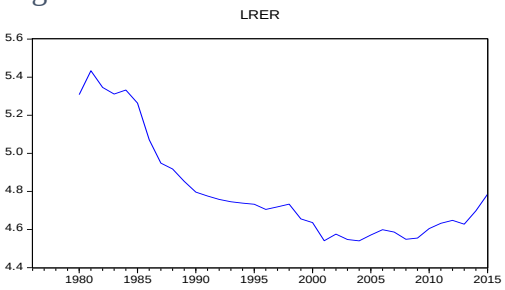


Figure 3.7

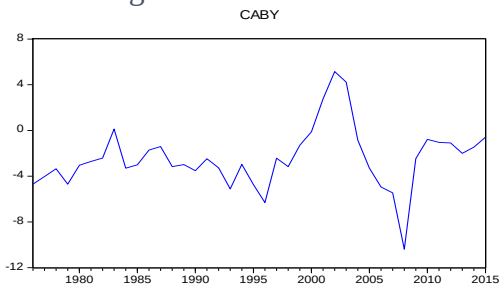


Figure 3.8

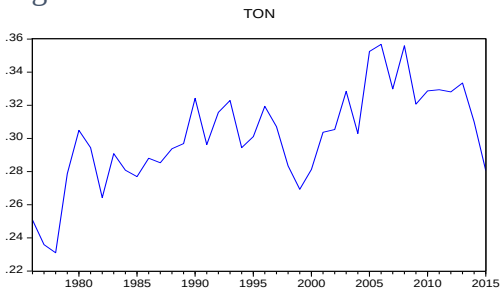
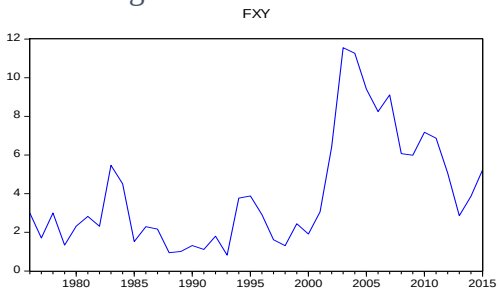


Figure 3.9



Trade openness and foreign exchange reserves to GDP exhibit quite similar trend to current account balance as shown in figure 3.7, 3.8 and 3.9. All of these variables are more interrelated and trends in policy variable along with these variables suggests that to some extend all instruments are effective in altering the trends of these variables but we will reach to final conclusion that which policy instrument is more effective after analyzing these empirically.

3.2 Theoretical Framework

Governments formulate macroeconomic policies to encourage economic growth and employment, price stability and stable financial markets and external balance conditions. Here, we will develop a theoretical framework to address the issue of effectiveness of monetary and fiscal policies in achieving macroeconomic stability.

Monetary authorities most probably the central bank conduct monetary policy with discretionary control of interest rate (directly or indirectly through money supply), credit and cost of credit to meet economic objectives such as sustainable economic growth, price stability or inflation control, exchange rate stability and healthy external balance position e.g. favorable current account balance, competitive trade volume and stable foreign exchange reserves [Friedman, 1968; Poole, 1970; Falegar, 1978; Onido, 1995 and Leeper, Sims and Zha, 1996]. Adequate monetary policy determines economic prosperity and stable inflation through monetary transmission [Taylor, 1995]. Economic theory shows that monetary easing stimulates aggregate demand and hence level of output by following transmission channels such as interest rate, income and wealth, real cost of capital, exchange rate, credit and asset price channel [Bernanke and Gertler, 1995 and Mishkin, 1996].

Taylor (1995) conduct a survey on monetary transmission mechanism specifically on interest rate channel and conclude that a rise in interest rate derives the cost of firms and households up because of higher borrowing costs, thus the demand for consumer durables and investment goods goes down. An interest rate hike slowdown economic activities by reducing consumer spending as they attract more to save and have less incentive for borrowings. Hence, decline in aggregate demand tends to lower inflation. Furthermore, low aggregate demand reduce import demand and low prices encourage exports jointly improve current account balance, trade balance and foreign exchange reserves.

Next in monetary transmission channel is other asset prices i.e. equity prices and exchange rate. monetary policy actions influence aggregate demand and output by affecting trade, current account balance and net exports through exchange rate channel. Higher interest rate

attracts inflows cause exchange rate appreciation makes exports relatively expensive and imports more competitive that decreases net exports and aggregate demand ultimately. Moreover, exchange rate appreciation has worse impact on current account balance (assuming relatively more price elastic demand).

Fiscal policy is considered as an alternative to monetary policy to achieve macroeconomic goals. Fiscal policy governs the course of economy by discretionary control of government expenditures, taxes, budget deficit and financial administration [Asogu, 1998].

Fiscal policy can alter aggregate demand by changing capacity of economy to produce goods and wealth distribution [Dembarg and Medougall, 1958]. Government perform three primary functions to affect economy namely, efficient resource allocation, effective and fair income distribution and macroeconomic stability. Changes in government spending or taxes can change the magnitude as well as patterns of demand for goods in short run. With the passage of time this demand influence resource allocation decision and the productive capacity of economy by affecting returns on factors of production, capital allocation, human capital development, and investments in research and development and technological change. Taxes determine net returns of labor employed, savings and investment hence, both have an impact on magnitude and productive capacity allocation.

Through aggregate demand channel government expenditures are able to stimulate output with multiplier effect that is greater than for a tax cut. For an economy, the impact of an increase in government spending is identical to the tax cut. Therefore, government expenditures are positively related to income while taxes are negatively associated with consumption and aggregate demand because tax increase lowers the consumer spending.

Budget deficits have a tendency to affect monetary aggregates and inflation adversely [Barro, 1989]. A rise in government spending generates aggregate demand that raises the prices [Lucas, 1973]. A fiscal expansion to boost up aggregate demand also create budget deficit that involve monetary factor to determines inflation. Such monetary factor arises when budget deficit is financed through sale of government securities and bonds and money creation. Thus, if budget deficit is financed through sale of bonds will put pressure on interest rate to rise that will offset the aggregate demand. In contrast, if monetary expansion funds the budget deficit interest rate may remain constant or decline results in higher prices.

In open economy when exchange rate floats freely, higher interest rate cause capital inflows that in result appreciates exchange rate and deteriorate current account balance. Expansionary fiscal stance leads to a price hike that choke off the part of aggregate demand rise in short run. In open economy with flexible exchange rate, in particular, if price change with exchange rate, since exchange rate appreciation lower prices whereas, with fixed exchange rate, a rise in price in response to exchange rate appreciation cause current account deterioration.

Fiscal and monetary expansion aims to stimulate aggregate demand and output while tightening of both policies control inflation and stabilize both internal and external balance.

3.3 Data and Variables

We have chosen data of all variables for period 1976-2015. To avoid structural break effect of Pakistan-Bangladesh separation in 1971, we have picked up this period of our dataset to compare relative prudence of policy instruments on macroeconomic stability. As structure

of our macro variables was changed in 1971 due to this separation and its effects last for later years.

We have extracted data of all variables that is used in our models from several sources as follows: real GDP, nominal GDP, current account balance, exports and imports data is extracted from the source of the World Bank (World Development Indicators). Data of real effective exchange rate and call money rate is taken from International Financial Statistics (IFS). Data of Broad money (M2), foreign exchange reserves, consumer price index (CPI), nominal exchange rate, government expenditures, government current expenditures, development expenditures, government total revenues and government tax revenues is collected from source of state bank of Pakistan (Hand Book of State Bank) and various issues of economic survey.

Now we'll describe detail of each variable means that how we use these variables and what scale they follow in our study. We have estimated output gap from real GDP data expressed in Billion rupees to find output stability. Inflation rate is computed by taking growth rate of general CPI to check general price stability. Real effective exchange rate is in index form hence we have taken natural log of that variable to convert it in rate to check exchange rate stability in our study. Foreign exchange reserves and current account balance are expressed in billion dollars. We have converted these into billion rupees by multiplying with nominal exchange rate. We have added up imports and exports and take ratio to nominal GDP to calculate trade openness to find policy impact on trade volume, all are expressed in billion rupees. Call money rate is used to check monetary policy impact on macroeconomic stability. Broad money in billion rupees is also monetary instrument, we have computed growth rate to find impact of monetary growth rate on macroeconomic

variables. Government expenditures, current and development expenditures, government total and tax revenues all are in billion rupees expressed fiscal impact taken in to nominal GDP ratio form. Budget deficit another fiscal instrument is computed by taking difference of government expenditures and total government revenues also in ratio of nominal GDP. Net foreign direct investment (FDI) is control variable in our all models expressed in billion rupees. Current account balance, foreign exchange reserves and trade openness are also in ratio to nominal GDP.

3.4 Vector Autoregressive (VAR) Model

We estimate 48 different Vector Autoregressive (VAR) models in our analysis, each consist of six variables. We analyze relative prudence of fiscal and monetary policy on output gap stability, price stability and exchange rate stability in first model by using instruments of both policies (current expenditures represent fiscal discipline and call money rate from monetary side) and foreign direct investment as control variable. Our first model is based on following system of equations.

$$\mathrm{OG}_t = \beta_0 + \sum \beta_{1i}\,\mathrm{OG}_{t-i} + \sum \beta_{2i}\,\mathrm{GCPI}_{t-i} + \sum \beta_{3i}\,\mathrm{LRER}_{t-i} + \sum \beta_{4i}\,\mathrm{CMR}_{t-i} + \sum \beta_{5i}\,\mathrm{CEY}_{t-i} + \beta_6 \mathrm{FDI}_t + \varepsilon_{1t} \quad (5.1)$$

$$\mathrm{GCPI}_t = \alpha_0 + \sum \alpha_{1i}\,\mathrm{OG}_{t-i} + \sum \alpha_{2i}\,\mathrm{GCPI}_{t-i} + \sum \alpha_{3i}\,\mathrm{LRER}_{t-i} + \sum \alpha_{4i}\,\mathrm{CMR}_{t-i} + \sum \alpha_{5i}\,\mathrm{CEY}_{t-i} + \alpha_6 \mathrm{FDI}_t + \varepsilon_{2t} \quad (5.2)$$

$$\mathrm{LRER}_t = \gamma_0 + \sum \gamma_{1i}\,\mathrm{OG}_{t-i} + \sum \gamma_{2i}\,\mathrm{GCPI}_{t-i} + \sum \gamma_{3i}\,\mathrm{LRER}_{t-i} + \sum \gamma_{4i}\,\mathrm{CMR}_{t-i} + \sum \gamma_{5i}\,\mathrm{CEY}_{t-i} + \gamma_6 \mathrm{FDI}_t + \varepsilon_{3t} \quad (5.3)$$

$$\mathrm{CMR}_t = \delta_0 + \sum \delta_{1i}\,\mathrm{OG}_{t-i} + \sum \delta_{2i}\,\mathrm{GCPI}_{t-i} + \sum \delta_{3i}\,\mathrm{LRER}_{t-i} + \sum \delta_{4i}\,\mathrm{CMR}_{t-i} + \sum \delta_{5i}\,\mathrm{CEY}_{t-i} + \delta_6 \mathrm{FDI}_t + \varepsilon_{4t} \quad (5.4)$$

$$\mathrm{CEY}_t = \theta_0 + \sum \theta_{1i}\,\mathrm{OG}_{t-i} + \sum \theta_{2i}\,\mathrm{GCPI}_{t-i} + \sum \theta_{3i}\,\mathrm{LRER}_{t-i} + \sum \theta_{4i}\,\mathrm{CMR}_{t-i} + \sum \theta_{5i}\,\mathrm{CEY}_{t-i} + \theta_6 \mathrm{FDI}_t + \varepsilon_{5t} \quad (5.5)$$

In next models, we replace exchange rate with current account balance to GDP ratio first and then with trade openness and foreign exchange reserves, CEY with other fiscal

instruments one by one e.g. development expenditures to GDP ratio, government expenditures to GDP ratio, budget deficit to GDP ratio, tax revenues to GDP ratio and total revenues to GDP ratio and at last we replace call money rate with monetary growth rate.[11]

3.5 Estimation Methodology

We determine the lag length in VAR through Schwarz Information Criteria (SIC). Hypothetical changes in policy instruments affecting output gap, inflation, exchange rate, trade volume, foreign exchange reserves and current account balance are estimated through impulse response functions (IRFs) and variance decompositions (VDs) from VAR model expressed above. VAR allow all variables to interact with itself and other variables without imposing theoretical structure on estimates [Sim, 1980]. In VAR, IRFs show the effect of one-time shock of policy variables on itself and all other variables over the forecast horizon. VDs decomposes the effects of all variable on dependent variable hence, VDs is useful to check that which variable exert greater impact as compare to others. Additionally, the VAR model is suitable for investigating the dynamic impact among variables [Sim, 1980]. In model setting, we analyze the response of standard errors by using Choleski decomposition at one standard deviation. Senbet (2011) used same approach to examine the relative effectiveness of monetary and fiscal policy on nominal as well as real output for USA. We extend this model for open economy and incorporate the policy role in output stability, price stability, exchange rate stability and external balance position for Pakistan.

[11] As mentioned earlier, these variables are highly correlated that's why we estimate them separately. Moreover, we want to analyze that which policy instrument is more effective for macroeconomic stability from both disciplines.

RESULTS AND DISCUSSION

Chapter 4

4.1 The Unit root test

In time series analysis very first thing is observing stationarity of all variables. By using Augmented Dickey-Fuller (ADF) test, we conduct unit root test for this purpose. If we find unit root in any variable, it means that series is nonstationary. Hence, we take difference of the series to make it stationary. The Augmented Dickey Fuller (ADF) unit root test at level and 1st difference with and without trend is represented in table. Results indicate that all variables have unit root at level while stationary at 1st difference.[12]

Table 1 ADF Unit Root Test

Variables	Test for Unit Root	Included in Test Equation	P-Statistics		Results
			ADF Test Statistics	Critical Values	
OG	Level	Intercept	-2.00	-3.62*	I(1)
		Trend and Intercept	-1.97	-3.53**	
	1st Difference	Intercept	-4.97	-3.62*	
GCPI	Level	Intercept	-2.80	-3.62*	I(1)
		Trend and Intercept	-2.74	-3.53**	
	1st Difference	Intercept	-7.21	-3.62*	
LRER	Level	Intercept	-2.12	-3.63*	I(1)
		Trend and Intercept	0.17	-3.54**	
	1st Difference	Intercept	-4.43	-3.64*	
CABY	Level	Intercept	-2.92	-3.61*	I(1)
		Trend and Intercept	-2.93	-3.53**	
	1st Difference	Intercept	-6.55	-3.62	
FXY	Level	Intercept	-1.84	-3.61*	I(1)
		Trend and Intercept	-2.57	-3.53**	
	1st Difference	Intercept	-5.50	-3.62*	
TON	Level	Intercept	-2.76	-3.61*	I(1)
		Trend and Intercept	-3.07	-3.53**	
	1st Difference	Intercept	-7.44	-3.62	
CMR	Level	Intercept	-2.25	-3.62*	I(1)
		Trend and Intercept	-2.25	-3.53**	
	1st Difference	Intercept	-5.66	-3.62*	
M2G	Level	Intercept	-4.27	-3.62*	I(1)
		Trend and Intercept	-4.31	-4.22*	

[12] Results also confirmed through Correlogram test.

	1st Difference	Intercept	-8.84	-3.62*	
CEY	Level	Intercept	-2.29	-3.61*	I(1)
		Trend and Intercept	-2.41	-3.53**	
	1st Difference	Intercept	-7.24	-3.62*	
DEY	Level	Intercept	-2.08	-3.61*	I(1)
		Trend and Intercept	-1.91	-3.53**	
	1st Difference	Intercept	-8.52	-3.62*	
GY	Level	Intercept	-2.71	-3.61*	I(1)
		Trend and Intercept	-2.79	-3.53**	
	1st Difference	Intercept	-8.49	-3.62*	
BDY	Level	Intercept	-3.17	-3.61*	I(1)
		Trend and Intercept	-3.21	-3.53**	
	1st Difference	Intercept	-8.64	-3.62	
TRY	Level	Intercept	-3.59	-3.61*	I(1)
		Trend and Intercept	-3.51	-3.53**	
	1st Difference	Intercept	-7.95	-3.62	
TY	Level	Intercept	-2.48	-3.61*	I(1)
		Trend and Intercept	-3.18	-3.53**	
	1st Difference	Intercept	-7.72	-3.62*	

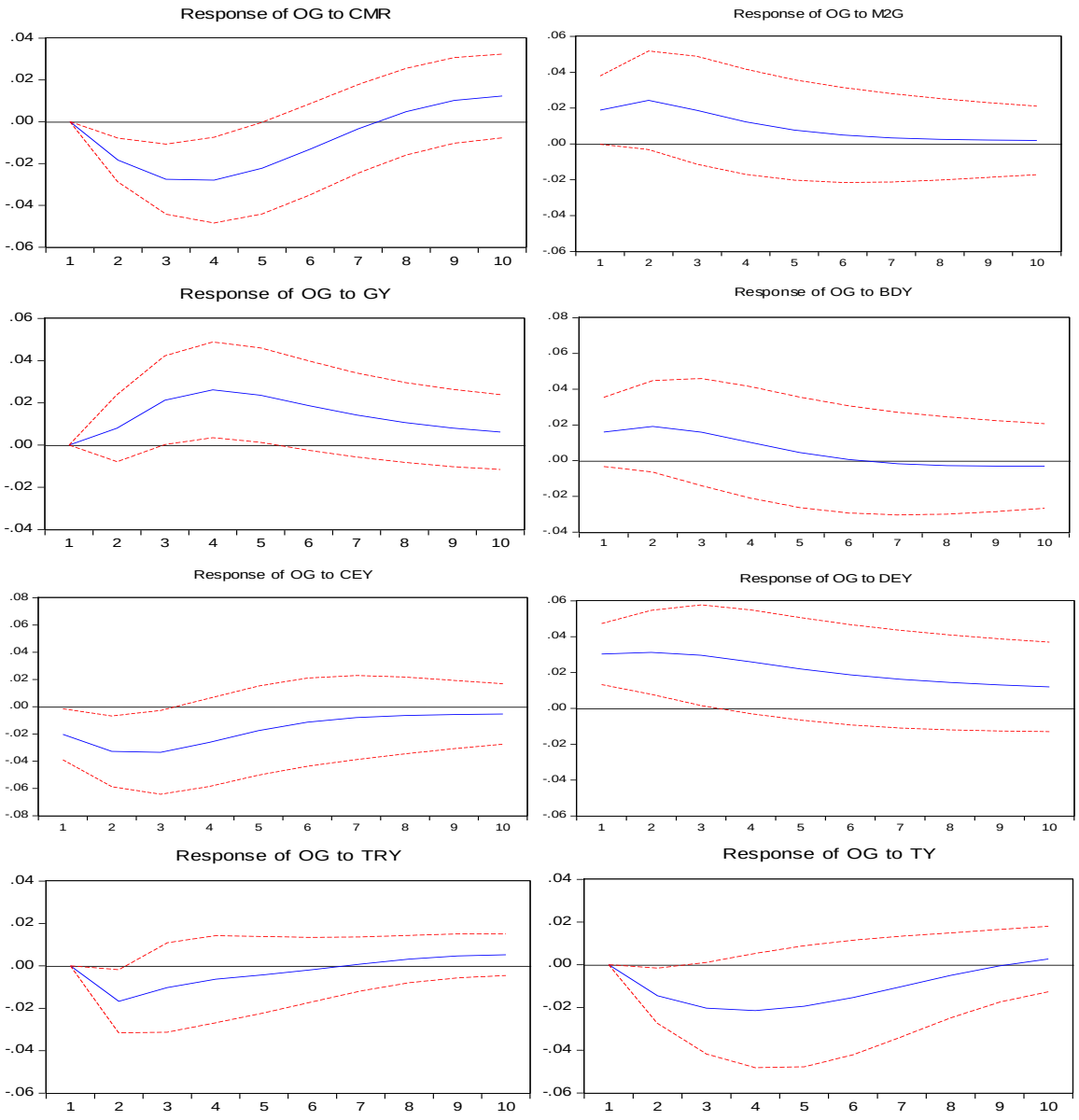
In this chapter, by using several instruments we analyze the effectiveness of the monetary and fiscal policy actions on the real output gap, inflation rate, current account balance, trade openness, foreign exchange reserves and exchange rate. The IRFs and VDs results are computed from VAR model expressed in chapter 3.2. In model setting, we analyzed the response of standard errors by using Choleski decomposition at one standard deviation with ordering of monetary policy variable CMR (or M2G) first, fiscal policy variables GY (or BDY, CEY, DEY, TRY, or TY) next, GCPI next, CABY (or TON, FXY, or LRER) next and then OG and FDIY at last as control variable.[13] Here, we suppose that contemporaneously, the fiscal authorities take actions after observing monetary actions. The one lag length is selected through SCI lag length criteria for all models.

[13]We have also checked with different orders but the results remained same but with less effectiveness of policy instruments which can be provided on request. We present here most effective results.

4.2 Impulse Responses of Output Gap:

Figure 4.1 shows response of OG against CMR, M2G, GY, BDY, CEY, DEY, TRY and TY through IRFs in VAR models (as described in chapter 03) for 10 periods of forecast horizon. Standard errors are measured on vertical axis plotted against forecast time horizon. Results reveal that CMR has negative impact on taming OG, while M2G affects OG positively but with weaker intensity as shown in figure 4.1. One standard deviation positive shock of CMR cause 3 percent decline in OG is significant up to fourth period that decays over time and in quarter of seventh period it converges back to its initial value while M2G explain 2.5 percent increase in OG that is significant in first quarter of forecast horizon and it slowly converges to its initial value in long run. In line with Senbet (2011), Koimain (2007) and Jordan, Roland and Carter (1999) it shows that an increase in interest rate or reduction in monetary growth precede to decrease in real output gap, suggesting that monetary authority is in game to stabilize the output gap in the Pakistan economy but it must rely more on interest rate to get efficient outcome. When output gap is above from its potential level meaning that positive output gap exists, either an interest rate tightening or money contraction lowers the output gap and vice versa. As a rise in money supply derives the interest rate down so money expansion or interest rate easing sounds same and vice versa. We can explain this relationship through interest rate channel. An increase in interest rate lowers the investment demand and aggregate demand that determines the level of output so that a fall in output decreases the output gap. Furthermore, interest rate hike raises the cost of borrowing so that firms and individuals avoid to borrow and prefer to save more instead to indulge in economic activities that lowers the output level. When we look at fiscal policy instruments BDY, GY and DEY provide positive feedback to OG while TRY

Figure 4.10: Impulse responses for the VAR model real output gap with monetary and fiscal policy instruments.



and TY affect negatively that is consistent with the studies of Patterson and Sjoberj (2003), Jordan, Roland and Carter (1999), Raham (2005), Bruce and Snyder (2004) and Ansari (1996). Consistent with Mehmood and Sial (2011), CEY exhibit negative significant impact on OG in first three quarters and converge to its initial value in 10th period. current expenditures are running expenditures and its major share is interest payments on debt that

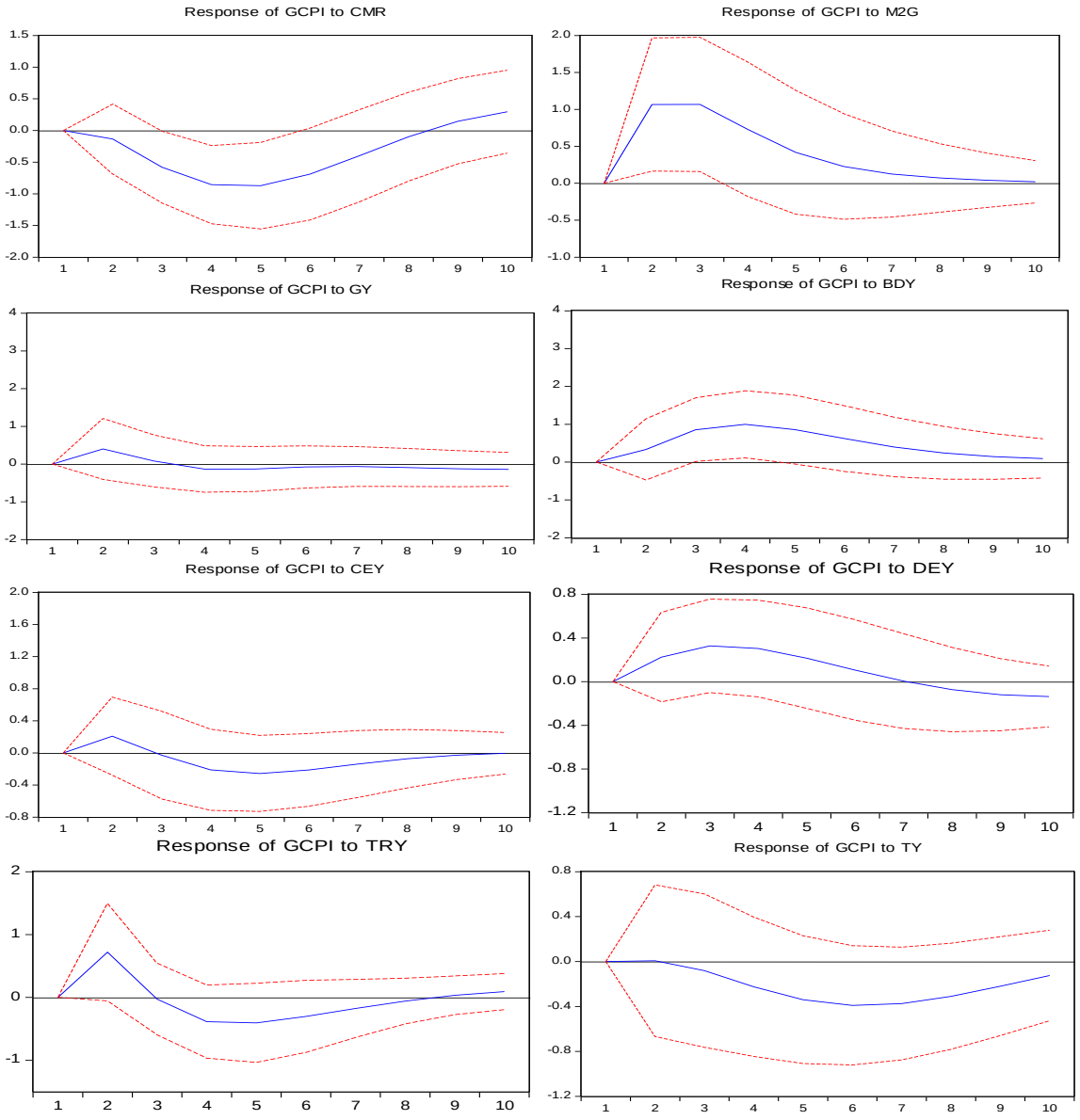
are harmful for output. One standard deviation positive shock of GY cause 3 percent rise in OG in third and fourth quarter of forecast horizon whereas positive shock to BDY explain 2 percent increase in OG significant in first quarter and completely vanish in sixth quarter. Positive shock of CEY shows 3 percent decline in OG i.e. significant in first three periods and DEY shows 3 percent increase in OG i.e. significant in first three quarters and slightly slowdown over time. A rise in government expenditures stimulate the output level as a result of increase in aggregate demand from two perspectives, the government demand and income induced consumer expenditures so that to lower the output gap government has to cut down his expenditures. Positive shock of TRY and TY both results in 2 percent fall in OG respectively in first two and first three quarters of forecast horizon. An increase in tax rate lowers the disposable income that is induced in consumption reduction that will further decrease the level of output and ultimately output gap. Tax cuts should encourage growth in small businesses and increase consumer self-confidence, thereby serving to boost up the economy [Mitchell, 2001]. TRY is basically combination of tax and non-tax revenues of government however TY is part of TRY so that most probably they will behave in similar manner. Here all kind of government expenditures and budget deficit shows permanent effect on output gap that slow down over time but tax revenues and total revenues exert short run impact on output gap that converges to its initial value over time respectively in ninth and sixth period of forecast horizon. Impact of increase in government expenditures are similar to tax cut or budget deficit reduction but tax multiplier is one less than government expenditures multiplier so that GY exerts greater impact than TY.

4.3 Impulse Responses of Inflation Rate:

Like output gap we plot impulse responses of inflation rate against all the policy instruments to examine the potency of fiscal and monetary actions on price stability. As shown in figure 4.2 CMR, TRY and TY are negatively associated with GCPI while M2G, GY, BDY, CEY and DEY shows positive association. A positive shock of CMR cause 81 percent decrease in GCPI significantly up to fifth period and converge back to its initial value in eighth quarter of forecast horizon. Conversely, a positive shock of M2G stimulate GCPI at 107 percent level significantly in first two quarters and converge to its initial value at the end of fifth period, meaning that loose interest rate policy and positive monetary growth exerts similar impact and vice versa. Rise in M2G or fall in CMR stimulate investment demand and aggregate demand as well. Positive feedback to aggregate demand creates inflationary pressure to the economy. Hence, to stabilize the prices we need to discourage aggregate demand by using tight monetary policy. Our findings are similar to the following studies (Friedman, 1963; 1968; 1970; 1971; Schwartz, 1973; Dwyer and Hafer, 1999; Moroney, 2002; Brumm, 2005; Grauwe and Polan, 2005; Qayyum, 2008; Bakare, 2011; Chaudhry et al, 2015). Now its turn to fiscal policy, a positive shock of GY creates 48 percent positive but insignificant change in GCPI that last for third quarter. Similarly, positive shock of BDY shows 90 percent positive impact on GCPI that is significant between third and fourth quarter and converge in tenth quarter. CEY and DEY exerts 15 percent and 33 percent positive impact that lasts till second and seventh quarter respectively. Outgrowth in government expenditures implies large budget deficits and both large deficit and incremental government spending generates additional aggregate demand that spurs the inflation. TRY shows 70 percent positive impact in first quarter and from

second to seventh quarter it turns to 40 percent negative and TY exert 39 percent long lasting negative effect means that partially converge but results is insignificant.

Figure 4.2: Impulse responses for the VAR model inflation with monetary and fiscal policy instruments.



In contrast with government expenditures, reduction in tax rates cause to decline in tax and total revenues with dual effect. At first, it provides less budget to fulfil government spending implies that government will cut its expenditures or face large fiscal deficits that

is pictured by initial positive response of TRY. Secondly, tax cut increases the disposable income of consumer that raises the consumer spending and aggregate demand both and finally positive demand side shock inflate the prices if economy is already at full capacity or quite close to it.

Hence, an increment in government spending or budget deficit or tax cut all mechanics reach to the same conclusion that is consistent with literature [for example: Friedman, 1981; Montiel and Haque, 1991; Han & Mulligan, 2002; Ezirim et al, 2008 and Olayungbo, 2013). Findings suggest that inflation is most probably monetary phenomenon but up to some extend it is also state dependent.

4.4 Impulse Responses of External Balance:

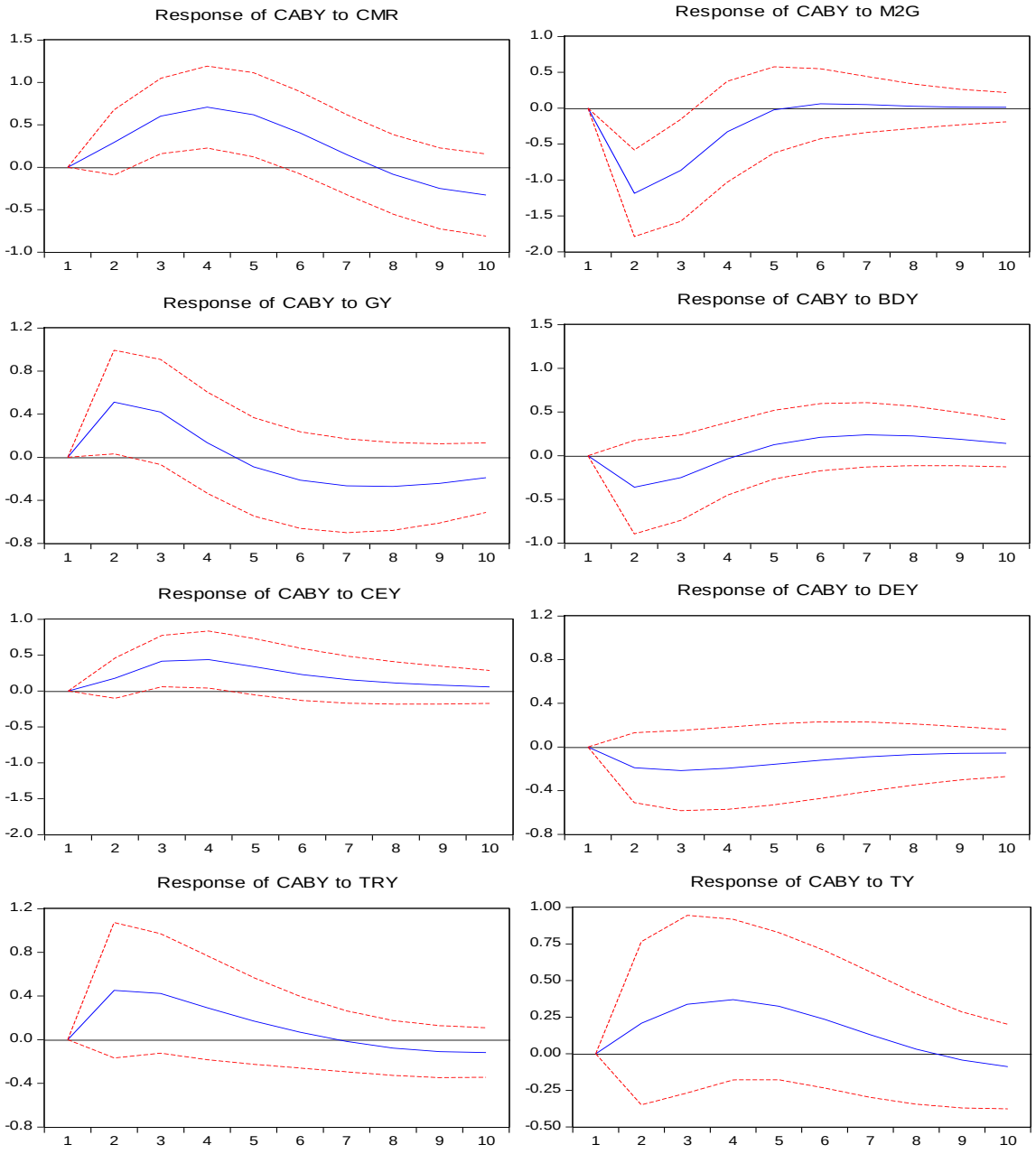
To determine the response of external balance against policy variable we plot IRFs of current account balance, trade volume, foreign exchange reserves and exchange rates in separate VAR models. From monetary side CMR has positive impact on CABY and negative on TON, FXY and LRER while M2G has negative relationship with CABY and FXY and positively associated with TON and LRER as shown in figures 4.3 to 4.6. Positive shock of CMR shows 58 percent positive impact significantly in second to fifth quarter. Initially transmitted CMR shock is completely decayed to its initial value in seventh quarter of forecast horizon. M2G shock transmit 118 percent negative change that is significant in first three quarters completely offset in fifth period. A rise in interest rate or fall in monetary growth shows shadow effect. Increasing interest rate lowers aggregate demand and prices that makes the exports cheaper hence stimulate demand for exports that improves current account balance. Moreover, in response to increase in interest rate consumer cut their

spending (more attract to save and have less incentive in borrowings) that will lower imports and therefore current account balance will improve see for example [Grohe and Uribe, 2014] consistent with [Bergin and Sheffrin, 2000; Bernhardsen, 2000 and Akdiş, 2006].

From fiscal perspective results are quite interesting. A positive shock of GY cause 51 percent positive impact significant in first two quarters that last for fourth quarter and 27 percent permanent negative effect onward. Government expenditures are financed by two resources, increasing taxes and government borrowings. Tax increase reduces consumer spending and imports as well as decline in aggregate demand and prices makes exports relatively more attractive both improve current account balance whether increase in borrowings heat up interest rate to discourage investment and aggregate demand cause improvement in current account balance. Furthermore, a rise in interest rate cause capital inflow that appreciates exchange rate (if BOP line steeper than LM line) makes imports expensive and exports more attractive hence improve current account balance. Negative relation indicates positive long run aggregate demand effect on current account deterioration. Similarly, CEY shock cause 44 percent positive change in current account balance significant from second to fourth quarter and converge to its initial value in long run. Behavior of GY and CEY are Contrary to Enders and Lee, (1990) and Abbas et al., (2010). Furthermore, findings indicate that both GY and CEY behave in similar fashion whereas DEY behaves in opposite manner. DEY shock deteriorate the current account balance by 22 percent that converge to its initial value in long run but result is insignificant. BDY deteriorate current account by 36 percent in first two quarters because of increase in government expenditures or tax cut (consistent with Kim and Roubini, 2009) and then

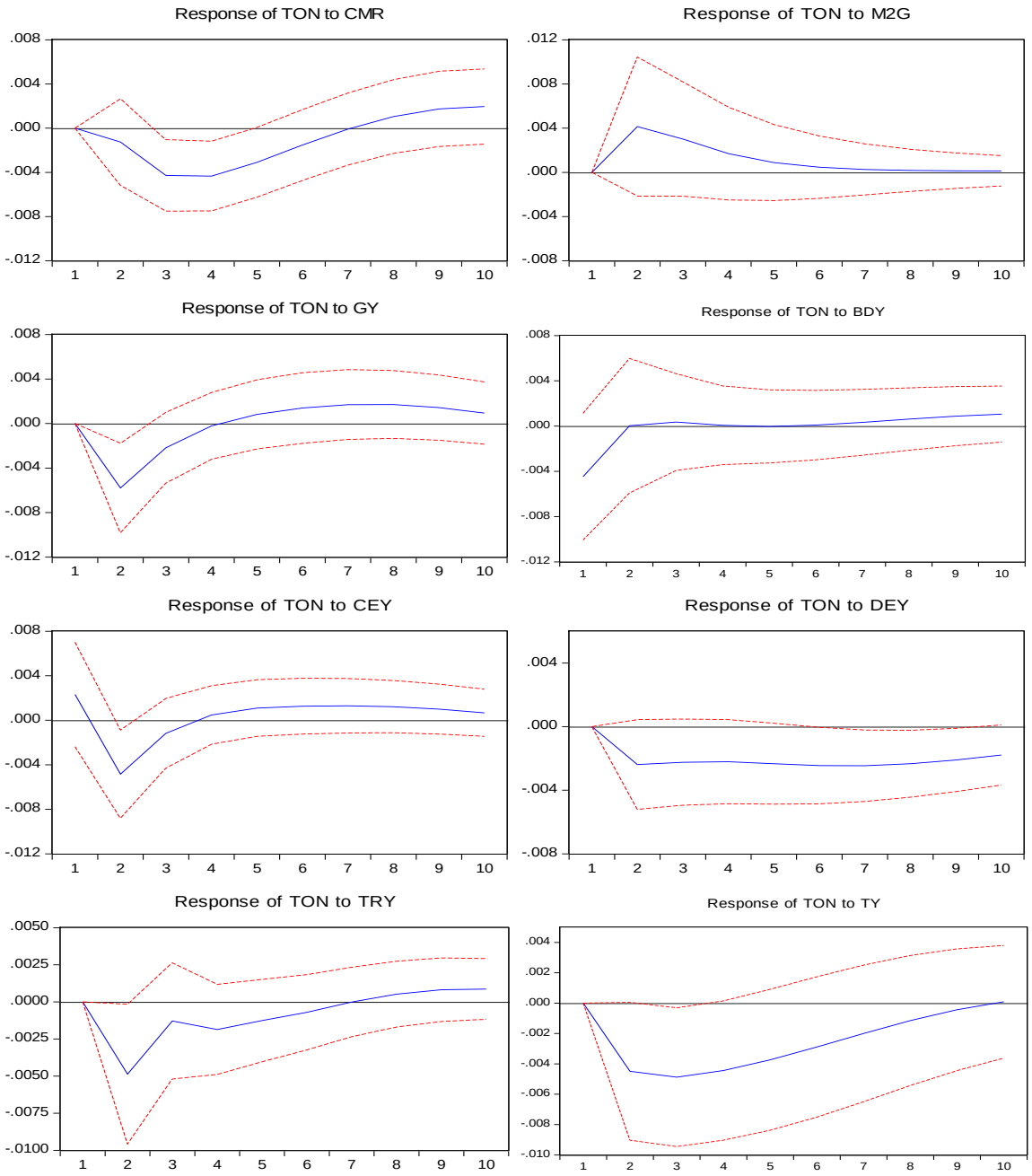
permanently spurs onward with 24 percent rate implies twin deficit hypothesis (consistent with Mohammadi, 2004).

Figure 4.11 Impulse responses for the VAR model current account balance with monetary and fiscal policy instruments.



Alike DEY, BDY also behaves insignificantly. TRY and TY moves in same direction.

Figure 4.12 Impulse responses for the VAR model trade openness with monetary and fiscal policy instruments.



A positive shock of TRY and TY cause 45 and 37 percent improvement in CABY that is completely decayed in seventh and ninth period respectively (consistent with Enders and Lee, 1990).

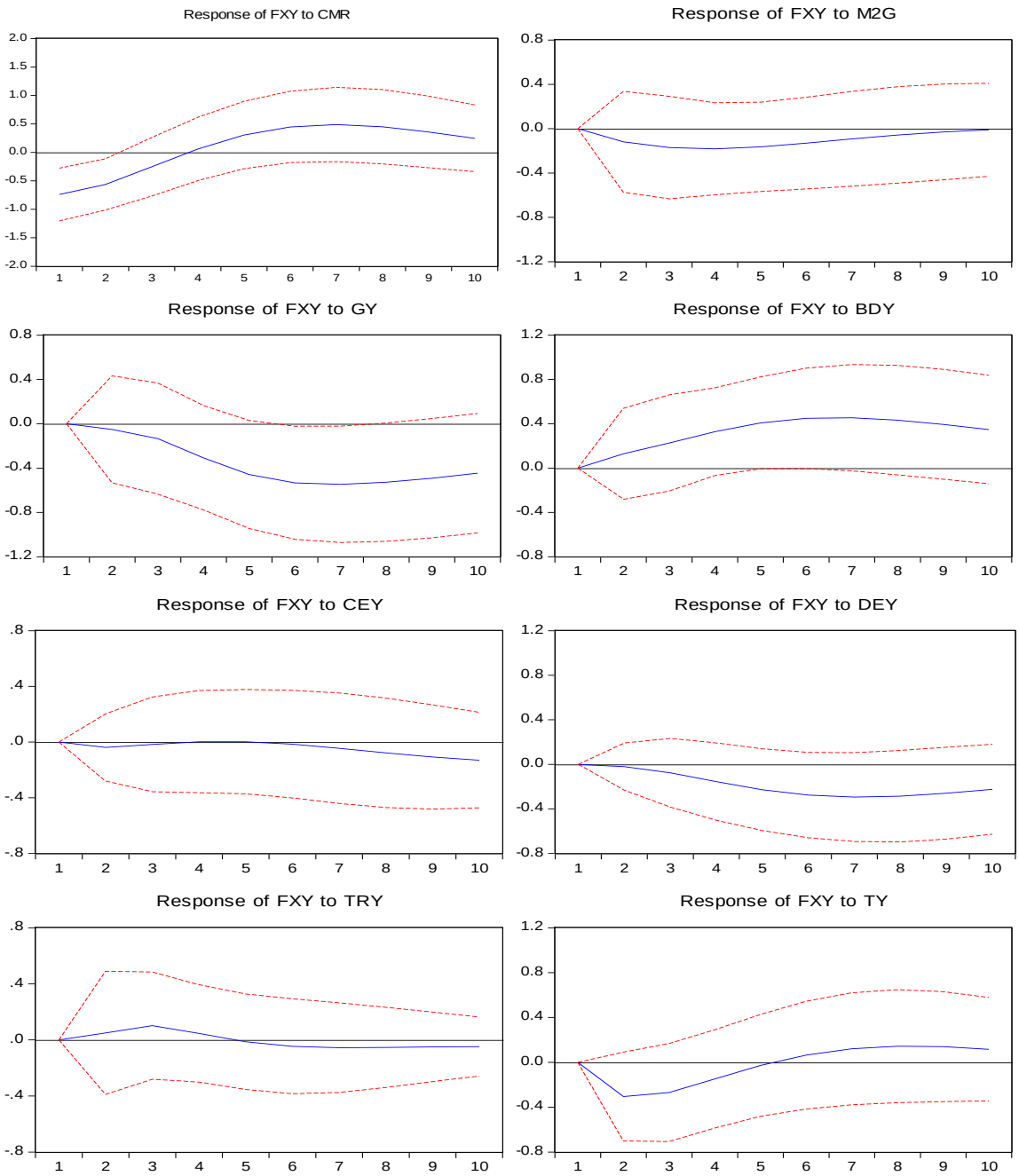
A shock of CMR negatively alter TON at 0.4 percent significantly in second to fourth quarter and its impact completely decay in seventh quarter. M2G insignificantly shows 0.4 percent positive impact that is totally decayed in tenth period. Results implies that increase in interest lowers aggregate demand and ultimately demands for imports whereas rise in monetary growth stimulate aggregate demand and demand for imports as well. GY shock shows 0.6 percent negative impact on TON significant in second quarter that converge to its initial level in fourth quarter. CEY cause 0.5 percent decline in TON significantly in second quarter and converge back in fourth quarter while DEY exert permanent negative effect of 0.25 percent significant in sixth to ninth period. Negative relationship of government expenditures implies that a cut in expenditures release inflationary pressures to make exports more competitive.

BDY exhibit 0.4 percent negative insignificant effect in first quartet and converge to zero in next period implies that increasing budget deficit cause inflation that makes exports relatively expensive hence exports and in due course trade volume declines. TRY and TY both negatively affect TON with same rate of 0.48 percent significant respectively in second and second to fourth quarter and converge in seventh and tenth quarter implies that increase in tax reduces the consumer spending, aggregate demand and eventually demand for imports. Totally reverse responses of trade volume to current account balance infers that imports are relatively more sensitive or more elastic to policy actions than exports meaning that increase in exports or fall in exports improve current account balance even though trade volume increase with increase in both and vice versa.

A shock of M2G cause 18 percent negative change in FXY and completely offset in tenth period. CMR cause 70 percent negative change significant in first two periods that lasts for

fourth period and then converted to 50 percent positive insignificant permanent impact on FXY that slightly slow down over time.

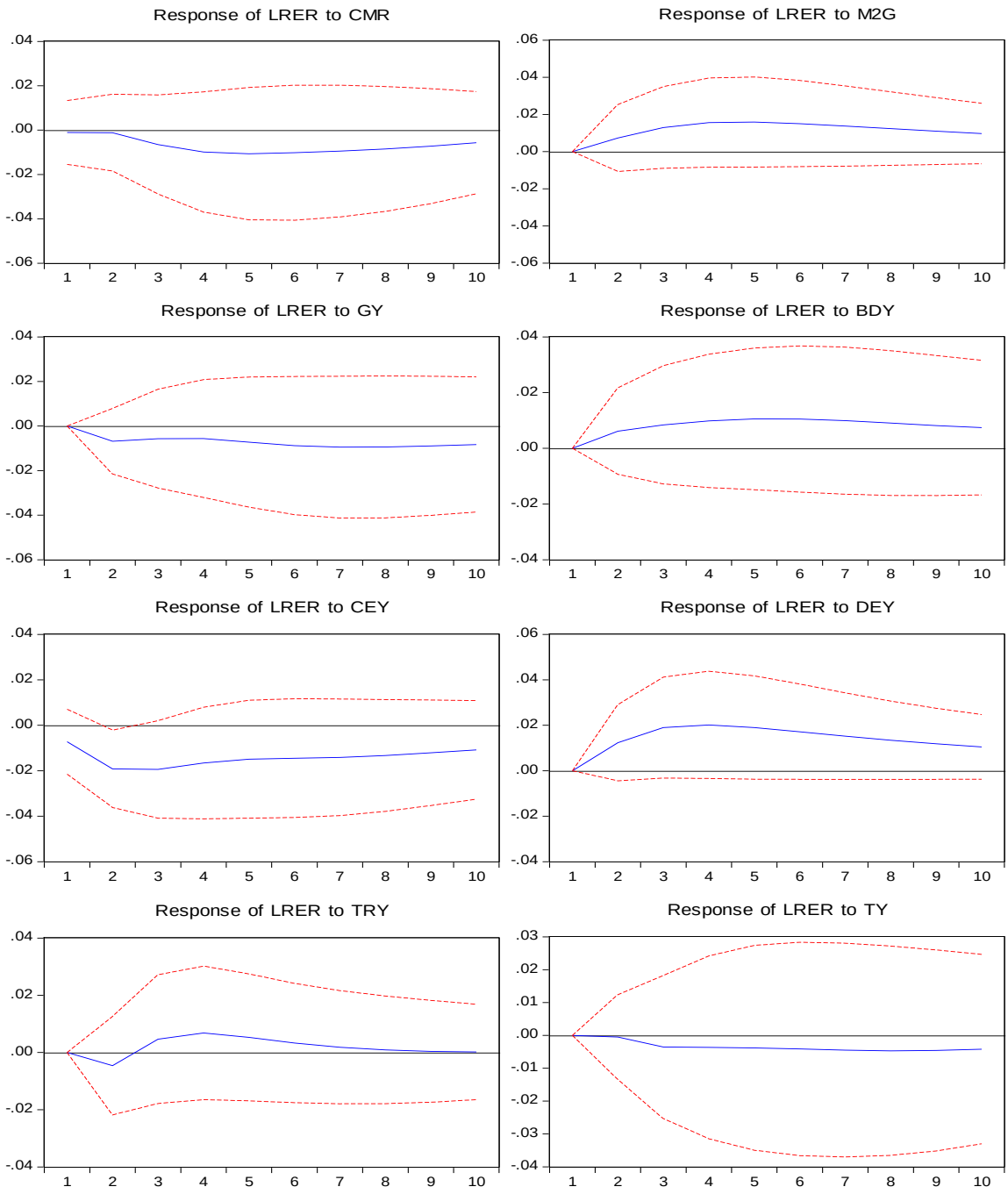
Figure 4.13 Impulse responses for the VAR model foreign exchange reserve with monetary and fiscal policy instruments.



Positive monetary shock or tight interest rate policy provide same feedback to foreign exchange reserves point towards that an increase in monetary growth derives the interest rate down, such decline outflows capital and worsen foreign exchange reserves. GY shows 49 percent permanent negative impact significant in sixth to eighth period infer that increase in government expenditures cause inflation in economy that discourage exports and imports become relatively more attractive than domestic goods indicate that economy is paying more dollars than it is receiving hence it leads to decline in foreign exchange reserves. Furthermore, developing countries are dependent to developed ones for supply of technology, machines and other equipment that leads to higher demand for imports, thereby, creating deficit in balance of payment account. More imports mean we are paying more dollars indicate that more decline in foreign exchange reserves. BDY shows 45 percent permanent positive impact that is significant in fifth to seventh period. Response of FXY to CEY is negative and insignificant at 4 percent level that last for third period and to DEY response is permanent negative at 29 percent. TRY and TY shows 10 percent positive and 30 percent negative but insignificant impact and both converge in fifth period. A rise in CMR depreciates exchange rate with 1 percent change permanently similarly positive shock of M2G cause 1 percent permanent appreciation of exchange rate implies that increase in M2G and fall in CMR both cause exchange rate depreciation. This result is consistent with uncovered interest parity approach where a fall in local interest rate as compare to the foreign interest rate induced by monetary expansion is related with capital outflows, which creates pressure on exchange rate i.e. depreciation. Moreover, in line with Misati and Nyamongo, 2011 and Cheng 2006 a rise in real interest rate increases the par value of shilling by encouraging capital inflows. A positive shock of GY and CEY depreciates exchange rate permanently at 1 percent and 2 percent level respectively indicates that increase in government expenditures heat up the interest rate that cause

exchange rate depreciation. BDY shows 1 percent enduring positive impact on exchange rate.

Figure 4.14: Impulse responses for the VAR model real effective exchange rate with monetary and fiscal policy instruments.



Similarly, positive shock of DEY permanently appreciate the exchange rate at 2 percent level. TY shows 0.5 percent permanent negative effect while impact of TRY is also 0.5 percent negative but it converges in second quarter. Except for CEY exchange rate respond to all the policy instruments insignificantly.

In variance decomposition analysis we just take policy variables and with respect to nature of study rest of them we have ignored in tables.

4.5 Variance Decomposition of OG:

Variance decomposition of OG with respect to CEY, DEY, GY, BDY, TY and TRY with CMR is shown in table 4.1 to 4.6. Table 4.1 shows that 86 percent variations in OG are explained by itself that is decayed up to 38 percent in tenth quarter of time. 13 percent variations are explained by CMR that shoots rapidly up to fourth quarter and reached at its maximum that is 53 percent in sixth quarter and then slow down over time. CEY explains 3 percent variation in second quarter and 4 percent in tenth quarter of forecast horizon. Results imply that monetary policy is more effective than fiscal stance when CMR and CEY are monetary and fiscal instruments respectively. when we replace CEY with DEY while monetary instrument is same the results become quite interesting. 65 variations in OG are explained by itself that turns to 33 percent in tenth period. Maximum variations after OG are contributed by DEY i.e. 21 percent while CMR explain 8 percent change in OG in first quarter infers that fiscal stance is more dedicating to stable output gap in short run but when we analyze the two instruments in long run DEY sharply decline over time and reach to 8 percent in tenth period while CMR shows increasing trend up to 6^{th} quarter.

It attains maximum i.e. 51 percent in sixth quarter and slightly decline over time represents that monetary policy instrument is relatively more attractive to stabilize output gap.

Table 4.1

Period	S.E.	OG	CMR	DEY
1	0.048151	65.49677	8.740652	21.56402
2	0.070049	55.81825	25.32132	13.57270
3	0.085877	46.91718	37.64150	11.38268
4	0.096436	40.70453	45.55558	10.26264
5	0.102660	36.71696	50.03275	9.472483
6	0.106012	34.44573	51.86579	8.941595
7	0.107973	33.40472	51.80242	8.621940
8	0.109536	33.06736	50.68969	8.418657
9	0.111066	32.96900	49.30571	8.245571
10	0.112502	32.84293	48.12221	8.071451

Table 4.2

Period	S.E.	OG	CMR	CEY
1	0.046844	85.96227	12.94784	0.768937
2	0.069692	68.11692	27.17725	3.033180
3	0.086689	54.67958	39.89773	2.689484
4	0.097730	46.84454	48.24809	2.119716
5	0.103783	42.63382	52.18985	2.090686
6	0.106603	40.53711	53.02675	2.536966
7	0.107934	39.56061	52.34684	3.225337
8	0.108981	38.96578	51.35082	3.894831
9	0.110187	38.33100	50.59643	4.345544
10	0.111467	37.58847	50.08505	4.527556

Table 4.3

Period	S.E.	OG	CMR	GY
1	0.047687	83.56042	12.68820	1.932058
2	0.069894	69.92998	25.76466	0.922453
3	0.086134	56.99790	38.66524	0.778104
4	0.096887	48.64979	46.88491	1.474492
5	0.103012	43.87050	50.46876	2.651342
6	0.105998	41.46462	51.11847	4.001667
7	0.107460	40.45120	50.41763	5.297683
8	0.108525	39.99045	49.43316	6.314231
9	0.109628	39.53654	48.64988	6.924707
10	0.110752	38.93181	48.06880	7.168563

Table 4.4

Period	S.E.	OG	CMR	BDY
1	0.048723	82.88043	7.117619	7.237462
2	0.069852	67.66229	21.92155	6.105003
3	0.085960	55.87454	33.62253	6.627318
4	0.096725	48.39556	40.46290	7.994619
5	0.102797	43.95325	43.48008	9.747348
6	0.105664	41.66793	44.07056	11.49006
7	0.106972	40.73457	43.52584	12.83720
8	0.107904	40.34407	42.77849	13.56441
9	0.108950	39.92483	42.20076	13.72710
10	0.110100	39.30768	41.72899	13.56722

We consider GY as policy instrument against CMR, results are quite similar to the combination of CEY and CMR. 83 percent variations in OG are described by itself that is remained 38 percent in 10^{th} quarter. CMR shows 12 percent variations that reaches to 51 percent in 6^{th} quarter, on the other hand GY explain very minor variations in short run and increase slowly up to 7 percent over time of 10^{th} quarter confirms monetary importance in output stability. In case of BDY as policy tool to stabilize output along with CMR, variations in OG by itself remain similar to the previous findings but CMR and BDY both play equal role i.e. 7 percent in first quarter but role of CMR shoots rapidly i.e. 44 percent in sixth quarter as compare to BDY i.e. 13 percent in 10^{th} quarter. Findings are almost same

when we introduce TY and TRY with CMR in models. Both CMR and TY shows 5 percent role in determining OG in first quarter and both attain its maximum in sixth quarter i.e. 42 and 24 percent respectively implies that both are equally important in very short run while in long run monetary policy is relatively more vital in determining output gap. CMR and TRY shows respectively 10 and 8 percent variation in short run. Impact of TRY is increasing up to 2nd period, attain 18 percent and decline to 13 percent over 10th time period while CMR reach to 47 percent in sixth quarter and minutely slow down over time point towards that again monetary policy is more attractive as an output stabilizer.

Table 4.5

Period	S.E.	OG	CMR	TY
1	0.044429	87.74527	5.415466	5.630165
2	0.069062	59.36478	21.88895	15.00592
3	0.088695	43.87380	32.40497	19.68187
4	0.102278	35.32740	38.46779	22.20790
5	0.110401	30.63962	41.57969	23.58236
6	0.114531	28.49630	42.71560	24.16009
7	0.116381	28.03464	42.65266	24.16964
8	0.117352	28.42002	42.08048	23.87441
9	0.118225	28.92726	41.50773	23.53627
10	0.119190	29.16028	41.15542	23.31359

Table 4.6

Period	S.E.	OG	CMR	TRY
1	0.044426	79.46960	10.43281	8.091281
2	0.073902	52.75793	23.15210	18.59117
3	0.090657	43.86185	33.98927	16.95598
4	0.100634	38.78622	41.35378	15.32650
5	0.106114	35.62416	45.53142	14.31295
6	0.108823	33.88212	47.23935	13.67534
7	0.110353	33.16209	47.19978	13.32688
8	0.111711	32.96759	46.22610	13.23894
9	0.113168	32.86905	45.05082	13.32446
10	0.114563	32.66684	44.08340	13.46263

First, we consider CMR as a monetary instrument and replace fiscal instrument one by one but crux remain same that monetary policy stance has more grip relative to fiscal policy in output stability both in long and short run except for development expenditures that play more role in output stability in short run but in long run we reach to single conclusion i.e. monetary policy is more fascinating output stabilizer consistent with previous studies [see for example; Friedman and Meiselman, 1963; Anderson and Jordan, 1968 and Senbet, 2011]. Now we replace CMR with M2G and again analyze the relative efficacy of monetary policy with respect to various fiscal instruments. Monetary dominance still exists in our findings but policy variables play less role when M2G is monetary policy instrument

along with GY, BDY, TY and TRY in our models as shown in table 4.7 to 4.12 while results of table 4.7 and 4.8 shows that impact of CEY and DEY are contradictory to the initial findings where we use CMR as monetary policy variable. In table 4.7, OG explain 79 percent variations by itself that reduced to 55 percent in tenth period. M2G cause 6 percent variations that increase to 10 percent in 10th quarter while CEY initially shows 12 percent variations that reaches to 26 percent in 4th quarter and slightly slow down over time. As shown in table 4.8, OG explain 58 percent variations by itself that turn to 42 percent in 10th quarter.

Table 4.7

Period	S.E.	OG	M2G	CEY
1	0.057230	79.06678	6.565531	12.54011
2	0.084307	68.51094	8.142263	20.91862
3	0.101365	62.40390	8.696273	25.38860
4	0.111424	59.02981	9.187500	26.50072
5	0.117508	57.19158	9.595415	26.05987
6	0.121508	56.23200	9.869998	25.24731
7	0.124414	55.75193	10.02404	24.49026
8	0.126711	55.49685	10.09607	23.86617
9	0.128621	55.32161	10.12297	23.36240
10	0.130247	55.15943	10.13016	22.95413

Table 4.8

Period	S.E.	OG	M2G	DEY
1	0.059878	58.17941	9.906833	25.61016
2	0.081999	51.50891	14.07921	28.18748
3	0.095445	48.28348	14.23612	30.44417
4	0.104239	46.60993	13.33325	31.72401
5	0.110426	45.54540	12.37283	32.24775
6	0.115073	44.70612	11.57884	32.35062
7	0.118733	43.96612	10.95714	32.26624
8	0.121701	43.29774	10.47307	32.12243
9	0.124147	42.70018	10.09384	31.97884
10	0.126180	42.17431	9.794577	31.85819

Table 4.9

Period	S.E.	OG	M2G	GY
1	0.059479	84.94000	7.492158	0.198286
2	0.084453	79.13942	10.30043	1.962807
3	0.099692	75.72526	11.58717	2.801791
4	0.108818	73.54939	12.40929	2.728728
5	0.114622	71.98534	12.87557	2.471577
6	0.118698	70.76751	13.07270	2.346547
7	0.121821	69.78367	13.11242	2.351299
8	0.124355	68.96771	13.08208	2.410002
9	0.126479	68.27004	13.03291	2.472681
10	0.128294	67.65470	12.98955	2.520640

Table 4.10

Period	S.E.	OG	M2G	BDY
1	0.059436	84.75026	7.460098	0.905826
2	0.083724	78.68250	10.13201	3.604654
3	0.098936	74.91878	11.48729	4.811190
4	0.108493	72.59938	12.16257	4.860957
5	0.114730	71.02178	12.40700	4.504356
6	0.119113	69.80397	12.40429	4.179060
7	0.122443	68.79524	12.28911	4.003721
8	0.125124	67.94918	12.14474	3.938073
9	0.127360	67.24212	12.01376	3.914531
10	0.129267	66.64622	11.91315	3.891571

M2G shows 10 percent variations that increase to 14 percent in 3rd quarter and slightly decay over time whereas, DEY explain 25 percent role in determining OG that rise to 32 percent up to 6th quarter and slightly slowdown over time. Table 4.9 shows that OG is 84

percent self-determined that decline to 67 percent in 10th period and 7 percent explained by M2G i.e. increasing up to 7th quarter to 13 percent and minutely slow down onward while GY shows very little impact initially and raises slowly over time i.e. 2 percent in 10th period. In table 4.10 results show that OG explain 84 percent variations by itself that decline to 66 percent. M2G exert 10 percent impact on OG in 2nd quarter that inclined to 12 percent in 4th quarter and persist onward while BDY shows 3 percent impact in 2nd quarter that increases to 4 percent in 3rd quarter and slightly decreases over the forecast horizon. Table 4.11 represents the impact of M2G and TY on OG. 92 percent variations in OG are self-explained that decay to 85 percent in tenth period. M2G cause 2 percent variations in OG that increases to 4 percent at 3rd quarter and slightly decreases over time while TY show minor impact that increases to 2 percent in 7th period and again decreases over time. As shown in table 4.12, when we replace TY with TRY, OG explain 92 percent variations by itself that decreases to 66 percent in 10th quarter, M2G initially cause with 5 percent level and increases to 12 percent at 4th quarter and slow down to 10 percent at 10th period while TRY exert 2 percent impact in second quarter that leads to 3 percent in 10th quarter indicates that monetary policy is dominant factor in output stability.

Table 4.11

Period	S.E.	OG	M2G	TY
1	0.062986	92.48949	2.591127	0.479140
2	0.085462	91.26390	4.612810	0.968750
3	0.099471	90.53099	4.716949	1.611355
4	0.108957	89.60739	4.362047	2.093876
5	0.115742	88.58059	4.057827	2.341435
6	0.120773	87.65428	3.873061	2.432257
7	0.124602	86.89745	3.779661	2.451296
8	0.127568	86.29565	3.736381	2.445841
9	0.129891	85.81433	3.712353	2.434943
10	0.131721	85.42348	3.693152	2.424200

Table 4.12

Period	S.E.	OG	M2G	TRY
1	0.060429	92.51491	5.427752	1.807252
2	0.082142	83.89435	10.57910	2.218219
3	0.095491	78.74979	12.17619	2.302054
4	0.104011	75.46346	12.32868	2.395426
5	0.109759	73.04401	12.04930	2.567181
6	0.113900	71.11588	11.69015	2.802253
7	0.117062	69.53132	11.34997	3.060400
8	0.119580	68.21230	11.04891	3.306278
9	0.121643	67.10508	10.78730	3.521854
10	0.123364	66.16930	10.56168	3.703603

Similar to the findings of Ansari, (1996), CEY and DEY shows greater impact than M2G on OG indicates that fiscal stance is more powerful to stabilize output gap while rest of the findings prove robustness of initial results where CMR is monetary policy instrument [i.e. Consistent with the studies of Anderson and Jordan, 1968 and Senbet, 2011].

4.6 Variance Decomposition of GCPI:

Earlier we have checked the role of several policy instruments in determining output stability, now we check their role in price stability.

Table 4.13 represents the impact of CEY and CMR on GCPI. GCPI is initially 100 percent self-determined but its role decreases to 48 percent in 10^{th} period. Initially both CMR and CEY play no role in determining GCPI but in 3^{rd} quarter CMR shows 10 percent while CEY explain 1 percent variations in GCPI. Role of both instruments is increasing in long run. CMR exert 28 percent impact on GCPI in tenth period while CEY reaches to 4 percent in same period implies that monetary policy is more influential in price stability as compare to fiscal stance when CMR is monetary policy instrument along with CEY as a fiscal instrument. We replace DEY with CEY in table 4.14. It shows that GCPI explain 100 percent variations by itself that declines to 47 percent in 10^{th} period. CMR shows 7 percent variations in 3^{rd} quarter that leads to 19 percent in 10^{th} period whereas DEY shows 11 percent variations in 3^{rd} quarter that decreases to 9 percent in 10^{th} period infers that fiscal policy is more effective in short run while its affect decline over time and monetary policy become more attractive in long run even in fourth quarter still proves monetary importance. In table 4.15, GCPI is determined 100 percent by itself in first quarter but it tends to 49 percent in 10^{th} quarter. CMR shows 4 percent impact in 2^{nd} period that leads to 27 percent

in 7th quarter and less than 0.1 percent decays in 10th quarter while GY exert less than 1 percent impact on GCPI and it increases to 2 percent in 10th quarter advocates monetary importance in both short run and long run. By replacing GY to BDY in model results remain similar further proves that monetary role is dominant in price stability as shown in table 4.16.

Table 4.13

Period	S.E.	GCPI	CMR	CEY
1	2.505292	100.0000	0.000000	0.000000
2	2.796947	87.13943	3.946514	0.125367
3	3.129740	69.67209	10.98054	1.792242
4	3.448419	58.00187	18.55720	3.394577
5	3.667638	52.00095	24.71507	3.726979
6	3.789996	49.77453	28.07160	3.529328
7	3.852620	49.61774	28.78069	3.505317
8	3.893275	49.94048	28.26675	3.756388
9	3.933170	49.74561	27.94667	4.092803
10	3.975224	48.97594	28.31951	4.339277

Table 4.14

Period	S.E.	GCPI	CMR	DEY
1	2.460873	100.0000	0.000000	0.000000
2	2.791119	82.22944	2.079706	8.530280
3	3.148081	64.66453	7.213791	11.37369
4	3.472264	54.28860	12.71238	11.19104
5	3.699802	49.77208	16.79656	10.39870
6	3.826682	48.47892	19.09003	9.782683
7	3.884803	48.42986	19.91166	9.506185
8	3.912594	48.44454	19.88932	9.501939
9	3.935747	48.08622	19.65918	9.618082
10	3.962280	47.45839	19.59874	9.722776

Table 4.15

Period	S.E.	GCPI	CMR	GY
1	2.502934	100.0000	0.000000	0.000000
2	2.793095	86.76975	4.026236	0.098758
3	3.134723	68.89497	10.85184	1.383061
4	3.448585	57.40020	18.27997	2.235008
5	3.664157	51.85352	24.14208	2.221050
6	3.790362	50.08440	27.05366	2.077143
7	3.859142	50.11881	27.47713	2.146398
8	3.902808	50.32531	26.92413	2.375510
9	3.941599	49.94971	26.63127	2.610706
10	3.979677	49.13466	26.95137	2.753654

Table 4.16

Period	S.E.	GCPI	CMR	BDY
1	2.429499	100.0000	0.000000	0.000000
2	2.721565	83.80926	2.002945	1.396040
3	3.067759	65.99407	9.795183	1.956824
4	3.395267	54.31717	19.01397	1.680331
5	3.638666	48.73086	25.24092	1.523620
6	3.783900	47.07638	27.77476	1.735104
7	3.857956	47.07488	27.89974	2.149856
8	3.900167	47.12086	27.31519	2.523758
9	3.936972	46.61591	27.16130	2.717190
10	3.974352	45.78147	27.63458	2.746995

In table 4.17, GCPI is 100 percent explained by itself in first period and decreases to 62 percent in 10th period. CMR explain 2 percent variations in 2nd quarter that reaches to 17 percent in 10th period while TY shows less than 1 percent impact that rises up to 5 percent

in 10th period meaning that both policies exert delayed impact and monetary policy play greater role than fiscal policy in price stability.

Table 4.17

Period	S.E.	GCPI	CMR	TY
1	2.703313	100.0000	0.000000	0.000000
2	3.039716	90.56892	2.260655	0.204753
3	3.278188	78.18025	7.250260	1.308405
4	3.496897	69.30119	12.37455	2.937596
5	3.669571	64.72351	15.80615	4.294755
6	3.783588	63.05112	17.32687	5.038866
7	3.847697	62.77244	17.57550	5.263741
8	3.880857	62.82818	17.35482	5.235302
9	3.900664	62.69925	17.22662	5.186866
10	3.917206	62.31088	17.37077	5.221799

Table 4.18

Period	S.E.	GCPI	CMR	TRY
1	2.352793	100.0000	0.000000	0.000000
2	2.695063	82.62348	2.345978	5.074291
3	3.071287	63.63896	8.126943	4.862570
4	3.465363	50.35387	13.91539	7.484910
5	3.724636	44.46722	17.99369	9.102287
6	3.851726	42.72922	20.15492	9.610011
7	3.901789	42.68183	20.80417	9.604847
8	3.925986	42.83695	20.67383	9.487598
9	3.951930	42.58010	20.45450	9.450446
10	3.983630	41.97965	20.48400	9.515631

In table 4.18, GCPI shows 100 percent variations by itself that tends to 41 percent in 10th quarter. CMR explains 2 percent variations in 2nd period and it rises to 20 percent in 6th quarter and onward while TRY shows 5 percent impact tends to 9 percent in fifth quarter and onward indicates that in short run up to 2nd quarter fiscal policy plays greater role while in long run monetary policy is more influential in price control. Overall judgement of our findings suggests that inflation or price instability is probably more supportive to the argument about monetary phenomenon that is consistent with studies (see for instance; Hossain, 1990 and Chaudary and Ahmad, 1995) and these could be controlled by monetary authorities by applying monetary policy actions.

Here we discuss role of M2G with several fiscal instruments in describing GPI. Table 4.19 shows that GCPI is 100 percent explained by itself and its impact decline up to 48 percent in 10th quarter. M2G explain 13 percent variations on GCPI in 2nd quarter lean towards 16 percent in 10th period. CEY shows 2 percent impact in 3rd quarter and tends to 11 percent in tenth quarter. Similarly, GCPI explain 100 percent variations by itself that lean towards

48 percent in 10th quarter as shown in table 4.20. M2G shows 20 percent variations that leads to 21 percent in 4th quarter and after a slight cut it reaches to 20 percent in 10th quarter while DEY exert 5 percent impact in 2nd quarter that lean towards 15 percent in 10th period. Table 4.21 shows that GCPI has 92 percent impact on itself that declines to 43 percent in 10th period. M2G explain 20 of total variations in GCPI in 2nd quarter and it tends to 24 percent in next period but slightly decays i.e. 21 in 10th period.

Table 4.19

Period	S.E.	GCPI	M2G	CEY
1	2.643365	100.0000	0.000000	0.000000
2	3.171003	79.54469	13.75009	0.024943
3	3.554144	63.36010	19.13477	2.408058
4	3.807559	55.42346	18.49545	6.007715
5	3.941512	51.81594	17.55451	8.551232
6	4.006498	50.15362	17.10189	9.923670
7	4.040597	49.31345	16.93022	10.61660
8	4.060702	48.83362	16.87984	10.96886
9	4.073358	48.53723	16.86490	11.14160
10	4.081844	48.34004	16.85215	11.21212

Table 4.20

Period	S.E.	GCPI	M2G	DEY
1	2.608103	100.0000	0.000000	0.000000
2	3.148072	76.56461	12.81056	5.330826
3	3.564388	59.73165	19.68224	10.77079
4	3.838101	52.62242	21.42501	13.65119
5	3.992265	50.05620	21.48597	14.85534
6	4.071860	49.16096	21.20459	15.29591
7	4.112178	48.79902	20.94025	15.43765
8	4.133864	48.58361	20.75020	15.47132
9	4.147102	48.40599	20.62012	15.46754
10	4.156365	48.24541	20.52865	15.45201

GY shows 3 percent impact in 2nd period that tends to 9 percent in 10th period in explaining GCPI. Likewise, GCPI is 100 percent self-defined in 1st quarter and lean towards 47 percent in 10th period as shown in table 4.22. M2G explain 12 percent variations in GCPI that leads to 20 percent in 4th quarter and maintain it on 20 percent onward. BDY explain 6 percent impact that tends to 19 percent in 10th quarter indicates that in long run BDY is equally important to M2G in explaining GCPI. In table 4.23, GCPI is explain 95 percent impact by itself that approaches to 44 percent in 10th period. M2G exert 22 percent impact in 2nd quarter that reaches to 30 percent in 4th quarter and decline to 27 percent in 10th period whereas TY displays 1 percent impact in 2nd period that increases to 2 percent in 10th period.

Table 4.21

Period	S.E.	GCPI	M2G	GY
1	2.633996	92.36043	4.092255	3.547313
2	3.148654	70.02652	20.04452	3.894189
3	3.486038	57.21726	24.23950	4.775927
4	3.733978	50.27587	23.82551	7.640742
5	3.877677	46.84797	23.18032	8.920150
6	3.956011	45.17918	22.73272	9.134222
7	3.997427	44.42216	22.39695	9.129992
8	4.018871	44.10638	22.16647	9.149513
9	4.031944	43.92104	22.03519	9.213667
10	4.043054	43.72226	21.96333	9.304872

Table 4.22

Period	S.E.	GCPI	M2G	BDY
1	2.656337	100.0000	0.000000	0.000000
2	3.132786	80.17046	12.73872	1.133869
3	3.531397	63.11306	19.41318	6.762511
4	3.825483	54.06271	20.72291	12.57251
5	3.988175	49.98727	20.58962	16.19492
6	4.059696	48.34341	20.34282	17.95889
7	4.086292	47.74915	20.20123	18.68675
8	4.095679	47.54296	20.13423	18.95438
9	4.099722	47.45711	20.09849	19.04584
10	4.102346	47.40410	20.07313	19.07455

Table 4.23

Period	S.E.	GCPI	M2G	TY
1	2.606647	95.11329	4.676498	0.210214
2	3.244033	66.76320	22.74340	1.032469
3	3.676979	52.28969	29.84948	0.816747
4	3.906229	47.84710	30.16641	1.000069
5	4.012944	46.40005	29.19940	1.486339
6	4.063544	45.69973	28.53109	1.876377
7	4.089806	45.28541	28.17311	2.081032
8	4.105448	45.02423	27.96916	2.171510
9	4.115958	44.85127	27.84481	2.213088
10	4.123223	44.73721	27.76591	2.236292

Table 4.24

Period	S.E.	GCPI	M2G	TRY
1	2.546044	93.02854	5.054168	1.917288
2	3.204131	66.16776	23.26150	4.831873
3	3.573339	53.52505	29.03611	5.614017
4	3.785389	49.50331	28.76358	5.581733
5	3.914450	47.41582	27.57276	5.790183
6	3.994861	45.97420	26.68399	6.364308
7	4.040990	45.15561	26.16243	6.976989
8	4.064529	44.81068	25.88031	7.314466
9	4.077310	44.68437	25.71837	7.389200
10	4.087055	44.58770	25.61082	7.361417

Likewise, 93 percent GCPI is self-explained that lowers to 44 percent in 10^{th} period. M2G explain 23 percent variations in GCPI in 2^{nd} quarter that jumps to 29 percent in next period and declines to 25 percent in 10^{th} period while TRY shows 4 percent impact that tends to 7 percent in 10^{th} period. Here, M2G is relatively more important to all fiscal instruments in determining inflation both in short run and long run except for BDY i.e. BDY approximately has equal influence in long run suggests that along with monetary control government officials need to control budget deficit to control inflation and price volatility. Furthermore, findings of models using M2G as monetary instrument confirm the robustness of previous results where CMR is monetary instrument implies dominant monetary role in determining inflation.

4.7 Variance Decomposition of CABY

Table 4.25 to 4.36 represent variance decomposition of CABY with regards to CMR, M2G (monetary policy variables) and CEY, DEY, GY, BDY, TY and TRY (fiscal policy instruments). Table 4.25 shows that 77 percent variations in CABY are explained by itself that tend to 42 percent in 10 periods of forecast horizon. CMR shows 5 percent variations in 2nd quarter that lean towards 29 percent in 10th period while CEY exert 1 percent impact on CABY that leads to 4 percent in 10th period support monetary policy dominance in describing current account balance in both short run as well as long run. In table 4.26, 82 percent variations in CABY are explained by itself that leads to 54 percent in 10 periods. CMR exert 4 percent impact on CABY that tends to 21 percent in 6th period and minutely decays over time whereas DEY show 2 percent variations that increase to 5 percent in 10th period point out similar conclusion.

Table 4.25

Period	S.E.	CABY	CMR	CEY
1	0.049465	77.76678	0.000000	0.000000
2	0.071869	68.63372	5.117120	1.830863
3	0.087744	57.25940	14.88621	3.535394
4	0.097723	50.09799	23.34087	4.262869
5	0.103504	46.79917	27.93137	4.407688
6	0.107018	45.66153	28.98609	4.326448
7	0.109751	45.18634	28.33420	4.218288
8	0.112386	44.48899	27.86684	4.167122
9	0.114912	43.43726	28.33831	4.171866
10	0.117051	42.34151	29.36956	4.194945

Table 4.26

Period	S.E.	CABY	CMR	DEY
1	2.025174	82.71008	0.000000	0.000000
2	2.336802	76.12640	4.669901	2.177796
3	2.542104	67.06715	11.68378	4.065723
4	2.685423	60.34713	17.34047	5.087671
5	2.773861	56.62101	20.49844	5.498008
6	2.823907	55.14439	21.57410	5.592260
7	2.854834	54.87018	21.50668	5.555715
8	2.879723	54.92813	21.13913	5.477659
9	2.902976	54.86013	20.91416	5.393984
10	2.923479	54.59500	20.89212	5.321841

Table 4.27 shows that 73 percent role in CABY is self-determining that decline up to 44 percent in 10th quarter. CMR explain 1 percent change in CABY in second quarter that turn to 7 percent in next quarter and lean towards 19 percent in 10th period while GY explore 4 percent change in second quarter turns to 6 percent in next period and reaches at 8 percent

after slight decrease in 10th period infers fiscal prudence in 2nd quarter and in long run CABY is more effectively determined through monetary stance. Likewise, with models incorporating BDY and TRY for fiscal stance results remain same as shown in table 4.28 and 4.29. In table 4.30, CABY follow same behavior while CMR shows 3 percent change in first quarter that turns to 17 percent in 10th quarter and TRY exert 5 percent impact in 2nd quarter that leads to 9 percent in 10th period implies strong fiscal prudence in 2nd quarter as compare to monetary position but more effective monetary stance than fiscal policy variable in long run.

Table 4.27

Period	S.E.	CABY	CMR	GY
1	1.934170	73.15231	0.000000	0.000000
2	2.271407	65.77887	1.723882	4.363381
3	2.488168	57.36096	7.881584	6.097935
4	2.614717	52.20511	15.18349	5.734332
5	2.693159	49.26615	19.21464	5.526288
6	2.753578	47.62524	19.73271	5.873273
7	2.802863	46.72803	19.06927	6.530632
8	2.842672	46.07273	18.84496	7.222532
9	2.873865	45.42468	19.24572	7.756800
10	2.896715	44.81711	19.78704	8.063838

Table 4.28

Period	S.E.	CABY	CMR	BDY
1	2.011708	79.44361	0.000000	0.000000
2	2.325284	75.77587	1.771759	2.013102
3	2.497667	68.84779	7.820492	2.475166
4	2.615290	63.01243	14.61415	2.257555
5	2.699778	59.26153	18.43854	2.471776
6	2.760648	57.36382	19.21818	3.183805
7	2.804563	56.55752	18.74609	4.087239
8	2.837876	56.06677	18.41559	4.893612
9	2.864459	55.50326	18.56679	5.453774
10	2.885438	54.86671	18.90775	5.762014

Table 4.29

Period	S.E.	CABY	CMR	TY
1	2.053842	80.55006	0.000000	0.000000
2	2.364972	76.73986	3.385416	1.244946
3	2.544820	68.59257	9.269094	3.542430
4	2.686923	61.53833	14.34188	5.577584
5	2.791700	57.51020	17.15018	6.733716
6	2.859401	56.03118	18.01729	7.112690
7	2.899921	55.90422	17.88326	7.076042
8	2.925827	56.09035	17.56849	6.952168
9	2.945904	56.04467	17.47801	6.913422
10	2.963423	55.70054	17.62870	6.976877

Table 4.30

Period	S.E.	CABY	CMR	TRY
1	2.001253	72.03713	0.000000	0.000000
2	2.398596	62.76226	3.838484	5.209192
3	2.624161	54.47923	9.633642	8.219697
4	2.748486	49.73127	14.32247	9.200716
5	2.814548	47.61292	16.80431	9.318497
6	2.851459	47.04956	17.46134	9.153184
7	2.878450	47.06657	17.25694	8.990680
8	2.904539	47.03295	16.98350	8.944002
9	2.930123	46.76408	16.94727	9.000485
10	2.951892	46.36456	17.08299	9.093149

From table 4.31 to 4.36 we compare efficiency of fiscal instruments with M2G in variance decomposition analysis. In all cases, monetary policy remains dominant and produce more or less similar results and proves robustness of results.

Table 4.31

Period	S.E.	CABY	M2G	CEY
1	1.637255	85.34656	0.000000	0.000000
2	2.211046	53.45815	24.23051	5.044235
3	2.582012	39.20843	25.08318	13.95159
4	2.757567	34.55024	22.90118	19.54419
5	2.832274	32.85597	21.87561	21.80877
6	2.868626	32.06852	21.49723	22.50950
7	2.889305	31.63625	21.40228	22.69778
8	2.901175	31.40103	21.39340	22.74871
9	2.907614	31.28169	21.39182	22.76050
10	2.910956	31.22338	21.38725	22.75712

Table 4.32

Period	S.E.	CABY	M2G	DEY
1	1.683665	84.63708	0.000000	5.387043
2	2.370963	51.68142	23.59633	13.58775
3	2.708298	39.79698	27.20120	16.83450
4	2.835098	36.41494	25.81267	18.21384
5	2.889151	35.16809	24.85846	18.81735
6	2.918641	34.49345	24.46315	19.16550
7	2.937743	34.05648	24.22289	19.44720
8	2.951742	33.74239	24.03016	19.69748
9	2.962663	33.50520	23.87516	19.91409
10	2.971333	33.32371	23.75529	20.09557

Table 4.33

Period	S.E.	CABY	M2G	GY
1	1.529417	80.50330	0.000000	0.000000
2	2.232806	42.12091	25.50050	10.27186
3	2.722917	28.32377	27.66140	18.30120
4	2.913988	25.02996	27.09600	20.45932
5	2.971278	24.31196	26.89055	20.39365
6	2.990265	24.08923	26.84017	20.14950
7	2.998749	23.97114	26.81037	20.05239
8	3.003824	23.89257	26.77335	20.00648
9	3.007609	23.83263	26.72976	19.96891
10	3.010661	23.78433	26.68721	19.93680

Table 4.34

Period	S.E.	CABY	M2G	BDY
1	1.544039	87.46315	0.000000	0.000000
2	2.230440	48.05646	27.58969	10.53338
3	2.698816	32.82492	32.55191	18.08386
4	2.902205	29.00475	32.18532	20.69312
5	2.967919	28.36854	31.54148	20.97864
6	2.987871	28.28403	31.19173	20.76711
7	2.996971	28.18711	31.00279	20.66867
8	3.003144	28.07932	30.87728	20.66949
9	3.007772	27.99300	30.78279	20.67627
10	3.011497	27.92476	30.70691	20.66120

Table 4.35

Period	S.E.	CABY	M2G	TY
1	1.666621	89.23471	1.106488	0.059347
2	2.365545	55.59226	31.99474	0.161160
3	2.708140	43.38606	37.33543	0.518240
4	2.843579	39.35157	35.86319	1.646200
5	2.910478	37.63134	34.29851	2.527708
6	2.950527	36.66507	33.37481	2.892679
7	2.976302	36.04718	32.80322	2.988970
8	2.994962	35.60280	32.43487	3.003908
9	3.009647	35.25803	32.18159	3.002851
10	3.021311	34.98884	31.98626	3.002252

Table 4.36

Period	S.E.	CABY	M2G	TRY
1	1.682240	84.69027	0.358066	1.560292
2	2.358119	55.12139	29.25057	0.806751
3	2.725338	42.36039	34.63857	0.845179
4	2.855636	38.61041	34.08442	0.913944
5	2.903570	37.34793	33.34905	0.884194
6	2.930604	36.66559	32.86543	0.932968
7	2.951033	36.16530	32.51913	1.038093
8	2.967400	35.77953	32.24557	1.135179
9	2.980357	35.48934	32.01617	1.210277
10	2.990619	35.27194	31.82352	1.270181

4.8 Variance Decomposition of TON

Table 4.37 to 4.48 represents the impact of policy variables on trade openness in variance decomposition analysis. In table 4.37 TON is 100 percent explained by itself that tends to 72 percent in ten periods. CMR shows 2 percent influence on TON that increases to 6 percent in 10th period while CEY exert throughout less than 1 percent impact proves relative efficacy of monetary stance. In table 4.38, 85 percent variations in TON are contributed by itself. CMR shows 2 percent impact in 2nd quarter that increases to 5 percent in 10th period while DEY shows less than 1 percent impact that boast up to 10 percent in 10th quarter implies that monetary policy is more effective in short run but in long run fiscal stance is more influential than monetary policy for enhancing trade volume.

Table 4.37

Period	S.E.	TON	CMR	CEY
1	0.018884	100.0000	0.000000	0.000000
2	0.021405	95.26471	2.270440	0.128897
3	0.022874	88.66553	3.993059	0.161978
4	0.023933	83.45417	4.648802	0.151104
5	0.024621	80.07178	4.682138	0.143860
6	0.025066	77.72088	4.522393	0.153158
7	0.025393	75.84166	4.531640	0.201028
8	0.025659	74.28116	4.889746	0.280046
9	0.025871	73.07638	5.511767	0.352539
10	0.026018	72.25813	6.157274	0.390343

Table 4.38

Period	S.E.	TON	CMR	DEY
1	0.018031	85.10746	0.000000	0.000000
2	0.019427	80.28384	2.087953	0.512277
3	0.020285	76.85766	3.612225	0.942149
4	0.020898	74.07882	4.248561	1.723222
5	0.021320	71.69826	4.290703	3.115414
6	0.021663	69.48149	4.155885	5.011546
7	0.021995	67.43875	4.187599	7.014810
8	0.022312	65.70267	4.502456	8.724752
9	0.022582	64.36305	5.008782	9.943559
10	0.022782	63.41376	5.539180	10.68269

In table 4.39, TON explain 88 percent variation by itself that decline to 65 percent in ten periods. Both CMR and GY show 1 percent impact on TON and their impact increases with same rate up to 7th quarter but in 10th quarter CMR shows 7 percent influence while GY shows 5 percent impact point towards that in short run both policy are equally important in determining trade volume but in long run monetary policy is more potent in enhancing trade. Table 4.40 shows that 90 percent variations in TON are self-explained

that decline to 70 percent in 10 periods. CMR shows 3 percent while BDY exert 1 percent impact in 3rd quarter that lean towards 5 percent and 3 percent respectively in 10th period indicates that both in short run and long run monetary policy play greater role in enhancing trade.

Table 4.39

Period	S.E.	TON	CMR	GY
1	0.018303	88.00971	0.000000	0.000000
2	0.020210	83.91132	1.208081	1.930660
3	0.021357	80.79816	3.392052	3.372660
4	0.022241	78.74249	4.804507	4.038263
5	0.022978	76.63062	4.988199	4.374026
6	0.023604	74.15364	4.728603	4.603299
7	0.024134	71.53606	4.773337	4.785487
8	0.024577	69.11596	5.329587	4.934775
9	0.024937	67.13409	6.220311	5.067227
10	0.025220	65.66134	7.155035	5.200583

Table 4.40

Period	S.E.	TON	CMR	BDY
1	0.018695	90.65685	0.000000	0.000000
2	0.020848	87.75784	1.393327	0.967310
3	0.022085	84.42078	3.511862	1.588795
4	0.023018	81.62686	4.786234	1.900935
5	0.023733	79.20519	5.038794	2.108942
6	0.024273	76.96403	4.853120	2.302731
7	0.024683	74.88397	4.764566	2.509879
8	0.025005	73.06192	4.986071	2.734784
9	0.025260	71.59222	5.455215	2.973153
10	0.025459	70.49510	5.992726	3.216194

Table 4.41 shows that 89 percent variations in TON are self-determined that decreases to 60 percent in ten periods. CMR shows 2 percent impact in 2nd quarter that leads to 6 percent in 10th quarter while TY shows 5 percent impact that reaches to 13 percent in sixth quarter and after minute decay approaches to 12 percent in 10th periods infers fiscal prudence against monetary stance in short run as well as long run.

Table 4.41

Period	S.E.	TON	CMR	TY
1	0.017723	89.57540	0.000000	0.000000
2	0.019860	82.86498	2.208787	5.013688
3	0.021456	76.29178	4.236721	9.311000
4	0.022780	71.71094	5.086075	11.90433
5	0.023840	68.62483	5.057779	13.18452
6	0.024658	66.42197	4.745012	13.57305
7	0.025278	64.70097	4.612933	13.43647
8	0.025755	63.23862	4.861487	13.07823
9	0.026134	61.93516	5.445306	12.70763
10	0.026446	60.77033	6.182070	12.42563

Table 4.42

Period	S.E.	TON	CMR	TRY
1	0.018425	85.93152	0.000000	0.000000
2	0.021197	79.63641	1.649071	3.235320
3	0.022737	76.37307	3.058519	5.089150
4	0.023785	74.68800	3.518026	6.084005
5	0.024531	73.57214	3.407907	6.444526
6	0.025083	72.37736	3.295413	6.395573
7	0.025514	70.92155	3.536959	6.205911
8	0.025863	69.38194	4.176689	6.043761
9	0.026139	68.01413	5.032729	5.945384
10	0.026347	66.95799	5.864315	5.883058

In table 4.42, TON explain 85 percent variations by itself that reaches to 66 percent in ten periods. CMR exert 1 percent influence on TON that reaches to 5 percent in tenth quarter while TRY shows 3 percent impact that turns to 6 percent in 5th quarter and again lowers to 5 percent in 10th quarter indicates that fiscal stance is more powerful in short run but in long run both policies exert similar role in determining trade volume.

When we replace M2G with CMR, TON shows 76 percent variations are self-explaining that decays to 73 percent in ten periods as shown in table 4.43. CMR shows 8 percent variations in 2nd quarter that decays to 7 percent in 10th quarter while CEY shows 2 percent impact throughout the forecast horizon support monetary dominance as a trade enhancing factor. In table 4.44, 69 percent impact on TON is explained by itself that leads to 56 percent in 10 periods. M2G shows 12 percent variations in first quarter that lean towards 21 percent in 4th quarter and reaches at 20 percent level in 10th quarter while DEY exert 6 percent variations in first quarter that tends to 9 percent in 10th quarter again support monetary prudence in short run as well as long run.

Table 4.43

Period	S.E.	TON	M2G	CEY
1	0.020025	76.14551	5.583886	1.494182
2	0.023394	75.04961	8.149729	2.597027
3	0.024882	74.91883	8.425551	2.650429
4	0.025711	75.24161	8.159146	2.507265
5	0.026194	75.47940	7.914991	2.415808
6	0.026482	75.37005	7.753329	2.365195
7	0.026671	74.96373	7.644345	2.347470
8	0.026815	74.40619	7.563516	2.361048
9	0.026939	73.81203	7.500036	2.394501
10	0.027050	73.24653	7.449684	2.433809

Table 4.44

Period	S.E.	TON	M2G	DEY
1	0.019071	69.44073	12.32298	6.291715
2	0.021505	63.92027	19.72864	5.028755
3	0.022566	60.83489	21.48513	5.256918
4	0.023102	59.31336	21.50907	5.920960
5	0.023405	58.42724	21.20613	6.713403
6	0.023599	57.79254	20.91327	7.498119
7	0.023736	57.29069	20.68327	8.198134
8	0.023837	56.88916	20.50991	8.779429
9	0.023913	56.57322	20.37992	9.239219
10	0.023970	56.32877	20.28221	9.591930

Table 4.45 shows quite interesting results. Impact of TON on itself revolve around 73 percent with minute change throughout the forecast horizon. Similarly impact of M2G and

GY also start with 7 percent level and rotate around 7 percent level with 1 percent positive and negative changes during ten periods implies that both policies are playing equally as a trade enhancing factor. Table 4.46 shows that 79 percent impact of TON is self-determined that left with 70 percent in 10th period. M2G exert 7 percent impact in 1st period that turns to 10 percent first in 3rd quarter and remain 9 percent onward with slight decay whereas BDY shows 2 percent impact in first quarter that raises to 7 percent in 8th quarter and remains at 97 percent with minute decay support monetary prudence as compare to fiscal stance.

Table 4.45

Period	S.E.	TON	M2G	GY
1	0.019589	73.89258	7.150735	7.161336
2	0.022344	75.23116	8.393815	5.641793
3	0.023805	74.95288	8.480552	6.482508
4	0.024696	74.83910	8.284991	7.265268
5	0.025242	74.55419	8.051939	7.603782
6	0.025592	73.95419	7.849479	7.739315
7	0.025846	73.14933	7.696996	7.817243
8	0.026055	72.26902	7.590158	7.885313
9	0.026239	71.39862	7.515809	7.955205
10	0.026407	70.58253	7.461518	8.026805

Table 4.46

Period	S.E.	TON	M2G	BDY
1	0.019672	79.64442	7.821994	2.128699
2	0.022566	78.53081	9.597332	2.700178
3	0.024048	76.48388	10.07520	4.876213
4	0.024894	75.25576	9.994968	6.535264
5	0.025381	74.47713	9.755306	7.409154
6	0.025685	73.73717	9.533315	7.781531
7	0.025906	72.92181	9.380991	7.908831
8	0.026089	72.07308	9.289639	7.933381
9	0.026249	71.25816	9.234636	7.921335
10	0.026391	70.51922	9.196426	7.901263

Tables 4.47 shows that 76 percent variations in TON are self-determined that turns to 74 percent in ten periods. M2G shows 8 percent variations in 1st period that reaches to 10 percent in next quarter and again declines to 8 percent in 10th period whereas TY shows 1 percent impact in first quarter that tends to 3 percent in 8th quarter and again declines to 2 percent level. In table 4.48, variations in TON explained by itself remain 72 percent approximately throughout. M2G shows 9 percent variations in 1st quarter that leads 11 percent i.e. maximum in 3rd quarter and decays up to 10 percent onward. TRY shows 2 percent variations in 1st quarter that turns to 3 percent in 10th quarter. Findings suggest that monetary policy is relatively more potent than fiscal policy in determining trade volume.

Table 4.47

Period	S.E.	TON	M2G	TY
1	0.019836	76.20247	8.154483	1.406232
2	0.022971	77.06413	10.13621	1.186876
3	0.024394	76.95325	10.09400	1.766638
4	0.025189	76.84226	9.668238	2.383928
5	0.025690	76.69179	9.325433	2.763874
6	0.026038	76.43270	9.085036	2.937328
7	0.026302	76.05949	8.907998	2.995632
8	0.026515	75.60871	8.768836	3.002186
9	0.026691	75.12990	8.654766	2.988716
10	0.026838	74.66278	8.560148	2.968900

Table 4.48

Period	S.E.	TON	M2G	TRY
1	0.020020	72.02045	9.273653	2.980422
2	0.023369	72.57450	11.45625	2.620612
3	0.024913	72.73681	11.65564	2.336224
4	0.025753	72.93207	11.26513	2.470732
5	0.026231	73.00882	10.91240	2.704379
6	0.026518	72.89902	10.68199	2.874749
7	0.026709	72.65477	10.53016	2.980219
8	0.026850	72.34641	10.42002	3.050975
9	0.026962	72.02440	10.33370	3.106353
10	0.027056	71.71742	10.26357	3.154223

4.9 Variance Decomposition of FXY

Table 4.49 to 4.60 shows variance decomposition of FXY with policy variables. Table 4.49 shows that 72 percent variations in FXY are explained by itself that tends to 30 percent in 10 periods. CMR explain 24 percent variations in 2nd quarter that reaches 20 percent in 3rd quarter and after a slow decline it again attains 20 percent level in 10th period while CEY exert less than 1 percent impact throughout the forecast horizon indicates monetary prudence in explaining foreign exchange reserves.

Table 4.49

Period	S.E.	FXY	CMR	CEY
1	1.529502	72.73403	23.38599	0.000000
2	1.878958	66.64987	24.47436	0.027844
3	2.105903	58.55130	20.93405	0.215717
4	2.321576	49.85675	17.29205	0.473801
5	2.526200	42.64375	16.04944	0.645694
6	2.698958	37.55402	16.79811	0.697614
7	2.829677	34.25679	18.26383	0.674990
8	2.920740	32.21829	19.51142	0.635286
9	2.981562	30.97973	20.16996	0.618391
10	3.023119	30.20438	20.28601	0.638292

Table 4.50

Period	S.E.	FXY	CMR	DEY
1	1.531193	96.29429	0.000000	0.000000
2	1.876590	91.87438	0.211055	0.237707
3	2.077567	81.71080	0.219927	0.874285
4	2.256558	70.05468	1.289873	2.135243
5	2.430562	60.39553	3.876501	3.852999
6	2.588791	53.58798	7.285419	5.569814
7	2.718571	49.09732	10.60156	6.925620
8	2.814035	46.17572	13.24816	7.811814
9	2.878002	44.26764	15.03476	8.295679
10	2.919156	43.03167	16.03142	8.504756

In table 4.50, 96 percent impact of FXY is explained by itself that lowers to 43 percent. Both CMR and DEY are explaining less than 1 percent impact in short run while in 10th quarter CMR shows 16 percent variations while DEY exert 8 percent impact indicates that

monetary policy stance is more effective in maintaining foreign exchange reserves in long run analysis while in short run both policies are ineffective. In table 4.51 FXY moves in similar manner. Both CMR and GY also explain less than 1 percent impact in 1st two quarters. Monetary policy remains ineffective up to 4th quarter. However, in 10th quarter GY shows 17 percent variations whereas CMR shows 6 percent variations indicates that fiscal discipline is more dedicating in maintaining foreign exchange reserves. Impact of BDY is almost similar to GY as shown in table 4.52.

Table 4.51

Period	S.E.	FXY	CMR	GY
1	1.526047	96.67927	0.000000	0.000000
2	1.860995	91.69091	0.417617	0.811078
3	2.056919	81.11803	0.427200	2.233733
4	2.237063	69.02011	0.534974	4.869361
5	2.420177	59.13397	1.362113	8.253168
6	2.593558	52.37068	2.620809	11.37150
7	2.745090	48.02422	3.873359	13.77860
8	2.869062	45.20710	4.892190	15.55729
9	2.965158	43.28887	5.608491	16.90767
10	3.036681	41.90112	6.039636	17.96771

Table 4.52

Period	S.E.	FXY	CMR	BDY
1	1.522165	96.37553	0.000000	0.000000
2	1.859812	91.37468	0.331545	0.908724
3	2.060897	80.14559	0.303050	2.938003
4	2.255928	67.22042	0.470655	5.943596
5	2.458350	56.87109	1.283916	9.200457
6	2.651401	50.07705	2.450789	12.07082
7	2.819637	46.00564	3.560929	14.32752
8	2.954887	43.61351	4.398524	16.01317
9	3.056084	42.15714	4.922289	17.24821
10	3.127333	41.20521	5.185012	18.14060

Table 4.53

Period	S.E.	FXY	CMR	TY
1	1.473086	96.23504	0.000000	0.000000
2	1.789506	87.07755	1.451754	2.565192
3	2.013745	74.15118	1.291986	3.402586
4	2.231154	61.49117	1.497759	3.002916
5	2.441879	51.45757	3.312216	2.510833
6	2.631090	44.32276	6.280300	2.323874
7	2.788466	39.47318	9.474999	2.395369
8	2.910419	36.24303	12.21347	2.576815
9	2.999105	34.13126	14.19407	2.752127
10	3.060611	32.78879	15.40922	2.865079

Table 4.54

Period	S.E.	FXY	CMR	TRY
1	1.530801	95.53892	0.000000	0.000000
2	1.894511	89.90267	0.172772	0.234028
3	2.140824	77.29657	0.189136	0.779863
4	2.360027	64.38694	0.919178	0.884800
5	2.557479	54.83225	2.636290	0.798965
6	2.720060	48.68307	4.997819	0.709105
7	2.843433	44.82903	7.458482	0.649125
8	2.931675	42.34581	9.573294	0.612204
9	2.992599	40.68841	11.11691	0.590447
10	3.034799	39.56468	12.07323	0.579008

In table 4.53, FXY explain 96 percent variations by itself that falloffs to 32 percent in 10th period. CMR shows 1 percent while TY explains 3 percent variations in 3rd quarter that leads to 15 percent and 2 percent respectively in 10th period suggests that in short run fiscal policy exert stronger impact than monetary stance while monetary policy influence more

in long run. Table 4.54 shows that both CMR and TRY are ineffective in short run but in long run monetary policy instrument is only effective. In model of M2G with CEY results are quite similar to the model include CMR with CEY as shown in table 4.55. In case of DEY with M2G both instruments are ineffective in short run but DEY plays stronger role in affecting FXY in table 4.56.

Table 4.55

Period	S.E.	FXY	M2G	CEY
1	1.577842	76.34112	18.67253	0.334903
2	1.930277	74.66667	14.83378	0.255815
3	2.128636	68.07078	12.31372	0.748870
4	2.304774	59.09747	10.56136	1.712130
5	2.487109	50.75032	9.326388	2.662315
6	2.666433	44.43955	8.469759	3.288152
7	2.827821	40.12418	7.874013	3.576177
8	2.962706	37.26584	7.446979	3.640300
9	3.069753	35.35702	7.128320	3.592529
10	3.152096	34.04541	6.882817	3.505181

Table 4.56

Period	S.E.	FXY	M2G	DEY
1	1.578201	95.61452	0.000000	0.000000
2	1.929102	89.65004	0.309574	0.171995
3	2.115065	80.70460	0.337999	0.935626
4	2.270287	70.68359	0.306355	2.408563
5	2.428193	61.84106	0.441849	4.321594
6	2.583263	55.23279	0.727396	6.319996
7	2.721834	50.72135	1.049234	8.185097
8	2.835073	47.73778	1.323670	9.831226
9	2.921057	45.75264	1.519199	11.23775
10	2.982690	44.39832	1.638417	12.40720

Table 4.57

Period	S.E.	FXY	M2G	GY
1	1.578170	66.90336	13.78859	14.24177
2	1.929337	65.89485	10.24266	14.41727
3	2.111537	60.25604	8.641022	15.44366
4	2.258709	53.10543	8.423390	16.75308
5	2.407586	46.88225	8.690679	17.97434
6	2.558631	42.44169	8.850441	18.99565
7	2.702859	39.56074	8.758152	19.85944
8	2.832594	37.72083	8.489016	20.63070
9	2.943996	36.49167	8.150279	21.34340
10	3.036552	35.60448	7.815289	22.00326

Table 4.58

Period	S.E.	FXY	M2G	BDY
1	1.569152	53.42779	12.24051	32.91258
2	1.922397	49.63128	8.950708	36.40602
3	2.110318	43.55685	7.454812	37.41868
4	2.270922	37.61778	6.775835	36.20616
5	2.444225	33.78291	6.301548	33.63444
6	2.628711	32.35807	5.819331	30.73830
7	2.809589	32.58919	5.332450	28.17607
8	2.973188	33.62091	4.890260	26.17212
9	3.111564	34.88123	4.523521	24.70733
10	3.222307	36.07444	4.239311	23.67845

In table 4.57, 66 percent variations are self-explained, M2G explain 13 percent and GY contribute 14 percent initially. Role of FXY tends to 35 percent, M2G declines to 7 percent while GY increases to 22 percent in 10^{th} quarter suggests that fiscal instrument is more effective. BDY and M2G both represent declining trend over time but BDY exert quite stronger impact than M2G indicates that fiscal control has power to stabilize foreign exchange reserves as shown in table 4.58.

In table 4.59, both M2G and TY are equally important in determining FXY both in short run and long run. Table 4.60 also shows equal importance of both instruments but impact of M2G is declining over time proves fiscal prudence in long run.

Table 4.59

Period	S.E.	FXY	M2G	TY
1	1.548898	70.80728	10.90789	11.06702
2	1.868172	70.36651	8.079123	8.004087
3	2.049788	65.00104	6.842947	6.692728
4	2.216949	56.74549	6.199670	5.871677
5	2.401370	48.37547	5.489416	5.130783
6	2.596373	41.58821	4.772697	4.473421
7	2.782406	36.72508	4.185611	3.952585
8	2.944034	33.43661	3.756834	3.571851
9	3.074996	31.25757	3.461010	3.304710
10	3.176091	29.81812	3.263173	3.120185

Table 4.60

Period	S.E.	FXY	M2G	TRY
1	1.557188	59.97336	15.82533	13.95291
2	1.952786	55.12685	12.15651	16.67638
3	2.180709	47.98477	9.835869	15.59505
4	2.368096	41.10232	8.500514	13.29603
5	2.545104	35.58568	7.915622	11.80935
6	2.706421	31.59136	7.673973	11.32235
7	2.843745	28.81677	7.497750	11.34827
8	2.954716	26.88965	7.306736	11.52353
9	3.041470	25.52235	7.111331	11.69049
10	3.108060	24.52663	6.933215	11.80161

4.10 Variance Decomposition of LRER

Table 4.61 indicates that CMR and CEY weakly determine LRER throughout where CEY is relatively more effective. Almost similar results are produced when we replace CEY with DEY, GY, TY or TRY as shown in table 4.62 to 4.66 and confirms fiscal prudence in explaining exchange rate in long run.

Table 4.61

Period	S.E.	LRER	CMR	CEY
1	0.049233	77.71045	0.000000	0.000000
2	0.076903	59.95671	5.11E-06	2.575384
3	0.101182	48.48837	0.291619	3.185060
4	0.118758	43.28625	0.792172	3.186355
5	0.130466	41.07404	1.243432	3.250802
6	0.138477	40.02526	1.594866	3.448947
7	0.144312	39.39552	1.863704	3.712310
8	0.148728	38.94489	2.058958	3.965720
9	0.152101	38.60340	2.179555	4.175386
10	0.154682	38.33419	2.231908	4.342389

Table 4.62

Period	S.E.	LRER	CMR	DEY
1	0.051514	83.85777	0.000000	0.000000
2	0.076777	67.96484	0.119186	0.802798
3	0.095121	60.89170	0.192787	2.450973
4	0.108534	57.54702	0.284334	4.027675
5	0.118444	55.86989	0.435967	5.343194
6	0.125865	54.96954	0.663415	6.397561
7	0.131479	54.44977	0.950206	7.213968
8	0.135742	54.13841	1.254311	7.820041
9	0.138970	53.96040	1.528050	8.249499
10	0.141403	53.87562	1.737737	8.539947

Table 4.63

Period	S.E.	LRER	CMR	GY
1	0.052635	81.41757	0.000000	0.000000
2	0.081844	64.18379	0.021174	0.840881
3	0.104044	55.51184	0.046558	0.939030
4	0.119612	52.01729	0.142499	1.011170
5	0.130778	50.59928	0.258984	1.214702
6	0.139230	49.88706	0.387341	1.525649
7	0.145795	49.43929	0.518096	1.866668
8	0.150892	49.14361	0.627803	2.184109
9	0.154831	48.95401	0.695635	2.462029
10	0.157888	48.82651	0.719119	2.703130

Table 4.64

Period	S.E.	LRER	CMR	BDY
1	0.052983	83.09845	0.000000	0.000000
2	0.081549	66.39260	0.001178	0.866141
3	0.103165	58.56131	0.031183	1.567710
4	0.119110	55.02456	0.149754	2.205558
5	0.130946	53.32244	0.370314	2.796986
6	0.139806	52.45143	0.660316	3.320412
7	0.146458	51.99815	0.952159	3.766612
8	0.151462	51.77187	1.180209	4.143528
9	0.155255	51.66524	1.312827	4.467184
10	0.158186	51.60739	1.358813	4.753766

Table 4.65

Period	S.E.	LRER	CMR	TY
1	0.053339	80.00916	0.000000	0.000000
2	0.082146	62.83024	0.141816	0.109367
3	0.102967	55.99578	0.192479	0.069933
4	0.117907	53.22541	0.223215	0.081204
5	0.128865	52.10658	0.264255	0.113315
6	0.137113	51.69874	0.322255	0.134896
7	0.143454	51.60834	0.390414	0.142921
8	0.148399	51.66128	0.454486	0.144135
9	0.152294	51.77521	0.501265	0.144075
10	0.155388	51.90667	0.525144	0.145869

Table 4.66

Period	S.E.	LRER	CMR	TRY
1	0.053320	75.07192	0.000000	0.000000
2	0.081700	59.13973	0.064069	0.149184
3	0.102259	53.61191	0.094567	0.635183
4	0.117005	51.54069	0.127618	1.123813
5	0.127815	50.69735	0.191429	1.238486
6	0.136024	50.29436	0.292923	1.195861
7	0.142390	50.09099	0.415530	1.123511
8	0.147369	50.01076	0.530487	1.059711
9	0.151281	50.01542	0.614202	1.010833
10	0.154373	50.07266	0.658397	0.975287

When we replace M2G with CMR in model again CEY exert greater impact as shown in table 4.67. In table 4.68, DEY and M2G both equally determine LRER but M2G exert greater impact when we replace GY, BDY, TY or TRY in our models as shown in table 4.69 to 4.72.

Table 4.67

Period	S.E.	LRER	M2G	CEY
1	0.051936	94.67811	0.000000	1.943604
2	0.077401	76.27062	1.014689	7.501149
3	0.098845	62.72497	2.300498	9.164745
4	0.115811	54.36518	3.348002	9.536582
5	0.128591	49.16865	4.123268	9.772754
6	0.138087	45.73086	4.681639	10.10679
7	0.145182	43.30012	5.076963	10.50233
8	0.150519	41.50128	5.351540	10.88257
9	0.154536	40.14095	5.537509	11.19871
10	0.157540	39.10606	5.658988	11.43712

Table 4.68

Period	S.E.	LRER	M2G	DEY
1	0.054010	98.27324	0.000000	0.000000
2	0.077656	82.66764	1.365684	0.316965
3	0.095332	72.31124	2.360318	1.248772
4	0.108389	66.34375	3.088934	2.343562
5	0.118062	62.80216	3.714182	3.335906
6	0.125325	60.56825	4.278215	4.148318
7	0.130851	59.07343	4.776719	4.781495
8	0.135096	58.02578	5.200443	5.260518
9	0.138377	57.26673	5.547986	5.615046
10	0.140923	56.70346	5.825572	5.872678

Table 4.69

Period	S.E.	LRER	M2G	GY
1	0.054477	94.88099	0.017523	1.502063
2	0.081363	80.53755	2.998106	2.710364
3	0.102524	70.42349	6.092762	2.885069
4	0.118803	64.22715	8.411768	3.028148
5	0.131236	60.31195	10.08832	3.294152
6	0.140801	57.65475	11.31373	3.646528
7	0.148211	55.73810	12.21979	4.020434
8	0.153955	54.30475	12.89316	4.368191
9	0.158391	53.21477	13.39338	4.667459
10	0.161795	52.38066	13.76353	4.914166

Table 4.70

Period	S.E.	LRER	M2G	BDY
1	0.054578	95.70648	0.032550	1.256438
2	0.080803	81.87180	2.443386	1.500242
3	0.101564	72.00100	5.078688	1.886171
4	0.117899	65.60971	7.178848	2.459596
5	0.130653	61.33171	8.752899	3.099636
6	0.140545	58.35860	9.901098	3.698244
7	0.148157	56.24273	10.72149	4.195875
8	0.153966	54.71744	11.29733	4.577497
9	0.158366	53.60973	11.69562	4.855008
10	0.161678	52.80072	11.96811	5.050832

Table 4.71

Period	S.E.	LRER	M2G	TY
1	0.054894	95.62568	0.372212	0.685193
2	0.081782	80.12748	4.906854	1.719174
3	0.102355	70.70597	7.989647	1.959086
4	0.117913	65.24103	10.54397	1.913309
5	0.129673	61.91833	12.80078	1.824448
6	0.138626	59.79038	14.70129	1.762216
7	0.145494	58.36822	16.20246	1.734887
8	0.150800	57.38130	17.33618	1.733025
9	0.154929	56.66989	18.17582	1.744156
10	0.158160	56.13752	18.79826	1.758502

Table 4.72

Period	S.E.	LRER	M2G	TRY
1	0.055529	96.87843	0.592496	0.070056
2	0.081328	82.51988	5.332080	0.650588
3	0.101002	73.14658	8.854653	0.498759
4	0.115872	67.69302	11.79861	0.379119
5	0.127033	64.52088	14.19041	0.316298
6	0.135465	62.59892	16.00004	0.278315
7	0.141919	61.36110	17.30957	0.257216
8	0.146927	60.50899	18.24983	0.247769
9	0.150857	59.88752	18.93638	0.244730
10	0.153965	59.41537	19.45023	0.244742

Call money rate exert very strong impact on output gap relative to all fiscal policy instruments, likewise, monetary growth also affects more relative to fiscal policy instruments except current expenditures and development expenditures indicates that for output stability monetary policy is more effective when call money rate is monetary instrument and current and development expenditures are playing their role more effectively when monetary growth is policy variable while still monetary policy is more effective when fiscal policy instruments are government expenditures, budget deficit, government total and tax revenues both in short run as well as long run. For price stability, monetary policy is more effective for both monetary aggregates in short run and long run except for the case when call money rate is policy variable, development expenditures exert greater impact in short run only. For current account balance monetary policy is relatively

more effective than fiscal policy instruments in short and long run except for the policy combination of monetary growth rate and current and development expenditures. The impact of monetary growth rate relative to current and development expenditures is quite different. In short run monetary growth is more effective but its impact decreases over time and impact of current and development expenditures increases over time shows that in long run above mentioned fiscal instruments are more effective. To improve trade volume, call money rate is more effective relative to government expenditures, current expenditures and budget deficit in short run and long run, development expenditures are more prudent in long run and tax revenues exert more potency in short run and long run relative to call money rate while total revenues equally affect trade volume in short run but in long run again monetary prudence prove when call money rate is monetary instrument. When monetary growth rate is monetary instrument, monetary policy is more potent against fiscal policy in short run as well as long run except for government expenditures which exert greater influence than monetary growth rate only in long run. For foreign exchange reserves, again more effectiveness of call money rate against government total and current expenditures and total revenues prove monetary dominance while development expenditures and tax revenues in short run and budget deficit in short run and long run indicates fiscal importance against call money rate. Monetary growth rate is more potent against current expenditures and tax revenues while development expenditures, government expenditures and budget deficit is more prudent than monetary growth rate in short and long run and total revenues in long run only. On exchange rate stability fiscal stance is more effective when monetary instrument is call money rate except for total revenues where both policies are less effective but for monetary growth rate results are

reverse except for current expenditures which exert greater impact in short and long run and development expenditures only in long run.

Here we conclude that both monetary instruments interest rate and monetary growth rate along fiscal instruments current and development expenditures are more important in long run and short run for output stability and for price stability monetary instruments are more efficient in short and long run along with development expenditures from fiscal discipline is more prudent in short run only. For better current account position monetary aggregates are more potent in short and long run while in long run current and development expenditures are more dominant to monetary growth rate. Both policies are important for trade volume and foreign exchange reserves with strong fiscal position for exchange rate stability and monetary dominance for output stability, price stability and current account balance position along with policy conflicts suggests that monetary instruments are useful for output and price stability whereas fiscal instruments are important for trade volume, foreign exchange reserves and exchange rate stability hence use of both instruments is an optimal policy combination for macroeconomic stability (internal as well as external stability).

Impact of CMR, CEY, TRY and TY is negative on output gap while M2G, BDY, GY and DEY exert positive impact suggests that when positive output gap exist we should increase call money rate and total revenues of government, generate tax revenues along with reduction in monetary growth rate and budget deficit, cut in government expenditures and development expenditures to attain output stability and reverse should apply when output gap is negative. Negative relation of current expenditures suggests that they are used in inefficient manner and harmful for economic growth as well as output stability. Negative

relation of GCPI with CMR, CEY, TRY and TY and positive with M2G, GY, BDY and DEY suggests same policy options to control inflation as mentioned above. CMR, GY, CEY, TRY and TY exert positive impact on CABY while M2G, BDY and DEY show positive association implies that monetary aggregates, budget deficit, tax and total revenues are in conflict with price and output stability if policy objective is to improve current account balance but there is no issue with output stability if negative output gap exist. Fall in current expenditures play important role in price and output stability along with current account balance betterment. If output gap is positive then for government expenditures, all three objectives are on same page but there is a conflict in achieving output stability and current account balance improvement. To improve trade volume, monetary aggregates, revenues aggregates and development expenditures are on same page with output, and inflation if output gap is positive but in conflict with current account balance and output if negative output gap exist. Current expenditure, government expenditures and budget deficits are negatively related to trade volume suggests that current expenditures are in conflict with increasing trade volume and current account balance improvement. A cut in budget deficit and development expenditures is supporting for current account balance in line with trade volume, price and output stability means that higher budget deficit is harmful for all policy objectives. A cut in Government expenditures are also supporting for volume of trade, output and price stability but at the same time cause current account deterioration. All instruments are negatively affecting foreign exchange reserves except budget deficit. CMR, GY, CEY, TRY and TY negatively affect exchange rate while M2G, BDY and DEY shows positive relationship.

Conclusion

Chapter 5

Fiscal and monetary authorities mainly deal with macroeconomic stability along with economic growth. In economics, several macroeconomic policy instruments were developed to facilitate these authorities to pull off their goals e.g. government current and development expenditures, government revenues including tax revenues and budget deficit represent fiscal policy instruments and interest rate and monetary growth rate from monetary side that are our concern. Th e study aims to understand links between monetary and fiscal policies with macroeconomic stability indicators and to determine relative effectiveness of both policies in general and policy instruments in particular on macroeconomic stability.

Our study is used Impulse Response functions (IRFs) and Variance Decompositions (VDs) in Vector Autoregressive (VAR) model to meet above mentioned objectives. Our findings of impulse response analysis indicate that impact of CMR, CEY, TRY and TY is negative on output gap and inflation rate while M2G, BDY, GY and DEY exert positive impact suggests that when positive output gap exist we should increase call money rate and total revenues of government, generate tax revenues along with reduction in monetary growth rate and budget deficit, cut in government expenditures and development expenditures to attain output and price stability and reverse should apply when output gap is negative. Negative relation of current expenditures suggests that they are used in inefficient manner and harmful for economic growth as well as output stability. CMR, GY, CEY, TRY and TY exert positive impact on CABY while M2G, BDY and DEY show negative association

implies that monetary aggregates, budget deficit, tax and total revenues are in conflict with price and output stability if policy objective is to improve current account balance but there is no issue with output stability if negative output gap exist. Fall in current expenditures play important role in price and output stability along with current account balance betterment. If output gap is positive then for government expenditures, all three objectives are on same page but there is a conflict in achieving output stability and current account balance improvement. To improve trade volume, monetary aggregates, revenues aggregates and development expenditures are on same page with output, and inflation if output gap is positive but in conflict with current account balance and output if negative output gap exist. Current expenditure, government expenditures and budget deficits are negatively related to trade volume suggests that current expenditures are in conflict with increasing trade volume and current account balance improvement. A cut in budget deficit and development expenditures is supporting for current account balance in line with trade volume, price and output stability means that higher budget deficit is harmful for all policy objectives. A cut in Government expenditures are also supporting for volume of trade, output and price stability but at the same time cause current account deterioration. All of the instruments are negatively affecting foreign exchange reserves except budget deficit. CMR, GY, CEY, TRY and TY negatively affect exchange rate while M2G, BDY and DEY shows positive relationship.

Variance decomposition analysis shows that both monetary instruments interest rate and monetary growth rate along fiscal instruments current and development expenditures are more important in long run and short run for output stability and for price stability monetary instruments are more efficient in short and long run along with development expenditures

from fiscal discipline is more prudent in short run only. For better current account position monetary aggregates are more potent in short and long run while in long run current and development expenditures are more dominant to monetary growth rate. Both policies are important for trade volume and foreign exchange reserves with strong fiscal position for exchange rate stability and monetary dominance for output stability, price stability and current account balance position along with policy conflicts suggests that monetary instruments are useful for output and price stability whereas fiscal instruments are important for trade volume, foreign exchange reserves and exchange rate stability hence use of both instruments is an optimal policy combination for macroeconomic stability (internal as well as external stability).

Policy Recommendations

Here we recommend that if positive output gap exist, government should use tight monetary and fiscal policy to stabilize the output and to control inflation. Cut in government expenditures will also improve trade volume, foreign exchange reserves and exchange rate stability whereas increase in tax revenues offset this effect and improve current account position. But if negative output gap exist loose policies should apply to stable output as negative output gap is less inflationary and reverse will happen with government expenditures and tax revenues. Now cut in tax revenues will worse off current account position and improve foreign exchange reserves and exchange rate that is offset by increase in government expenditures. Current expenditures are used in inefficient manner so that these expenditures should be reduced. Furthermore, our findings suggest

that large budget deficits are harmful for all macroeconomic variables and macroeconomic stability.

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Appendix

List of Figures

List of Tables