Macroeconomic Effects of Fiscal Policy:

A Case Study of Pakistan

Submitted By:

ASMAT KHAN
Reg No. 04/M.Phil-Eco/PIDE/2012

Supervised By:

DR. MAHMOOD KHALID

A Dissertation Submitted to the Department Of Economics, Pakistan Institute of Development Economics, in Partial Fulfillment of the Requirements for the Degree of Master of Philosophy in Economics

Department of Economics,

Pakistan Institute of Development Economics
Islamabad, Pakistan
2015

IN THE NAME OF ALLAH

THE MOST BENEFICENT

THE MOST MERCIFUL

Verily we have Created Man into Toil and Struggle… Have We not made for Him a Pair of Eyes, and a Tongue, and a Pair of Lips, and Shown him the Two Ways (Obedience and Disobedience) … ?

Qur'an, Al-Balad (90:4-10)

GOLDEN SAYING OF

THE HOLY PROPHET

[PEACE AND BLESSINGS OF ALLAH BE UPON HIM]

"Knowledge from which no Benefit is derived is Like a Treasure out of Which Nothing is spent in the Cause of God".

Al-Hadith, Al-Tirmidi (108)

GOLDEN SAYING OF

AMEER-UL- MOMANEEN

HAZRAT ALI [K.W]

"People are divided into three Categories: a Scholar who Devotes his Knowledge to Serve Allah, a Learner who Learns for the Sake of Rescuing Himself, and the Hooligan type of Rabbles that Follow Anyone who Cries Out, Turning Whichever the Way Wind Blows. The Last Category has not Been Illuminated by the Light of Knowledge and it has not fallen back upon Support that Offers Safety, Strength and Security."

(Dua-e-Kumail)

DEDICATED

TO

MY BELOVED PARENTS

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

All Praises for Almighty Allah, the Cherisher and Sustainer of the Worlds and All Respect for Allah's Apostle (Peace Be upon Him). My sincere Gratitude to Almighty Allah, who made me able to do this work.

I would like to express deepest appreciation to my Supervisor Dr. Mahmood Khalid, who has attitude of a Genius, He Continually and Convincingly Conveyed a Spirit of Adventure in Regard to Research: Quality is far important than Quantity. Undoubtedly, without His Guidance and Persistent help this Dissertation would not have been possible. I Reserved my Special Thanks to All Family Members, My Honorable Teachers; Dr. Athar Maqsood Ahmad, Dr. Wasim Shahid Malik, Dr. Fazal Hussain [Dean], Dr. Ijaz Ghani [HOD], Dr. Attiya Y. Javid, Dr. Musleh Uddin, Dr. Karim Khan and Dr. Rehana Siddiqui for their constant Encouragement, Endless Prayers and Continuous Moral Support.

Last but not the least; I am Grateful to Saeed Sb, Inayat, Muhammad Shehzad, Saba Ul Hasan, Fawad Zafar, Azaz Bukhari, Naveed Mehmood, Sami Khilji, Amjad Rizwan, Abid Hussain, Munir Ahmad and Nasir Shabbir for being so Kind and so supportive.

ASMAT KHAN

LIST OF ACRONYMS

Gdp: Gross Domestic Product

SE: Standard Error

NT: Net Tax Revenue

TE: Total Expenditure

IR: Interest rate

VAR Vector Auto Regressive

MPC: Marginal Propensity to Consume

SVAR: Structural Vector Auto Regressive

FP: Fiscal Policy

MP: Monetary Policy

OLS: Ordinary Least Square

PP: Philips Perron test

AIC: Akaike Information Criteria

ADF: Augmented Dickey Fuller test

LM: Langrange Multiplier test

RBC: Real Business Cycle

ABSTRACT

The role of the fiscal policy in stimulating the economic activity of country has been one of the most important issues for policy makers. The effectiveness of the fiscal policy for stabilizing and sustainability of the economic activity is also very much challenging for the policy makers. I n this thesis we will work on the effectiveness of the fiscal policy on major economic variables using data of Pakistan from 1974 to 2013. The dynamic effects of fiscal policy can also be observed, this thesis describes response of output, inflation and interest rate to the fiscal policy shock. Here we will use Blanchard and Perroti (2002) methodology using Structure Vector Autoregressive (SVAR) model, which is the extension of the Sim (1986) and Bernanke (1986) proposed structural VAR used.Majority of the time structural vector autoregressive (SVAR) model is being used for quarterly data but here we will use annual data as fiscal policy is announced annually Using this method which is based on institutional information, after identifying the parameters impulse response is calculated to the check the effectiveness of the fiscal policy shock on the major macroeconomic variables. Variance Decomposition is also projected which describes the rise and fall of the variables due to dissimilar shocks at different time. After estimation crowding out phenomena is observed due to expenditure shock where it discourages the private investors and no response of prices is observed due to net tax shock, very weak sustainability is observed in both the cases.

CHAPTER 1

INTRODUCTION

The main concern of the study is to know about the macro economic effects of fiscal policy on the economy of Pakistan. The effect of Public expenditure and taxes on the economy is interesting and the results vary from country to country. Likewise, using different models and techniques end up to diverse conclusions. This study will help us to know the effects of shocks of government expenditure and taxes on macroeconomic variables like output, interest rate, and inflation. The role of all mentioned macro-economic variables are very important for they play an important role in the growth of the economy. Moreover the effects of one variable over other variables have been one of the main concerns of the institutions and policy makers.

The basic aim of the fiscal policy is to stimulate and stabilize the economy of the country. Sometimes it is kept expansionary or loose to increase the aggregate demand and spending more will increase the common man consumption due to increase in their disposable income which will lead to the government budget deficit and more borrowing. In the same way the government also keeps tight or deflationary fiscal policy to bring improvement in the budget deficit and reduce the consumption by increase in tax which will reduce the disposable income and ultimately reduction in the aggregate demand.

In developing countries and developed countries fiscal policy has its role to play. Economist agree about some of the consequences of loose fiscal policy such as crowding out the private investment and it does not increase the aggregate demand due to decrease in the funds for the private investors. This will lead government for higher borrowing and higher repayment of debt also. Time lagging is also one of the

important concerns for the economist that is the right time to identify and to know about the actual problem and injection of the fiscal policy to increase the aggregate demand. Because of the not having perfect information on the part of Government about the state of the economy the government has to see whether the injection of the spending causes a final increase in the real GDP or not.

Under these circumstances expansionary fiscal policy will increase the interest rate because of the market failures due to inefficient market structure. Fiscal policy has its multiplier effects but it depends on the state of the economy whether fiscal policy has long lasting effects on overall aggregate demand of the economy or not. Saqib and Yasmin (1987) worked on the comparative analysis of both the tools that is fiscal and monetary policy effectiveness on the economy of Pakistan. During recession fiscal policy acts in different way in order to increase the overall demand of the economy, however fiscal policy is being found more effective than monetary policy in recession (Miller and Hindras, 1988).

Policy decision of being discretionary or non-discretionary is also one of the main concerns for the policy makers whether the policy should be discretionary that is the deliberate effort by the government to increase the overall aggregate demand of the country or it should be based on the automatic fiscal stabilizer, that is the economy is growing with the overall increase in the government expenditure.

Fiscal policy has its effects on the demand side and the supply side of the economy. As the Baxter and King (1993) noted that fiscal policy effects only the supply side of the economy in real business cycle models though the wealth effect. High budget deficit and high expenditure is one of themain concerns of Pakistan. This is due to lack of politician consent on expansion of tax base and administrative

incapability to raise revenue (Haque and Mcontiel, 1994). In early 50's, 60's and 70's there was so much emphasize on the defense budget of the country which ultimately increased the defense expenditure which is not accompanied by high revenue. During 1980 and 1990 policy has been stressed by the need to stop the increasing fiscal deficit and efforts to control the rate of debt increasing (Haque and Montiel, 1994). There is general consent that the government should be bound to follow a fiscal policy strategy that can be scrutinized. The effect of Government expenditure on economy is also very important to know as it has direct and sometimes it has indirect effect on the economic growth of the country(S Fan, P Hazel 2000).

Fiscal policy effects on the demand side were also found by the (Gali et al.2005). There is much emphasize of using the fiscal instruments for managing the demand side of the economy (Decasta and Hernandez,2007). The effects of shocks of fiscal policy through (automatic fiscal stabilizer) on output, prices and interest rate can be different in magnitude and lags implementation.

Government expenditure has its (Keynesian) effects on aggregate demand in standard IS-LM framework. Fiscal policy has different effects on major macroeconomics variables like output, prices and interest rate while monetary policy always responses to the inflation. However in Pakistan monetary policy has dual objective to control inflation and output but these objective are never achieved. Due to demand pull inflation created by the expansionary fiscal policy it leads to high inflation that's why inflation appears fiscal obsessed phenomena.

In order to know the structural shocks of the fiscal policy we will use Structural vector autoregressive model (SVAR) for our study. The choice of SVAR seems appropriate at least for two reasons, firstly, because the fiscal policy, unlike

monetary policy, is a long-run concern. The longer time required for the complete cycle obviously involves almost all the macroeconomic variables intensively. Secondly, the fiscal policy, as discussed requires longer time therefore, it is important to know how the fiscal policy effects the macroeconomic variables and how long does it take for stabilization. This could be examined from the impulse response functions.

1.1. Objective of the Study:

In this study we analyzed the dynamic effects of fiscal policy that is the effect of government expenditure shock and net taxes shock on inflation, interest rate and output. Although in previous literature majority of the study is done on quarterly data but here we will use the annual data due to non-availability of quarterly data, and beside this in time series for the long-run relationship, such as, co-integration analysis the annual data is preferred, therefore to some extent the fiscal policy analysis can also be addressed using annual data.

1.2. Research Question:

The macroeconomicanalysisof the fiscal policy using annual data of Pakistan from 1974 to2013.Analyzingthe dynamic effects of fiscal policy by using structural vector autoregressivemodel (SVAR).

1.3. Hypothesis of the Study:

Fiscal policy shocks have positive and long lasting effects on output, inflation and interest rate.

1.4. Significance of the Study:

Fiscal policy plays a very important role in both developing and developed countries. In developing countries like Pakistan which faces a huge fiscal deficit where the deficit is always financed through conventional revenue and public

borrowing, therefore it is very much important to know about the dynamics of fiscal policy. Empirical studies analyzes that the fiscal uncertainty in developing countries is due to high borrowing and lack of political consensus on expansion of tax base and it incapability to raise the revenue (Haque and Montiel,1994). Fiscal policy plays a very dynamic role in affecting major macroeconomic variables like growth, inflation and interest rate. In this study we will observe the effectiveness of the fiscal policy shocks using Structure Vector Autoregressive (SVAR) model through (Blanchard and Perroti, 2002) approach. This study will tell us the impact of shock of public expenditure and net tax revenue on the major macroeconomic variables that are already mentioned. This thesis will examine to encourage us that fiscal policy can be used as policy instrument for the sustainability and economic growth of the country.

1.5. Organization of the Study:

In chapter 2 of this thesis we have given the details of the fiscal policy in Pakistan. Chapter 3 consists of literature review where we have explained the existing literature both theoretically and empirically. In chapter 4 we have explained the methodology of this thesis, and identification problem is also explained in this chapter. The source of data is also explained in this chapter. Chapter 5 consists of estimation where we calculated the impulse response and variance decomposition and the details of the result is discussed in this chapter. Conclusion of the study is also discussed in this chapter. In the end references of the study is discussed while robustness of the study is also given explained in appendix (B).

CHAPTER 2

FISCAL POLICY IN PAKISTAN

In this chapter we will discuss about the effectiveness of the fiscal policy and its consequences for long term economic growth and short term stabilization. As fiscal policy movements depends on instruments behind them, hence it is very important to explore the institutional and political economy aspect of fiscal policy conducted in Pakistan. As we know that fiscal policy does not work in isolation it has very strong relation with macroeconomic policies and shocks that's all affecting the economy of the country.

2.1. Mechanism of Fiscal Policy in Pakistan:

Fiscal policy comprises of set of policies concerning to the public budgeting. It consists of policies which not only to look after economic development of the country but also to finance its current expenditure. There are different ways of raising revenue it may be collected through tax revenues, non-tax revenue and through borrowing.Taxation is not the only tool of fiscal policy to run economic activity but there is expenditure side as well who plays a great role in bringing the economic stability.Beside taxation and expenditure there are number of other objectives of the fiscal policy that is to maintain the economic stability, resource provision and resource mobilization as well. Allocation of resources in different sectors is made through budgetary machinery, where different resources of the public are used to support the government activities. In developing countries like Pakistan where the government is more committed to economic development and its stability, bringing theeconomic stability is one of the most difficult tasks of the fiscal policy. One of the important objectives of the fiscal policy is to bring price stability and to maintain full

employment which is very difficult to achieve. Fiscal policies can also be used to bring balance between different sectors it can be done by imposing direct and indirect taxes.In Pakistan most of the taxes are collected by the federal government. As most of the taxes are collected by the federal government which later goes into separate pool and is shared among provinces through National Finance Commission (NFC) awards. Federal government distributes fund through National Finance commission (NFC) awards based on the population of the provinces. In Pakistan the machinery of the expenditure and taxation are channeled under the ministry of the finance (MOF) which is the central ministry which gives assessments of the expenditure and revenue in the form of budget document every year of fiscal year (July first to 30th June). Major revenue at the federal level is collected by the Federal Board of Revenue (FBR). In Pakistan the overall planning mechanism is supervised by the National Economic Council (NEC), below it is (ECNNC) which is the executive committee of National Economic Council (ECNEC). Planning and Commission also play its role in supervising the main economic planning's of Pakistan that is the ten year and five year perspective plan for short run and long run economic growth.

2.2 Fiscal Management in Pakistan:

Fiscal policy is considered to be the most dynamic tool for bringing the economic stability and sustainability of the country. But due to war rushing's, natural disasters and governance issues of Pakistan which affects the magnitude and sustainability of the fiscal policy it becomes very difficult to conduct fiscal policy in normal circumstances.

2.3. Resource Mobilization in Pakistan:

In Pakistan resource mobilization takes place through two networks one is Revenue receipt and the other is funds receipt. In revenue receipt it includes both the

federal and provincial government for both the tax and non-tax revenues, which is further divided into direct and indirect tax. The main taxes that are imposed by the federal government are income tax, corporation tax, estate duty, gift tax and custom duties. By the 1973 constitution of Pakistan tax structure is defined in the table below.

Table 2.1 Tax Structure by Legislation for Pakistan

Level of the Government	**Direct Taxes**	**Indirect Taxes**
Federal Government	Income Tax	Sales Tax
	Corporation Tax	Excise Duty
	Wealth Tax	Import Duty
	Property Taxes	Export Duty
		Gas and Petroleum Surcharge
		Foreign Travel Tax
Provincial Government	Land Revenue	Stamp Duty
	Urban Immovable Property Tax	Motor Vehicle Tax
	Tax on Transfer of Property	Entertainment Tax
	Agriculture-Income Tax	Excise duty
	Capital Gains tax	Cotton fee
	Tax on Professions, trades and Callings	Electricity Duty

source: Zaidi, 2005

The fund receipt or capital receipt includes internal and external borrowing. In Pakistan tax revenue to GNP (at factor cost) ratio is still very slow which due to non-willingness to pay for taxes and the weak capability of revenue accumulating organizations.

2.4. Tax Structure: Direct Taxes and Indirect Taxes:

Pakistan tax foundation has a narrow base practically in every sense. It is very important to know how Pakistan tax structure is elastic to its tax base. As we know a country should produce more revenue with the increase in the economy but due to regularmodifications in tax structure and ineffectiveness of the fiscal policy in this area it is verymuch difficult to calculate the yield of tax after isolating it from such changes.

The contribution of direct taxes in the total tax revenues has been considerably less than that of indirect taxes due to difficulty in tax supervision. If we look at the history of the direct tax share in the overall tax revenue we can conclude that the share of the direct taxes is increasing over the time, the major component in the direct tax from the beginning is from the incomes earned by the corporate and individual business Zaidi (2005). It has been never less than the 90 percent of the total direct tax collection. Capital value taxes are a recent phenomenon and contribute thinly to the direct taxes.

If we look at the composition of the indirect taxes it is noticeable that major dependence of the indirect taxes was on the custom duties. Due to high tariff and import duty it had contributed to the early economic growth of the country (Zaidi 2005). It was 37 percent over the period of 1959 to 1969 Zaidi (2005). It was still increasing in 1970s till 1990s but after that it started to decline and reached lowest value in 2001 where it was just 14% of the total indirect taxes.On the other end federal excise duty (FED) increasing and reach to maximum 54% in 1967 and carries a steady rate and reaches to minimum in 2005 Zaidi (2005). Due to some structural change in taxation system where the major source of revenue was on the custom duty and federal excise duty it is shifted to sales taxZaidi (2005).

One of the reasons accounted for such miserable of tax assortment is the existence of the large dissident economy which evades taxes. Khalid (2002) has found the size of the underground economy to be 17% over the period of the 1974 to 1998. In another study Kemal (2007) noted that tax evasion was estimated to present in all the years 1976 to 2005 and was high 7.3 per cent of GDP in 1996 (table 2.2).

In Pakistan more than 57% of the expenditure goes into interest payments and subsidies which are nonproductive expenditures. If we look at the history investing on public sector declining since 70s, Public sector not only provides a suitable environment for economic growth but it can boost private investment as well. The gap between private investment and public investment can be shortened if we invest in the public sector. Due to this meager fiscal responsibility on the behalf of the government where current expenditure is so high due to which investment on public sector is most affected. For long term economic growth Pakistan should invest in human capital, education, health and research.

.

Table 2.2 Budget Deficit and Tax Evasion as a Percent of GDP

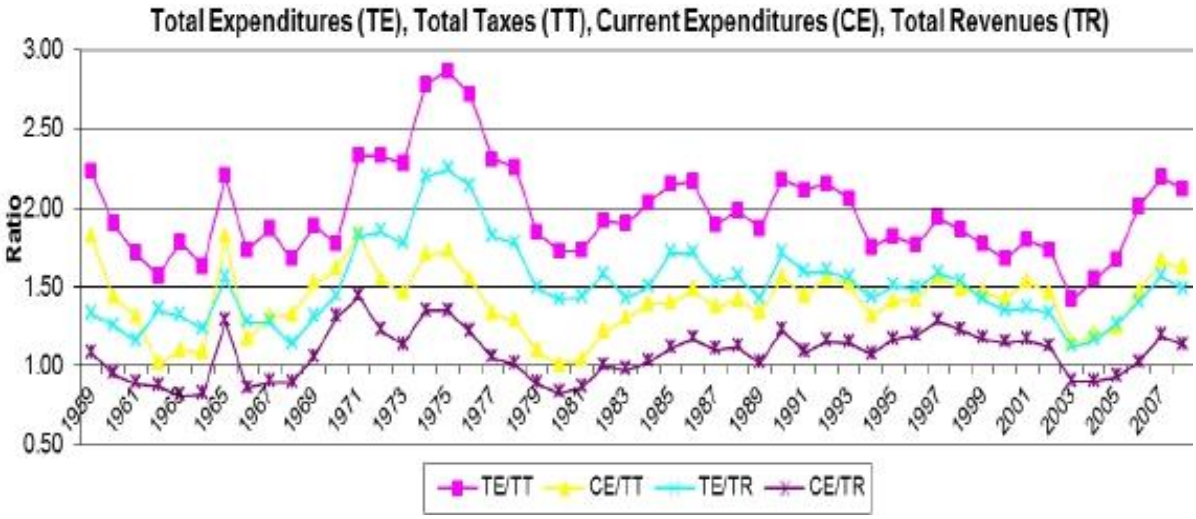
Years	Budget Deficit	Tax Evasion	Years	Budget Deficit	Tax Evasion
1976	9.6	2.6	1996	8.8	3.5
1977	8.6	2.6	1997	7.5	4.5
1978	7.9	3	1998	8.1	4.6
1979	8.9	3.7	1998	5.9	5.5
1980	6.3	4.3	1999	5.6	6
1981	5.3	4.1	2000	6.5	7.3
1982	5.3	5.1	2001	6.4	7.2
1983	7.1	4.3	2002	7.7	7.5
1984	6	4.8	2003	6.1	5.4
1985	7.8	3.9	2004	5.4	5.7
1986	8.1	4.6	2005	4.3	6.3
1987	8.2	5.5	2006	4.3	6.8
1988	8.5	4.6	2007	3.7	7.1
1989	7.4	4.6	2018	2.4	6.3
1990	6.5	4	2009	3.3	5.8
1991	8.8	3.5	2010	3.9	6.5
1992	7.5	4.5	2011	3.5	7.1
1993	8.1	5.5	2012	4.1	6.8
1994	5.9	6	2013	3.4	7.00
1995	5.6	7.3			

Source: Kemal (2007)

2.5. Resource Allocations and Gap:

Like other rising countries government has always played a role in providing goods and services to the economy of Pakistan. In Pakistan expenditure has been on the higher side due to poor allocation and organization of the resources in Pakistan. It is obvious that Pakistan is not among the main high government spending group and the main problem is not the high expenditure but the proper allocation of the expenditure which is the main problem among the globe. If we look the history of the resource gap Pakistan has never achieved a budget surplus. From the figure it is clear that total expenditure always above the total revenues it was high 2.87 times of tax revenue in 1975. Current expenditure went high to1.81 times of tax revenue in 1965. Both the current expenditure and total expenditure has shown a volatile picture over the sample period. In case 0f total revenue which is mainly comprise of non-tax revenue cannot sustain for long time due to public sector incomes.

Figure 2.2. Fiscal Resource Gap (1959-2008)



By analyzing the descriptive side of the Pakistan economy we belief that Pakistan is not amongst those countries whose size of expenditure is large like other

developed countries. The share of the expenditure in total GDP is too low. Due to some problems like underground economy and increase in the interest payments it is very much difficult to conduct fiscal policy in normal way due to which the overall resources are shrinking. Due to this large gap between expenditure and revenue it ultimately affects the development expenditures as well. It is explicit that fiscal policy has been playing a major role in bringing the policy decisions for the state. But due to high expenditure and collection of tax it is very much difficult to announce a particular policy for the country. In this thesis we will analyze the effectiveness of fiscal policy instruments from revenue and expenditure side on the economy of Pakistan.

CHAPTER 3

LITERATURE REVIEW:

3.1. Different School of Thought about Fiscal Policy:

Different school of thought has given its own interpretation about fiscal policy and its implementation.

3.1.1 Classical Economists:

Classical economists were of the view that economy is itself stabilizing and regulating due to [1]invisible hand. Classical economists were of the view that government should not interfere in the economy and there should be no discretion in policy. The classical economist was of the view that the economy runs on the individual actions and the economy attains natural equilibrium. However these policies were adopted before great depression and their policies were for the stable market structure. One of the views was that any deviation between actual and potential Gdp adjust automatically. However when it comes to fiscal policy high spending brings high interest rate and high inflation and crowding out of private investors is due to high higher interest rate.

3.1.2. Keynesian Economists:

Classical economists existed for about a century and collapsed after great depression 1929. Due to great depression in 1929 Keynesian economists was accredited. Keynesian was of the view that decrease in aggregate demand is due to sticky prices. Keynes was in favor of flexible prices for the adjustment of market system and to bring full employment of output in short run. Keynes was of the view

[1] Invisible hand was first introduced by the founder of the economics that is Adam Smith that economy attains the natural equilibrium and social benefit is attained by individual actions.

that about the intervention of monetary policy to prevent crowding out. Keynes also introduced liquidity trap and emphasized policy for short run.

3.1.3. Monetarists:

The effect of monetization on the economy of a country cannot be ignored. Keynes analyzed the overall economic performance through aggregate demand and Philips curve. Keynes theory was first criticized by the monetarists that the role of the money cannot be ignored. Money plays an important role in determining the overall economy of the country. They introduced the natural rate of unemployment, they were of the view that due to lags in implementation both fiscal and monetary policy are instable in the country (woodford,1999).

3.1.4. New Classical Economist:

New classical economists reaffirmed the non-interventionist through introducing the rational expectation and the assumptions of the market. They were of the view that demands policy is effective in short run if the policies are unanticipated.

3.1.5. Real Business Cycle Model:

Real business cycle model evaluate stabilization and the main role is to determine the price level without effecting on real economic activity. Real business cycle model are also noninterventionist (Abel and Bernanake, 2003).

3.1.6. New Keynesians:

Keynesian was criticized because in their theory they have not introduced the micro foundations to the model of business cycle. According to the new Keynesian it is possible to bring rational expectation into the models of wage rigidity and nominal price. By giving three types of models sticky price, efficiency wage, insider –outsider model. Thus new Keynesian like Keynesian is policy activists (Woodford 1999).

3.2. Effectiveness of Fiscal Policy:

Different school of thought leads to different position regarding the effectiveness of fiscal policy. Public spending and taxation has its impact on the overall aggregate demand and aggregate supply of the economy. We will briefly discuss its effectiveness on major macroeconomic components.

(a)Effects on Consumption:

Two approach for analysing the impact of fiscal policy on consumption, one is Ricardian and the other is Keynesian approach. The static side of the consumption relates with the current disposable income. The dynamic side of the consumption states that agents always try to smooth their life time consumption. This implies that fiscal policy affect the propensity to consume both temporarily and permanently. Ricardian are of the view that fiscal expansion is offset by contraction in private consumption.

(b) Fiscal Policy and Inflation:

It is commonly known in economics that high spending results in deficit and inflation. Fiscal deficit leads to both current price level and persistent increase in price level due to money supply. Fiscal deficit financed by printing money and or selling bond to central bank increases inflation (Abel Bernanke 2003).

(c) Crowding Out:

Most of the governments tend to finance spending by issuing bonds it happens though two ways it reduces the saving at any real interest rate and thus increases the real interest rate. In second way issuing of bond for financing would decrease the bond prices. Thus all the increase in the prices and interest rate effect the investment negatively.

(d) Ricardian Equivalence:

According to the classical school of thought financing the government spending does not affect the interest rate at all. Private sectors increases its saving and debt would be fully paid by the increasing the tax on individuals. Such change in the timing of the tax and no change in the saving have no impact on economy.

3.3. Empirical Evidence:

The role of fiscal policy is very essential for the macroeconomic stability of the country. The comparative analysis of the fiscal and monetary policy is one the main concerns for policy makers. But the dynamic effects of the fiscal policy are less discovered. It is very much problematic to determine which type of wealth effect arises due to fiscal shock. The effect of the fiscal policy on macroeconomic variables is one of the main concerns for the policy makers. The effect of the fiscal policy is different during recession and normal time. According to Barro (1981) decrease in tax increases the disposable income and will lead to the perpetual increase in the government debt and Gdp ratio. As a result it will encourage the private sector and will lead the crowding out of the export and investment.

Barro (1981) on the other side also determine the spending to Gdp ratio which leads to increase in exchange rate, output and interest rate in short run. It is also observed that change in real interest rate depends on the level of government in debt in open economy but the temporary cut in tax brings the real interest rate to the world rate of interest.

Boskin (1988) analyses that fiscal policy has that much effect on goods and services that the private sector cannot do. The literature suggests that government

spending have positive effect on output whereas decrease in taxes has strong negative effect on investment spending (Rotembey and Wooford 1992).

Different studies have been done to know the impact of spending on inflation. One of the main article was Gerald and Dwayer (1982) it was observed that there is correlation between spending and inflation when the country is finances the deficit through wealth effect. Gerald and Dwayer (1982) used quarterly data of 24 years from 1952 to 1976 of Usa and observed the effect of fiscal financing on inflation, borrowing and money supply.

Other school of economics is based on the flexible prices (Baxter and King, 1993), in this mechanism expenditure is supported by taxes which creates negative wealth effect. Thus due to different effects of these mechanisms the role of monetary policy becomes essential as it has effects on the interest rate.

Romey and Shapiro (1997) uses univariate auto regressive model for GDP where he identifies increase in government spending as dummy variable. Weber (1999) estimates long run multiplier using data of USA by using cointegression and error correction model and the results were similar as that was estimated by Baxter and King (1993).

Having information about the taxes and spending we can estimate the automatic effects of unexpected movements of fiscal variables and we can trace it dynamic effects (Fatas and Mihos 1998). Both Govt expenditure and taxation affect GDP since both are not independent to estimate the effects of one it is necessary to include the other as well. One of the widely known results in fiscal policy is that fiscal expenditure should affect output in the short run.

A parallel study is done by Fatas and Mihos (2001) who count on Cholesky ordering to identify fiscal shocks. They find that a government direct expenditure shock in the US induces a positive response of private consumption, while the response of investment is not significant and the tax multiplier is small. By spending we mean government expenditure as total purchases of goods and services that are Government consumption plus government investment. The effect of discretionary fiscal policy on aggregate demand depend on number of assumptions and the empirical results from different research study offers contradicting results. Most of the results which have been drained through VAR analysis show very scatter result in long term but it has positive short term output multiplier effect.

Hayder (2001) test the crowding out effect of Pakistan using vector error correction framework and variables were the private investment, Gdp and government investment where he founds that there is apposite relation between private and public investment.

(Fatas and Ilian, 2001) found that decrease in consumption due to increase in government spending because of the negative wealth effect. Blanchard and Perroti (2002) found that private consumption is regularly crowded in and crowded out by spending and taxation. As in the real business cycle it can increase output due to increase in government spending.

Gupta (2002) noted that composition of expenditure and fiscal adjustments of 39 low income countries and found that the Keynesian effects of the fiscal policy bigger of those low income countries who have achieved the macroeconomic stability.

Kandi (2002) used quarterly data for period 1956 to 1996 of US economy. They worked on aggregate demand and private consumption. There was asymmetrical

behavior of increase and decrease in government spending, the private consumption reduced due to high spending.

There is diversified literature on the use of the fiscal policy on increasing the economic activity. (Linnemann and Andreas,2003) analyzed that increasing the government expenditure will increase the real interest rate in new Keynesian framework, which ultimately decrease the investment expenditure. The mechanism through which fiscal policy works is based on the IS_LM model based on sticky prices which states that the government expenditure has multiplier effect on consumption.

The role of fiscal policy is very essential for the macroeconomic stability of the country. The comparative analysis of the fiscal and monetary policy is one the he main concerns for policy makers. But the dynamic effects of the fiscal policy are less discovered. It is very much problematic to determine which type of wealth effect arises due to fiscal shock. Alesian et.al (2002) analyzed that during the time of large fiscal adjustments the effects of fiscal instruments has no such effects on the investment. He founds that one percent increase in Gdp and spending ratio decrease the investment as a percent of Gdp is .15 and .74 percent after five.

Perotti and Blenchard (2002) used the three variables GDP, Direct expenditure and private consumption. Following a direct expenditure shock private consumption reacts positively and private investment negatively. The response of GDP to the direct expenditure increased at 4^{th} quarter that is one dollar shock brought 50 cent increase at 4^{th} quarter.

There is some evidence concerning developed economies that reports non-Keynesian effects for fiscal policy in the short run, *i.e.* expansionary fiscal contractions (Giavazzi and Pagano, 1990; De Castro, 2003).

Similarly an investigation by Craig Burnside (2003) on fiscal shocks and its effects on real wages, he founds that military purchase after world war era in us has decreased the real wage and increased the unemployment. In this paper he used neoclassical model for the impulse response of real wages to a shock of fiscal policy. After the empirical results he founds that there is decline in real wages and rise in tax rate with short run increase in investment and consumption.

The study of OECD countries post war in 1980 period (Perrotti 2004) that was the effect of fiscal shocks on GDP, it has been observed there is negative fiscal multipliers. Blanchard and Perotti (2002) use information about the elasticity of fiscal variables to classify the automatic response of fiscal policy, and find that expansionary fiscal shocks increase output, have a positive effect on private consumption, and a negative effect on private investment.

Carman et al (2003) analyzed the impact of fiscal policy on consumption it was observed from us data taken from the 959 households that families are more responsive to the current policy change due to cut in income tax. They concluded that only 37% of households were interested in the future policy changes. It was observed that consumption particularly depends on the ages. Lavi and Strawazyurki (2005) in his work estimated that the impact of fiscal policy on wages and wealth. They observed that impact of fiscal policy both in long run and short run. They found different methods of financing have different effects on the pattern of the consumption.

Kusteper (2005) used the data of turkey and analyzed the fiscal policy in the light of classical and Keynesian views. He took data from 1963 to 2003 and observed that government spending causes crowding in (Keynesian view) and deficit causes crowding out (classical view) through integration analysis.

Mountford and Uhlig (2005) find a negative effect in residential and non-residential investment. In this approach the identification of fiscal policy shocks is obtained by exploiting decision lags in fiscal policy making which tell us about the discretionary fiscal policy programming with respect to output.

Biau and Girard (2005) find a cumulative multiplier of government spending larger than one, and positive reactions of private consumption and private investment in France.). He used a five variable VAR, which includes government direct expenditure, net revenues, GDP, the price level and interest rate. They found that the effect of collective multiplier of government spending at the 4^{th} and 12^{th} quarter equal to 1.9 and 1.5 respectively. The writer found a positive reaction of government spending.

Andre Mount Ford (2005) works on the US quarterly data by using vector autoregressive model, he wants to know whether deficit spending stimulate the economy or that of the deficit tax cut financing. He comes up with the result that both types of spending fiscal shocks have its effects of crowding out in the investment .But decrease in tax rate couldn't crowd out in term of interest rate. The final result about his study was that the best policy for stimulating the economy is tax-cut policy.

Corsetti and Muller (2006) identify fiscal shocks for the Australia, US, Canada, UK analyse the impact of fiscal shock to government spending and public deficit they found that deficit is more limited to closed economies and with less

determined fiscal shocks. Gali *et al* (in press) use a four variable VAR which include GDP, Government expenditure, employment and the real interest rate, the result was that the cumulative multiplier of the government spending , which increases from around unity at the 4^{th} quarter and 12^{th} quarter.

The effect of government expenditure has one to one effect on output which is due to increase in private investment and consumption Antonio and Ilian Mihov (2001). He also compares the result with real business cycle model and finds out a positive relationship between expenditure and employment.

Rina Bhattacharya and Sanchita Mukherjee in his paper "Non Keynesian effect of fiscal policy in OECD countries" find out the relationship between consumption and Govt Debt. He finds out the Government Debt and the marginal propensity of consumption is not linear. To maintain the public debt over the long term and the medium term we need to adjust the fiscal policy. Using a panel data of OECD countries, he examines that the hypothesis of household moves to the Ricardian behaviour. He also examines that the adjustment of fiscal policy also depends on the monetary policy. He determines that the high debt countries have negative relationship with household consumption.

Khalid et al (2007) worked on the fiscal policy of Pakistan and found that fiscal policy has procyclic reaction to the business cycle instabilities and they fail to show the instrument though which fiscal policy effect the economy. The study of the Ali and Naveed (2010) found that fiscal deficit had long run negative effects on growth where they used ARDL approach and for short run they used error correction model and came to know that there is positive effects on the economy. They also found that private consumption increased due to increase in investment.

Richard and Chengy Yang (2010) work on the effects of fiscal policy by using the Keynesian Growth Model. Here he finds out that the long run effect of decrease in tax and increase in spending depends on the marginal propensity of consumption and investment. His results show that the consumption at fix tax rate increased exponentially. Moreover he also suggests that the equilibrium theory should be understood on both micro and macro level.

Attya Javed et.al (2010) has empirically worked on the fiscal deficit using SVAR methodology through Cholesky decomposition method). She found that expansionary fiscal policy shock decrease the investment which enhanced the current account and exchange rate devaluated which is against the (Mudell-Fleming model).

DeLong, J. B., Summers(2012) "Fiscal policy in Depressed Economy" the author investigates that if the expansionary fiscal policy facing to financing itself than spending benefit–cost policy test should be taken and found decline in prices. Here he concludes that the cost of expenditure should be equal to the benefit of expenditure through tax revenue.

CHAPTER 4

4.1. Methodology and Data:

The dynamic effects of the macroeconomic variables can be examined through different models that run from single time series equation to the system of equations. In vector autoregressive model (VAR) for the system of equations where each variable is function of its own lagged values and current values of the remaining variables. In order to know the macroeconomic effects of the fiscal policy based on the variables we have to use the vector auto regressive model as bench mark model. Therefore using vector autoregressive model (VAR) which consists of system of equations depends on its own lagged value and other variables as well. VAR consist of different types depends upon the assumption of its identification. In past vector autoregressive model were majority of the time was used to study the dynamic effects of monetary policy but nowadays it is also used to study the dynamic effects of the fiscal policy. But our study is based on structure vector autoregressive model (SVAR) where we will estimate the structural shocks of the variables which we are using for the five variables that are government expenditure , output, inflation, net tax revenue and interest rate (bonds and securities).

Our aim is to identify the impact of shock of fiscal policy on GDP, inflation and interest rate of an exogenous and unpredicted change in fiscal policy. To do so, we will estimate a SVAR with annual data in which we will carefully identify exogenous and unanticipated fiscal policy changes on the residuals of the SVAR.

The reduced form VAR can be written as

$$Xt = B(L)Xt\text{-}1 + U_t \qquad (1)$$

Where X = (g_t, t_t, y_t, p_t,r_t) is the vector of endogenous variables that are government expenditure, net tax revenue, Gdp growth rate as output, consumer price index as inflation and interest rate on bonds and securities. Where B(L) is an autoregressive lag polynomial. The vector u_t contains the reduced form residuals which will have non zero correlation. Model (1) is estimated by OLS and the number of lags is to be set by the Likelihood ratio (LR) which is based on the probability p values or critical values whether to accept or reject the model and Akaike information criterion (AIC).

4.2 Identification

In the second step, the reduced form residual[2]s need to be found as they are linear combination of structural shocks. For structural estimation we need to have the structural estimations and for that we must have reduced form VAR. The basic purpose of the identification is to transform the data which is correlated into uncorrelated data using structural vector autoregressive model (SVAR). We can face the problem of identification while using structural vector autoregressive model identification we have triangular and the other one is non-triangular restrictions. We have to put some restrictions that is non-triangular restrictions which is used by Blanchard and Perroti (2002) that was totally basing on institutional information.

The reduced form residuals in the first two equations can be decomposed as

$$u_t^g = \alpha_{g,y}u_t^y + \alpha_{g,p}u_t^p + \alpha_{g,r}u_t^r + \beta_{g,t}e_t^t + e_t^g \qquad (2a)$$

$$u_t^t = \alpha_{t,y}u_t^y + \alpha_{t,p}u_t^p + \alpha_{t,r}u_t^r + \beta_{t,g}e_t^g + e_t^t \qquad (2b)$$

[2] Reduced form residuals examine that error terms in the equations has no correlation that is the serial correlation is zero.

In the above two equations (u_t^g, u_t^t) are the reduced form equations for government expenditure and net tax revenues. Where (e_t^g, e_t^t) are the structural orthogonal shocks of government expenditure and net tax revenue. Similarly the reduced form equation for output (u_t^y), prices (u_t^p) and interest rate (u_t^r) can be derived from the above two equations. Following (Blenchard and Perrotti, 2002) we rely on institutional information about tax, transfers and spending we need to measure the coefficients α's and β's in the (2) are needed. As the fiscal decisions are taken annually and implanted in the budget therefore it is impossible for the policy makers to react so quickly to the shocks that is observed within the quarter particularly in developing countries. As we know that yearly budget is highly political and during the whole year changes are always possible and it can be changed if considered necessary for public expenditure we will include all the expenditures that is announced in annual budget and for net tax revenue we have subtracted total subsidies from the total tax.

Therefore fiscal policy can be adjusted in reply to the unpredicted change in GDP within the year. Thus we need to construct the elasticity's to output of government purchases and of taxes minus transfers. Given that from equation (2a) interest payments are excluded from the definition of the expenditure and net taxes that's why it is set to zero *i.e.*$\alpha_{g,r}$ and $\alpha_{t,r} = 0$. Similarly we we could not identify any automatic feedback from economic activity to the government purchases of goods and services hence we also take it zero $\alpha_{g,y=0}$ (Sandro momigliani and Robert perroti(2006). In Perotti (2004) the price elasticity to government expenditure is set to -0.5 and this setting to zero does not appear to disturb the results significantly. From equation (2b) we can calculate the output and price elasticity's as they are already calculated by bilqees for Pakistan. Here the output elasticity value that is calculated by the bilqess is .96 (Faiz Bilqees,2003).

.

After estimating the output and price elasticity's we will use cyclic fiscal shocks which can be derived as Blenchard and Perotti (2004)

$u_t^g = u_t^g - (\alpha_{g,y}\, u_t^y + \alpha_{g,y}\, u_t^p + \alpha_{g,y}\, u_t^r) = \beta_{g,t} e_t^t + e_t^g$ (3a)

$u_t^t = u_t^t - (\alpha_{g,y}\, u_t^y + \alpha_{t,p}\, u_t^p + \alpha_{t,r}\, u_t^r) = \beta_{t,g} e_t^t + e_t^g$ (3b)

As we already discussed that expenditures are prior to tax ones therefore $\beta_{g,t}$ = 0 so we can calculate $\beta_{t,g}$.If tax decisions are coming first than we have to move systematically$\beta_{g,t}$. But we have already decided that expenditure comes first$\beta_{g,t} = 0$.

The reduced form output residual are assumed to be the linear combinations of the fiscal shocks.

$u_t^y = \alpha_{g,y} u_t^g + \omega_{y,t} u_t^t + e_t^y$ (4)

The above equation can be calculated using instrumental variables. Likewise the price equation can be written as

$u_t^p = \omega_{p,g}\, u_t^g + \omega_{p,t} u_t^t + \omega_{p,y} u_t^y + e_t^p$ (5)

Similarly equation for interest rate can be calculated once we find out e_t^g , e_t^p , e_t^tas an instrument's

$u_t^r = \omega_{r,g}\, u_t^g + \omega_{r,t} u_t^t + \omega_{r,p\, U_t^p} + \omega_{r,y\, U_t^y} + e_t^r$ (6)

It can be calculated but for it we have to calculate e_t^p

Finally the last equation we can get as $U_t = \grave{A}^{-1} B \acute{R}_t$ (7)

Where as $\acute{R}_t$ is the vector of orthogonal structural shocks and the reduced form residual are the orthogonal shocks of the form. After putting some restrictions that already discussed above based on institutional information and the final matrix $\grave{A}$ takes the form below.

$$\grave{A} = \begin{bmatrix} 1 & 0 & \alpha_{g,p} & 0 & \alpha_{g,r} \\ \omega_{y,g} & 1 & 0 & \alpha_{y,t} & 0 \\ \omega_{p,g} & \omega_{p,y} & 1 & \omega_{p,t} & 0 \\ 0 & \omega_{t,y} & \omega_{t,p} & 1 & 0 \\ \omega_{r,g} & \omega_{r,y} & \omega_{r,p} & \omega_{r,t} & 1 \end{bmatrix}$$

All the coefficients in matrix $\grave{A}$ are in negative….

$$B = \begin{bmatrix} 1 & 0 & 0 & \beta_{g,t} & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ \beta_{t,g} & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

$$U_t = \grave{A}^{-1} B \acute{R}_t \qquad (8)$$

Form the above matrix we can calculate the impulse response of the mentioned macroeconomic variables.

4.3Data Sources:

We have five variables that are government expenditure, total net tax revenue, consumer price index CPI will be used as measure of inflation it is one of the index used by statistical agencies, Gdp growth rate and interest rate on bonds and securities.

For net tax revenue we have subtracted subsidies from the total revenue. The data is taken from the official sources like Pakistan Economic survey and International financial statistics from 1974 to 2013. The data is converted into log form and 2010 is taken as base year. All the data are taken from Pakistan Economic Survey except interest rate on bonds and securities that is taken is taken from the international financial statistics (IFS).

CHAPTER 5

5.1. Estimation and Results:

Unit root Properties of Data:

By using structural autoregressive model two important tests are very important to perform one is to check the stationarity of the data and the other one is to check the lag length of the data. In order to check the stationarity we are using augmented dickey fuller test and for lag length we are using Akaike Information Criteria (AIC). For lag length the criteria is used to take the lowest value of the Akaike Information Criteria of the overall model.

Augmented Dickey Fuller test will be used to check the stationarity of the data. After performing the test it is found that inflation, interest rate and Gdp growth rate and net tax revenue are found to be stationary on level while total expenditure on first difference in (table01). Therefore to bring all the variables to the level we have taken growth rate of total expenditure and found stationary at unit level.Results of the ADF test both at level and first difference are summarized in table. The null hypothesis is generally accepted at 5% of significance level. All the variables are taken to the level in conclusion column which is described in table (01)

Table 5.1.Augmented Dickey Fuller (ADF) For Stationarity

Variables	Level		First Difference I(1)		Conclusion
	t-statistics	Level of Significance	t-statistics	Level of Significance	
Total Expenditure	6.170	3.531	5.802	2.940	I(0)
Total Net Tax Revenue	3.736	1.950	5.830	2.940	I(0)
Output	3.639	2.950	13.28	2.940	I(0)
Prices	4.912	2.945	6.660	2.954	I(0)
Interest rate	3.915	2.940	6.086	2.954	I(0)

Where I(0) and I (1) are the order integration at level and first difference at 5%

5.2. Structural Vector Autoregressive Model (SVAR):

The dynamic effects of the macroeconomic variables can be investigated using different models that ranges from univariate time series model to the system of equations. In vector autoregressive model (VAR) for the system of equations where each variable is function of its own lagged values and current values of the remaining variables. Vector Autoregressive Model (VAR) is of different types i.e reduced form, recursive and structural vector autoregressive (SVAR).Here will use structural vector autoregressive model (SVAR) which shows the contemporary relationship between the variables . These contemporary relationships among variables are known as identifying assumptions. Basically the identification of the fiscal policy in structural vector autoregressive model was proposed by Blanchard and Perroti (2002). In order to conduct SVAR lag length test is performed and lag length is important pre requisite for regression. Different procedures is suggested for calculating the lag length but here will use Akaike(1974) information criteria (AIC) that is mostly used.

After putting some more restrictions on the matrix À that is some of the borrowed values are taken of tax output and tax price elasticity's that is calculated by Bilqess (2003) that is output elasticity value is $\omega_{t,y}$ = .96 . The final estimated result of the matrix can be seen in (table2). The output and expenditure elasticity is found to have positive and significant value similarly the tax to expenditure value is also positive and significant. The interest rate elasticity's with output and prices are negative is found not significant. The dynamic effects of all the variables are discussed in next section.

We have estimated the coefficient values of the matrix (A) through Blanchard and perroti (2002) approach. From the table (02) we can see that the estimated

Coefficient value of government expenditure and net tax revenue ($\beta_{t,g}$) is insignificant as the probability value is greater than the level of significance which tell us that government expenditure doesn't have any effect on the increasing or decreasing the tax revenue. Similarly from the table (02) we can see that the estimated coefficient of government expenditure and output ($\omega_{y,g}$) is significant and positive as the probability value is less than the level of significance which tell us that the government expenditure has positive effect on the output. Similarly the estimated coefficient of expenditure and prices ($\omega_{p,g}$) is also positive and significant that is expenditure raises the inflation. From the table (02) we can see that the estimated coefficient of government expenditure and interest rate is negative and insignificant. From the table 02 we can see the estimated coefficient of net taxes and output ($\alpha_{y,t}$)is insignificant. But the estimated coefficient of net taxes and interest rate on bonds and securities is significant see (table02).

Table 5.2Estimated (matrix A) in table form

	$\omega_{p,g}$	$\omega_{r,g}$	$\omega_{y,g}$	$\omega_{p,y}$	$\omega_{r,y}$	$\omega_{r,p}$	$\alpha_{y,t}$	$\omega_{r,t}$	$\omega_{p,t}$	$\beta_{t,g}$
Coefficient	3.1348	-.0635	1.2345	-.9824	-02855	-02276	5.2900	.0206	-1136	.6662
Z statistics	7.8385	-.10944	3.1502	-64960	-07272	-.1897	8.5196	.0023	-1298	4.1093
p-values	.0000	.9129	.0016	.9129	.0000	.9420	.2342	.9006	.9006	.9812

*The level of significance is checked at 5%.

5.3. Dynamic Effects of Fiscal Policy:

The dynamics of fiscal policy can be understood through the impulse response and variance decomposition of the variables.

5.3 1.Impulse Response:

Impulse response tells us the shock affects of the variables itself and its shock is also transferred to the other variables as well. The dark line of the impulse response is the actual line that shows the shock effects of the variable on its own and rest of the variables while the dotted lines are the error brands. While variance decomposition explains how variable is affected by the movements in different shock at different time, we take the value of variance decomposition in percentage form at different horizons.

5.3.2:Government Expenditure Shock:

As we can see from the figure (5.1) one standard deviation shock of the public expenditure on itself and on the rest of the variables. Theoretically we know the effects of the expenditure will bring the rise in price level and crowding out phenomena can be observed due to overall decrease in the output. The response of the expenditure on itself shock is positive at first year and starts declining and becomes insignificant after fifth year. The results are similar to (Linneman and Andreas,2003) that increasing the government expenditure will increase the real interest rate which ultimately decrease the investment expenditure. The behavior of the expenditure shock on itself denies the Keynesian multiplier mechanism that initial incremental amount of spending can lead to increase in income and consumption causing increase in overall increase in output.

Government expenditure has very sharp and negative effect on the output which reaches to minimum on second year and then starts rising after 4thperiod. The results are very much similar to the Perroti and Blanchard (2002) that the response of GDP to the expenditure increased at 4th quarter. The effect of the government expenditure on output is negative because of the increase in output will lead to increase the transaction demand of money; this will ultimately decrease the speculative demand of money resulting an increase in the interest rate. This increase in interest rate will bring the reduction in investment and private consumption due to which the overalls aggregate demand decreases because it has no stimulation effect on the aggregate demand. Crowding out phenomena is observed both in output and interestrate, as interest rate ascends to crowd out private investment and consumption.[3]Similar results were found byHyder (2001) the crowding out effect in case of Pakistan using vector error correction framework. Fatas and Mahio (1998)also found thatthe fiscal expenditure affects output in short run. Similarly Fatas and Ilian (2001) come up with the result that the decrease in private consumption due to increase in spending because of the negative wealth effect. Similar results were also found by Ali and Naveed (2010) that fiscal deficit has long run negative effect on growth which is similar to our study figure (1).The increase in the output might be due to increase in the interest rate for accommodating the monetary policy and to manage the deficit as well.Likewise the effect of the public expenditure on the inflation is also negative on first year (figure5.1), theoretically if the government expenditures fails to increase the aggregate demand of the economy or it has no effect on the output then it will be facing the lower level of inflation in the country then we can conclude that it is more structural in Pakistan. Results are similar to study of

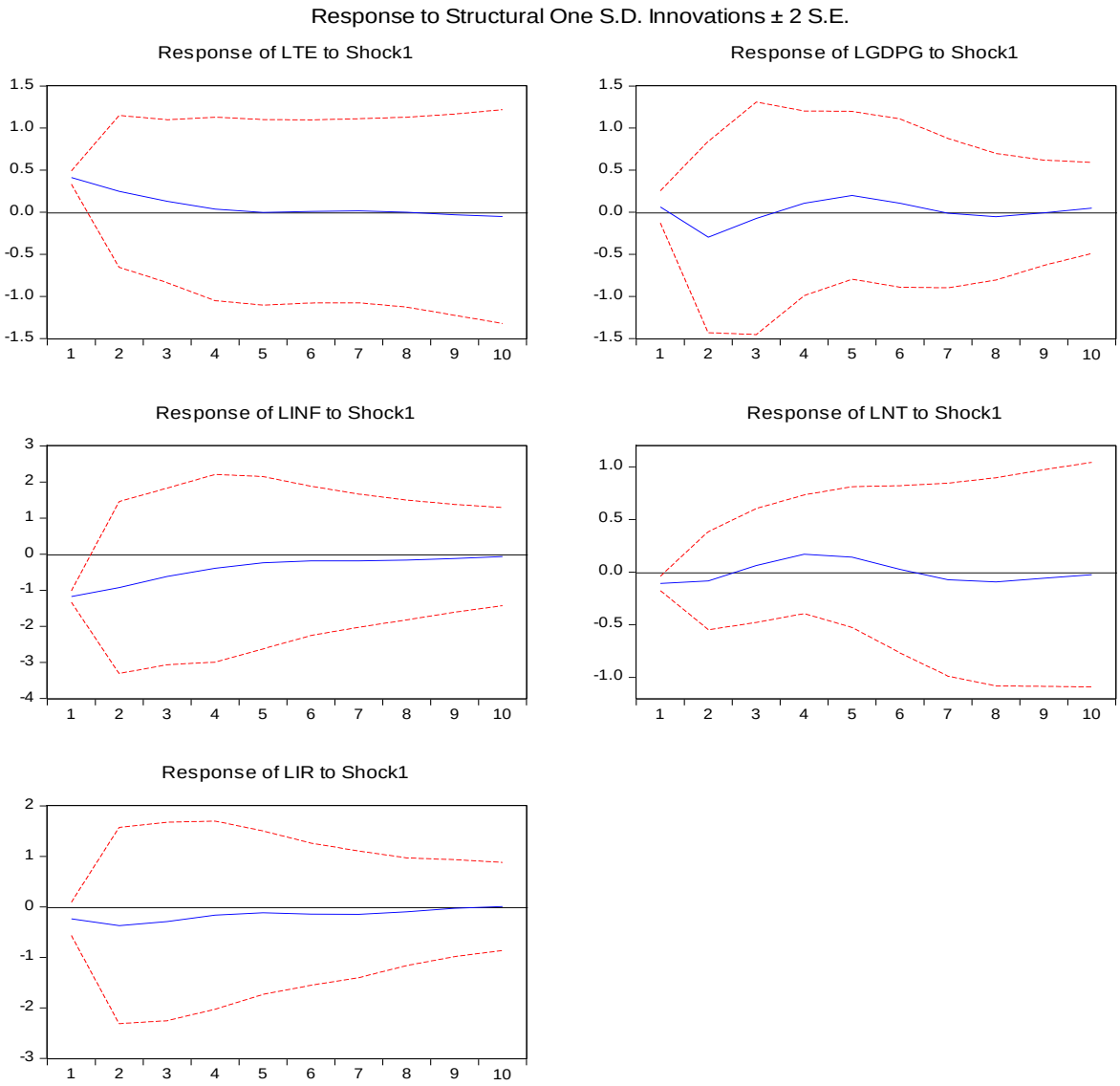
[3] Although investment and consumption not part of the investment but these are driving force behind crowding out.

DeLong, J. B., Summers(2012) “Fiscal policy in Depressed Economy” where they found decline inflation due to high spending. The results are contrary to the Gerald and Dawyer (1982) where they found correlation between inflation and spending.The overall results are so much similar to the Ricardian approach which states that fiscal expansion is offset by contraction in private consumption discussed in chapter (2).

The effect of the public expenditure on the net tax revenue is negative and starts increasing on third quarter of the second year reaches maximum on the fourth year and then again starts decreasing and become significant and persistent to the expenditure shock in the next periods. As the government is not able to collect and receive the revenues due to its structure and expenditure history of the country.

The effect of the government expenditure on the interest rate (bonds and securities) is negative on first year and it reaches to zero on the first quarter of the ninth year. The effect of the government expenditure on interest rate has no immediate effect like on output. Barro (1981) observed that increase in spending leads to increase in interest rate for short run. We can analyze from the figure (5.1)through IS_LM mechanism, that increase in the money supply will bring fall in the interest rate as bank gets the money market to clear which will reduce the negative unplanned investment and there will be increase in the output. This rise in the output pushes the interest rate toward bench line.

Figure 5.1:**Impulse response of Total Expenditure Shock**



5.3.3. Public Revenue Shock:

Here we will discuss the response of the macroeconomic variables to the one standard deviation shock to public revenue. The effect of the shock to the expenditure as we can see from the figure(5.2) is negative and insensitive to the shock of the public revenue; this may be due to contractionary strategy in term of revenues. Theoretically we know that more revenues lead to high spending which is called ratchet up effect. As we can see from the history that economy is always suffering from the deficit and due to non-development expenditures' and net tax revenue was

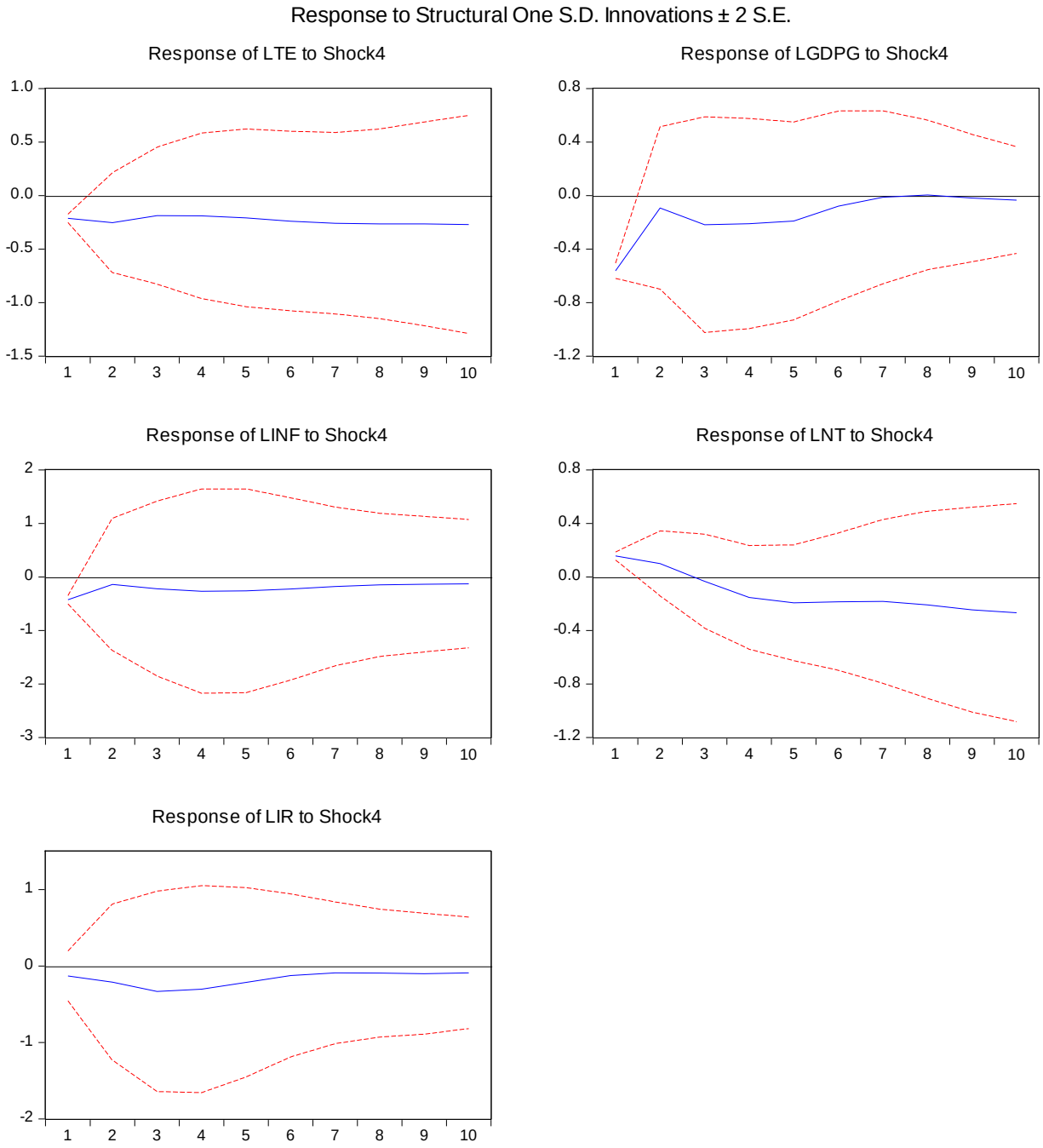
never the benchmark to increase the overall aggregate demand of the economy. Therefore we cannot see any change in the expenditure due to revenue shock.

The effect of shock of the public revenue on the output is negative see figure (5.2) on first year and then jumps immediately to the toward the bench line values on the second year makes the kinked shaped (figure5.2). It starts declining after the third period and merges to the bench line after seventh year. Output couldn't achieve a positive value in case of tax shock. Similar results were found by Barro (1981) that decrease in tax increases the disposable income and leads to perpetual increase in GDP ratio. Perroti and Blanchard (2002) also found the similar results that increase in tax has negative effects on GDP. Similar results were found by Mount Ford (2005) using US quarterly data that the best policy for stimulating the economy is tax cut policy. Similarly Richard and Chengy Yang (2010) also found that the consumption increased exponentially at fix tax rate.

The effect of the revenue shock on the interest rate is negative on first period and start declining and then rising sixth year touches the bench mark and then becomes non responsive till the next periods(figure5.2). The results are similar to the Andre Mount Ford (2005) that decrease in tax rate couldn't crowd out the interest rate. As we know from IS- LM mechanism if the investment is perfectly interest inelastic monetary policy will be useless in shifting the output because increase in the money supply cannot bring rise in investment. As we already know that inverse relationship exists between the value of the asset and the interest rate which is known as wealth effect of the fiscal policy. Ultimately there will be always downward pressure on the interest rate.

The effect of the revenue on itself is positive for the first period and then starts declining after the 2nd quarter of the 2nd year. The persistence of the revenue shock to itself cannot be observed in coming years though it is positive initially. Due to our economic and the deficit phenomena government fails to collect the desired revenue every year. The effect of the revenue shock is negative and starts rising slightly first period and remains same till the next periods and don't show any response to the net revenues.

Figure (5.2)**Impulse Response of Net Tax Revenue Shock.**



5.4. Variance Decomposition:

Variance decomposition explains the overall rise and fall of the variables due to different shocks at different time. Here we have five endogenous variables that will let us know that which variable is affected more due to fluctuation in different shocks. Variance decomposition is taken in percentage, and to explain the accumulative behavior of the shocks we will use average percentage. As we can see from the table1 (AppendixA),net tax revenue plays the most important role in estimating standard error of government expenditure that is almost 40% .While the prices and interest rate also plays a plays significant role in forecasting standard error of government spending shock that is almost 14% in table1 (appendixA).

Net tax revenue and interest rate shows the most significant and important role in estimating the standard error of the output that is almost 40% and 30% table(2). While the role of prices and expenditure in explaining the standard error of output that is almost 5% and 12%. Likewise the role of total expenditure is most significant in explaining the standard error of the prices. While it is 13% for net revenue, the role of output for estimating the standard error of the prices is just 0.7%.

The role of output and total expenditure is more prominent in explaining the standard error of the net tax revenue that is almost 30% and 15% table(3). However the role of prices and interest rate is also significant. The variance decomposition of interest rate is very interesting, total expenditure and net tax revenue plays a main role in explaining the forecasting error that is 15% and 14% of interest rate while it is negligible in case of output and prices.

5.5. Conclusion:

The basic purpose of this study was to know about the empirical results of the fiscal policy using annual data of Pakistan from 1974 to 2013. The data is taken from Pakistan economic survey and for interest rate we have taken data from International financial statistics (IFS). Structural vector autoregressive model is used to estimate the structural shocks of the fiscal policy. Majority of the time structural autoregressive model is used for quarterly data but as fiscal policy is announced annually therefore we will take annual data. The estimation is done through Blanchard and perroti (2002) approach, where we have taken some coefficient values zero and some fixed based on theory and institutional information. The direct and indirect effect of the fiscal policy can be observed through different channels of its implications. It is very important to know whether the fiscal policy should be revenue led or expenditure led in case of Pakistan, secondly contractionary or expansionary fiscal policy should be adopted.

Crowding out phenomena is observed due to expenditure shock where it discourages the private investor and no responsiveness of prices is observed due to net tax shock. Although interest rate in initial stage was negative then it starts increasing after eighth period and touches the baseline. In each shock no sustainability of policy is observed. The rise and the fall of the output due to expenditure and net tax revenue shock is observed though it was positive in case of expenditure shock but in case of revenue rising from the negative and touches the base line after fifth period. Through fiscal policy instruments using data of Pakistan weak response is observed due to fiscal shock remains negative but slightly increasing after fifth period which concludes that policy is not increasing the overall aggregate demand of the economy. The coefficient value of output and expenditure is found positive while the prices and

interest rate with output is found negative. The overall estimation where we have used the annual data of Pakistan the empirical results couldn't leads us to say that fiscal policy is stimulative in increasing the overall aggregate demand of the economy. In Pakistan majority of the expenditure goes into interest payment and subsidies and very less is invested into public sector which has increased the gap between public sector and private sector. Investing in public sector not only promotes the economic growth but it also boosts the private investment as well. It can crowd in if we invest in public sector and reduce the current expenditure.

REFERENCES:

Afonso, A. (2001). Non-Keynesian effects of fiscal policy in the EU-15.

Ahmed, J., Zaman, K., & Shah, I. A. (2011). An empirical analysis of remittances-growth nexus in Pakistan using bounds testing approach. *Journal of Economics and International Finance*, *3*(3), 176-186.

Alesiana A,R.perroti.,j. Tavares, M. Obstfeld and B.Eichengreen (1998), " The political Economy of Fiscal Adjustments", Brooking paper on Economic Activity, vol1.

Alesina, A., & Perotti, R. (1994). The political economy of growth: a critical survey of the recent literature. *The World Bank Economic Review*, *8*(3), 351-371.

Barro, R. J. (1979). On the determination of the public debt. *The Journal of Political Economy*, 940-971.

Bilquees, F. (2004). Elasticity and Buoyancy of the Tax system in Pakistan. *The Pakistan Development Review*, 73-93.

Barro, Robert J, 1981. "Output Effects of Government Purchases," Journal of Political Economy, University of Chicago Press, vol. 89(6), pages 1086-1121, December.

Baxter, M., & King, R. G. (1993). Fiscal policy in general equilibrium. *The American Economic Review*, 315-334.

Bhatia, M (1990), Pakistan Econonomic Development, Delhi.Shiba offset press policy..

Bhattacharya, R., & Mukherjee, S. (2013). Non-Keynesian effects of fiscal policy in OECD economies: an empirical study. *Applied Economics*, *45*(29), 4122-4136.

Blanchard and Perrotti (1999), “An empirical characterization of the dynamic effects of changes in government spending and taxes on output”, NBER working paper No.7269.

Boskin, M. J. (1988). Tax policy and economic growth: lessons from the 1980s.*The Journal of Economic Perspectives*, 71-97.

Burnside, C., Eichenbaum, M., & Fisher, J. D. (2004). Fiscal shocks and their consequences. *Journal of Economic theory*, *115*(1), 89-117.

Carman, K. G., Gokhale, J., & Kotlikoff, L. J. (2003). *The impact on consumption and saving of current and future fiscal policies* (No. w10085). National Bureau of Economic Research.

Cashin, P., Haque, N. U., & Olekalns, N. (2003). Tax smoothing, tax tilting and fiscal sustainability in Pakistan. *Economic Modelling*, *20*(1), 47-67.

Castro, F., & de Cos, P. H. (2008). The economic effects of fiscal policy: the case of Spain. *Journal of Macroeconomics*, *30*(3), 1005-1028.

Corsetti, G., Meier, A., & Müller, G. J. (2012). Fiscal stimulus with spending reversals. *Review of Economics and Statistics*, *94*(4), 878-895.

Corsetti, G., Meier, A., & Müller, G. J. (2012). What determines government spending multipliers?. *Economic Policy*, *27*(72), 521-565.

Day, R. H., & Yang, C. (2011). Economic growth and the effects of fiscal policy. *Metroeconomica*, *62*(1), 218-234. Zaidi, S. A. (2005). Issues in Pakistan's economy. *OUP Catalogue*

DeLong, J. B., summers, L. H., FELDSTEIN, M., & RAMEY, V. A. (2012). Fiscal Policy in a Depressed Economy [with Comments and Discussion].*Brook*

Fan, S., Hazell, P., & Thorat, S. (2000). Government spending, growth and poverty in rural India. *American Journal of Agricultural Economics*, *82*(4), 1038-1051.

Fatás, A., & Mihov, I. (2001). Government size and automatic stabilizers: international and intranational evidence. *Journal of International Economics*,*55*(1), 3-28.s

Fatás, A., & Mihov, I. (2001). *The effects of fiscal policy on consumption and employment: theory and evidence* (Vol. 2760). Centre for Economic Policy Research.

Fernandaz,F.and P.De Cos (2006), " The Economic effect of exogenous fiscal policy"

Galı, J., & Gertler, M. (1999). Inflation dynamics: A structural econometric analysis. *Journal of monetary Economics*, *44*(2), 195-222..

Galí, J., López-Salido, J. D., & Vallés, J. (2007). Understanding the effects of government spending on consumption. *Journal of the European Economic Association*, *5*(1), 227-270.

Gianni, A., & Giannini, C. (1997). Topics in Structural VAR Econometrics.

Giavazzi, F., & Pagano, M. (1990). Can severe fiscal contractions be expansionary? Tales of two small European countries. In *NBER Macroeconomics Annual 1990, Volume 5* (pp. 75-122). MIT Press.

Giordano, R., Momigliano, S., Neri, S., & Perotti, R. (2007). The effects of fiscal policy in Italy: Evidence from a VAR model. *European Journal of Political Economy*, *23*(3), 707-733.

Gupta, S. Clements, B. J., Baldacci, E., & Mulas-Granados, C. (2002). Expenditure composition, fiscal adjustment, and growth in low-income countries.

Haque, N. U., Husain, A. M., & Montiel, P. J. (1994). An empirical "dependent economy" model for Pakistan. *World Development*, *22*(10), 1585-1597.

Hussain, M. N. (2014). Empirical econometric analysis of relationship between fiscal-monetary policies and output on Saarc countries. *The Journal of Developing Areas*, *48*(4), 209-224.

Javid, A. Y., Javid, M., Arif, U., & Sabir, M. (2010). Fiscal Policy and Current Account Dynamics in the Case of Pakistan [with Comments]. *The Pakistan Development Review*, 577-592.

Khan, R. E. A., & Gill, A. R. (2010). Determinants of inflation: A case of Pakistan (1970-2007). *Journal of Economics*, *1*(1), 45-51.

Linnemann, L., & Schabert, A. (2004). Can fiscal spending stimulate private consumption?. *Economics Letters*, *82*(2), 173-179.

Mountford, A., & Uhlig, H. (2009). What are the effects of fiscal policy shocks?. *Journal of applied econometrics*, *24*(6), 960-992.

Mountford, A., & Uhlig, H. (2009). What are the effects of fiscal policy shocks?. *Journal of applied econometrics*, *24*(6), 960-992.

Mountford, A., & Uhlig, H. (2009). What are the effects of fiscal policy shocks?.*Journal of applied econometrics*, *24*(6), 960-992.

Mukherjee, S.& Bhattacharya, R.(2011). Inflation targeting and monetary policy transmission mechanisms in emerging market economies. *IMF Working Papers*, 1-27.

Pattnaik, R. K, Raj, D. S., & Chander, J. (2006). Fiscal Policy Indicators in a Rule-Based Framework: An Indian Experience. *Available at SSRN 2005,230*.

Perotti, R. (2005). Estimating the effects of fiscal policy in OECD countries.

Perotti, Roberto [2007]: "In Search of the Transmission Mechanism of Fiscal policy," NBER Macroeconomic Annual, forthcoming.

Planning and commission of Pakistan (1950), first five year plan

Quintos, C. E. (1995).Sustainability of the deficit process with structural shifts.*Journal of Business & Economic Statistics*, *13*(4), 409-417.

Raju, S. & Mukherjee, J.(2010). Fiscal Deficit,Crowding Out and the Sustainability of Economic Growth. *Asia Visions*, *31*, 1-31.

Rotemberg, J. J., & Woodford, M.(1996).Real-business-cycle models and the forecastable movements in output, hours, and consumption. *The American Economic Review*, 71-89.

Stock, J. H., & Watson, M. W.(2001).Vector auto regressions. *Journal of Economic perspectives*, 101-115.

Weber, C. E. (1999). Fiscal policy in general equilibrium: empirical estimates from an error correction model. *Applied Economics,31*(7), 907-913.

APPENDIX (A)

Table1. Variance Decomposition of Total Expenditure

Period's	SE	shock1	shock2	shock3	shock4	shock
1	0.482372	72.81311	0.798581	6.744295	19.64401	0.000000
2	0.618279	60.33298	0.586086	7.701745	28.78501	2.594182
3	0.706307	49.64359	0.983942	8.355013	29.23181	11.78564
4	0.774109	41.56301	1.970842	9.473606	30.41250	16.58004
5	0.829261	36.21861	2.810091	11.24031	32.87088	16.86011
6	0.882173	32.01337	3.110369	12.86816	36.44818	15.55992
7	0.937214	28.39283	3.129317	14.01196	39.93126	14.53463
8	0.994303	25.22602	3.136767	14.68284	42.56718	14.38720
9	1.052946	22.57579	3.244379	15.12580	44.32363	14.73039
10	1.110817	20.49580	3.411892	15.54220	45.79799	14.75212

Table2: Variance Decomposition of output

Periods	SE	shock1	shock2	shock3	shock4	shock5
1	0.603033	1.107526	2.888901	8.932751	87.07082	0.000000
2	0.882118	11.74650	7.338712	4.978947	41.82185	34.11400
3	0.931164	11.15656	7.768527	4.532893	43.01843	33.52359
4	0.996090	10.87385	6.792733	4.587257	42.04896	35.69720
5	1.048881	13.42859	6.579044	4.137130	41.23643	34.61881
6	1.063508	14.07796	6.459851	4.053990	40.66685	34.74134
7	1.076648	13.74919	6.391451	3.998414	39.69620	36.16474
8	1.080929	13.89335	6.562119	3.968391	39.38362	36.19252
9	1.083573	13.82984	6.571707	3.971511	39.22556	36.40137
10	1.088572	13.90964	6.521938	3.949572	38.96555	36.65330

Table3 Variance Decomposition of Prices

Periods	SE	shock1	shock2	shock3	shock4	shock5
1	1.279782	84.55060	0.453807	3.832558	11.16304	0.000000
2	1.593759	88.36753	0.615999	2.700099	7.993623	0.322750
3	1.734645	87.26224	0.792689	2.765796	8.366591	0.812683
4	1.808280	85.05231	0.758688	2.918429	9.887231	1.383340
5	1.846010	83.32303	0.727997	3.017147	11.48477	1.447052
6	1.870536	82.17155	0.710398	3.040363	12.64414	1.433544
7	1.890247	81.41304	0.722677	3.043055	13.28463	1.536597
8	1.904850	80.92444	0.761880	3.058401	13.70632	1.548960
9	1.914531	80.49905	0.787228	3.090561	14.08528	1.537883
10	1.920887	80.09513	0.792438	3.121626	14.44058	1.550227

Table4 Variance Decomposition of Net Revenue

Periods	SE	shock1	shock2	shock3	shock4	shock5
1	0.248112	18.93671	41.38176	0.038390	39.64314	0.000000
2	0.335917	16.44781	47.02200	5.965114	30.54889	0.016186
3	0.383595	15.30070	40.27056	17.85595	24.15067	2.422120
4	0.470689	23.20250	26.74756	21.43292	26.69395	1.923071
5	0.556873	23.10017	19.14302	20.48050	31.11668	6.159627
6	0.644400	17.42100	14.61748	18.53482	31.51534	17.91135
7	0.724922	14.75719	12.84324	17.71653	31.32398	23.35906
8	0.788689	13.84768	12.18822	18.35044	33.52726	22.08640
9	0.846673	12.46930	11.29544	19.23816	37.50410	19.49300
10	0.904445	10.99590	10.25185	19.66158	41.63956	17.45111

Table5. Variance Decomposition of Interest Rate

Period's	SE	shock1	shock2	shock3	shock4	shock5
1	1.038051	5.246751	0.044919	0.331392	1.573858	92.80308
2	1.286446	11.73470	0.294216	1.467746	3.729696	82.77364
3	1.367920	14.90506	0.278013	2.151530	9.212236	73.45316
4	1.430798	14.97012	0.279073	2.266006	12.94215	69.54266
5	1.453247	15.17227	0.274813	2.225936	14.71666	67.61033
6	1.468957	15.82861	0.328203	2.188293	15.12675	66.52815
7	1.482172	16.56567	0.467443	2.181048	15.22913	65.55671
8	1.489559	16.82474	0.530096	2.227759	15.48051	64.93689
9	1.495272	16.73053	0.528654	2.268145	15.83239	64.64028
10	1.498498	16.65991	0.528044	2.283582	16.13481	64.39365

APPENDIX (B)

Robustness:

As we have used some borrowed values while estimating the results that was based on theory Blanchard and Perroti (2002). In order to check whether our results are consistent with the actual results we are going to check the robustness. There are two methods to check the robustness one way is to add and subtract 5% of the borrowed values and then estimate the results and the other method is to change the sample period. Here we will use the first method that is to add and subtract 5% to the values which we have borrowed based on theory.

In Blanchard and Perroti(2002) paper the government and price elasticity value is taken as -0.5 through outside information while in the output elasticity to the net tax is 0.96 and . After adding and subtracting the five per cent to these values we estimated again the vector autoregressive (VAR) model and structural vector autoregressive model (SVAR) model. After estimating the results most of the results were consistent with the previous results. Output coefficients are almost same , out of eleven parameters only the output and expenditure coefficient which was positive in previous results becomes negative while adding 5% to the borrowed values. The rest of the results are almost similar to the early estimated values. The impulse response and variance decomposition generated from this results are almost of same pattern.