Fiscal Policy and Inflation Growth in the United States

[1]Garima Gambhir, [2]Anamika Shori, [3]Gunja Chandna, [4]Ashwarya Shukla, [5]Kajal Ahuja, [6]Akshita Jain

[2,3,4,5,6,7] Bachelors in Economics Honours, II Year

Abstract: **This study has been put forward to examine the impact of Consumer Price Index (CPI) and Government expenses and the effect of changes in Fiscal Policy on Gross Domestic Product i.e Output in the United States from 1980-2011 using regression analysis. These variables also indicate the inflation in the economy.**

Keywords: **Fiscal Policy and Inflation Growth, Consumer Price Index (CPI), Gross Domestic Product.**

I. INTRODUCTION

Much of the history of economic policy in the United States since the Great Depression of the 1930s has involved a continuing effort by the government to find a mix of fiscal and monetary policies that will allow sustained growth and stable prices. That is no easy task, and there have been notable failures along the way.

But the government has gotten better at promoting sustainable growth. From 1854 through 1919, the American economy spent almost as much time contracting as it did growing: the average economic expansion (defined as an increase in output of goods and services) lasted 27 months, while the average recession (a period of declining output) lasted 22 months. From 1919 to 1945, the record improved, with the average expansion lasting 35 months and the average recession lasting 18 months. And from 1945 to 1991, things got even better, with the average expansion lasting 50 months and the average recession lasting just 11 months.

Inflation, however, has proven more intractable. Prices were remarkably stable prior to World War II; the consumer price level in 1940, for instance, was no higher than the price level in 1778. But 40 years later, in 1980, the price level was 400 percent above the 1940 level. In part, the government's relatively poor record on inflation reflects the fact that it put more stress on fighting recessions (and resulting increases in unemployment) during much of the early post-war period. Beginning in 1979, however, the government began paying more attention to inflation, and its record on that score has improved markedly. By the late 1990s, the nation was experiencing a gratifying combination of strong growth, low unemployment, and slow inflation. But while policy-makers were generally optimistic about the future, they admitted to some uncertainties about what the new century bring. The purpose of this paper would is to give an insight view of Fiscal Policy and Inflation Growth in the United States. The scheme of the study is as follows: Section II - Literature Review, Section III- Research and Hypothesis, Section IV- Data and Methodology, Section V- Concludes the paper. What impact does CPI, Expenses of the Government, Changes in Fiscal Policy and Inflation Growth have on the Output.

II. LITERARY REVIEW

Fiscal policy is considered any changes the government makes to the national budget in order to influence a nation's economy. The approach to economic policy in the United States was rather laissez-faire until the Great Depression. The government tried to stay away from economic matters as much as possible and hoped that a balanced budget would be maintained. Prior to the Great Depression, the economy did have economic downturns and some were quite severe. However, the economy tended to self-correct so the laissez faire approach to the economy tended to work. After the Great Depression, economists decided that something needed to be done about the government involvement in U.S. economic affairs. The U.S. looked to the influential views of economist John Maynard Keynes to help fix the crisis the country was

in, as well as to prevent it from happening again. President Franklin D. Roosevelt first instituted fiscal policies in the United States in The New Deal. The first experiments did not prove to be very effective, but that was in part because the Great Depression had already lowered the expectations of business so drastically. The Congressional Budget Office projects that the federal budget deficit for fiscal year 2009 will spike dramatically to an unprecedented $1.2 trillion, or 8.3% of the gross domestic product (GDP). The new budget plan is set to leave the US with a record-breaking deficit of $1.56trn in 2010. As a percentage of the GDP, within the context of the national economy as a whole, the highest deficit was run during fiscal year 1943 at over 30% of GDP, whereas deficits during the 1980s reached 5–6% of GDP and the deficit for 2005 was 2.6% of GDP, close to the post-World War II average. In 2009, the deficit grew closer to 14% of GDP, which was caused by government actions.

To investigate the Inflation Growth in the US, we have used two variables to show their impact on GDP. These variables also indicate the inflation in the economy. Variables being consumer price index, government expenditure and their impact on gross Domestic Product. Our evidence suggests that Fiscal multipliers keep conventional signs throughout. It also implies a direct and positive correlation between Government Expenditure and Gross Domestic Product. Also, more of Consumer Price Index indicates inflation which leads to a negative or ambiguous impact on economy's growth. An investigation of changes in fiscal policy conduct indicates an increase in the countercyclical responsiveness of net taxes over recent decades, which appears to have reached a maximum during the 2008–2009 recessions.

On evaluating conditional predictive densities for U.S. output growth and inflation using a number of commonly used forecasting models were found to rely on a large number of macroeconomic predictors. More specifically, we evaluate how well conditional predictive densities based on the commonly used normality assumption fit actual realizations out-of-sample. Our focus on predictive densities acknowledges the possibility that, although some predictors can improve or deteriorate point forecasts, they might have the opposite effect on higher moments. We find that normality is rejected for most models in some dimension according to at least one of the tests we use. Interestingly, however, combinations of predictive densities appear to be correctly approximated by a normal density: the simple, equal average when predicting output growth and Bayesian model average when predicting inflation.

We empirically investigate the effects of inflation uncertainty on output growth for the US using both monthly and quarterly data over 1985-2009. Employing a Markov regime switching approach to model output dynamics, we show that inflation uncertainty obtained from a Markov regime switching GARCH model exerts a negative and regime dependant impact on output growth. In particular, we show that the negative impact of inflation uncertainty on output growth is almost 4.5 times higher during the low growth regime than that during the high growth regime. We verify the robustness of our findings using quarterly data.

Both the above mentioned reviews did not in particular investigate the inflation growth but did infer at some point how GDP is positively correlated to Government Expenditure which helped us in our further analysis of the same. It also informed us about the recession that reached its maximum due to particular fiscal policy changes by the US.

III.   RESEARCH AND HYPOTHESIS

FISCAL POLICY:

It is the means by which a government adjusts its spending levels and tax rates to monitor and influence a nation's economy. The approach to economic policy in the United States was laissez-faire until the Great Depression. Prior to the Great Depression, the economy did have economic downturns and some were quite severe. However, the economy tended to self-correct so the laissez faire approach to the economy tended to work.

After the Great Depression, economists decided that something needed to be done about the government involvement in U.S. economic affairs. The U.S. looked to the influential views of economist John Maynard Keynes to help fix the crisis the country was in, as well as to prevent it from happening again.

President Franklin D. Roosevelt first instituted fiscal policies in the United States in The New Deal. The first experiments did not prove to be very effective, but that was in part because the Great Depression had already lowered the expectations of business so drastically.

Fiscal Policy: History In the US:

The Great Depression struck countries in the late 1920s and continued throughout the entire 1930's. In 1933, 25 percent of all workers were unemployed in America. Because of the prolonged recovery of the United States economy and the

major changes that the Great Depression forced the government to make, the creation of fiscal policy is often referred to as one of the defining moments in the history of the United States. The size of the federal government began rapidly expanding in the 1930s, growing from 553,000 paid civilian employees in the late 1920s to 953,891 employees in 1939. The budget grew substantially as well. In 1939, federal receipts of the administrative budget were 5.50 percent of Gross National Product, GNP, while federal expenditures were 9.77 percent of GNP. These numbers were up significantly from 1930, when federal receipts averaged 3.80 percent of GNP while expenditures averaged 3.04 percent of GNP.

Another contributor to changing the role of government in the 1930s was President Franklin Delano Roosevelt. FDR was important because of his implication of The New Deal, which was a program that would offer relief, recovery, and reform to the American nation. In terms of relief, new organizations, such as the Works Progress Administration, saved many U.S. lives. The reform aspect was indeed the most influential in The New Deal, for it forever changed the role of government in the U.S. economy. In essence, it was the beginning of fiscal policy. It was the first time that the government took an active role in attempting to secure American individuals from unseen drastic changes in the market.

The World War II then, forced the government to run huge deficits, or spend more than they were economically generating, in order to keep up with all of the production the US military needed. By running deficits, the economy recovered, and America rebounded from its drought of unemployment. The military strategy of full employment had a huge benefit: the government's massive deficits were used to pay for the war, and ended the Great Depression. This phenomenon set the standard and showed just how necessary it was for the government play an active role in fiscal policy.

INFLATION:

I**nflation** is a sustained increase in the general price level of goods and services in an economy over a period of time. There are many possible measures of the price level, there are many possible measures of price inflation. Most frequently, the term "inflation" refers to a rise in a broad price index representing the overall price level for goods and services in the economy. The Consumer Price Index (CPI), the Personal Consumption Expenditures Price Index (PCEPI) and the GDP deflator are some examples of broad price indices. However, "inflation" may also be used to describe a rising price level within a narrower set of assets, goods or services within the economy, such as commodities (including food, fuel, metals), tangible assets (such as real estate), financial assets (such as stocks, bonds), services (such as entertainment and health care), or labor. The Reuters-CRB Index (CCI), the Producer Price Index, and Employment Cost Index (ECI) are examples of narrow price indices used to measure price inflation in particular sectors of the economy. Core inflation is a measure of inflation for a subset of consumer prices that excludes food and energy prices, which rise and fall more than other prices in the short term. The Federal Reserve Board pays particular attention to the core inflation rate to get a better estimate of long-term future inflation trends overall.

(A) CPI AND GOVERNMENT EXPENDITURE:

For our hypothesis, we have used Consumer Price Index as a measure of inflation and government expenditure as a variable of fiscal policy, the effect of these two variables on the Gross Domestic Product:

CONSUMER PRICE INDEX:

The Consumer Price Index (CPI) is produced by the Bureau of Labor Statistics (BLS) in the USA. It is the most widely watched and used measure of the U.S. inflation rate. The BLS describes the CPI as a measure of the average change in price over time of goods and services purchased by households on an average day-to-day basis.

Originally, the CPI was determined by comparing the price of a fixed basket of goods and services in two different periods. Determined as a cost of goods index (COGI). However, over time, the U.S. Congress embraced the view that the CPI should reflect changes in the cost to maintain a constant standard of living. Consequently, the CPI has been moving toward becoming a cost of living index (COLI).

Implications for the GDP:

The CPI indicates whether the economy is experiencing inflation, deflation or stagflation. The CPI plays a role in the determination of the real GDP; therefore, manipulation of the CPI could imply manipulation of the GDP because the CPI is used to deflate some of the nominal GDP components for the effects of inflation i.e. real GDP is arrived at by adjusting the nominal GDP for effects of inflation.

Inflation also as an effect on *future GDP growth*: a high rate of price inflation in the current year results in slower GDP growth in subsequent years.

GDP Growth:

Often times, a rise in GDP is the *reason* for rising CPI, not the other way around, since the rise in GDP occured primarily because of a rise in government spending.

An economy wants economic growth, but not rapid growth. The U.S. government can only sustain a 2.5 to 3.5 percent growth annually. The growth in GDP causes inflation, and inflation begets hyperinflation. Once this process is in place, it can quickly become a self-reinforcing feedback loop. This is because in a world where inflation is increasing, people will spend more money because they know that it will be less valuable in the future. This causes further increases in GDP in the short term, bringing about further price increases. If growth occurs too fast, then inflation grows too fast, making the cost of living, reported through the CPI, too high for people to keep up. People then cannot afford the new prices, because the trickle down of income to the people is slower than inflation.

Additionally, a lower CPI could have the following benefits:

1. Many government payments, such as Social Security are linked to the level of the CPI; therefore, a lower CPI translates into lower payments - and lower government expenditures.

2. The CPI deflates some components used to calculate the real GDP - a lower inflation rate makes the economy look better than it really is.

B) GOVERNMENT EXPENDITURE AND GROSS DOMESTIC PRODUCT:

Government spending or **expenditure** includes all **government** consumption; investment, and transfer payments .For fiscal policy, increases in government spending are expansionary, while decreases are contractionary.

Government spending increases effective demand leads to a higher output and economic growth.

Government expenditure is necessitated in developing economies, when private investment is lacking, to bridge the gap between demand and supply. When Government spends, say in laying roads, bridges and railways or create a banking system, it generates lot of jobs, gives the much needed services to kick start the economy, and increases money supply to boost demand. These lead to increased growth rate and a higher GDP.

But this may not be true for a developed or advanced economy- for - it increases fiscal deficit, it crowds out private investment, increases taxes therby reduces savings and therefore private investment. (All these apply to a developing economy also). However, since private is not coming forward to spend Govt has to chip in, in a developing economy , whereas, in the developed economy Govt spending would choke private investment which is disincentive for growth. Thus there is a trade-off, and depending on the context and circumstances the country is in, the choice is made to induce growth through public spending.

Output growth can affect both government spending and inflation. As output or income per capita increases, private consumption may rise depending upon the marginal propensity to consume of consumers. Public consumption may also rise as government expands to meet the higher demand for public services by the private sector. As a result, prices may increase to high level leading to inflation

C) RELATIONSHIP BETWEEN CPI AND GOVERNMENT EXPENDITURE:

There is a short-run as well as a long-run relationship between inflation and government expenditure.

Government spending can be one of the contributing factors to rising inflation.

In addition to accumulating debt, another way for the government to finance its spending is money creation. As the central bank grows its monetary base, aggregate money supply increases, leading to higher credit supply, and then higher inflation.

In turn, Governments also use the CPI to set future expenditure. Many government expenses are based on the CPI and, therefore, any lowering of the CPI would have a significant effect on future government expenditures.

IV. DATA AND METHODOLOGY

Here, we will take into account two specific components which will affect the output (GDP) and these components are directly related to the cause of inflation, they are Government Expenses & Consumer Price Index (CPI).

Data used for making graphs and deriving equations.

YEARS	GDP	GOVT. EPENSES	CPI
1980	2788.15	465.88	13.51
1981	3126.85	520.55	10.32
1982	3253.18	568.15	6.16
1983	3534.6	610.55	3.21
1984	3930.92	657.55	4.32
1985	4217.48	720.08	3.56
1986	4460.05	776.1	1.86
1987	4736.35	815.1	3.74
1988	5100.43	852.73	4.01
1989	5482.12	902.95	4.83
1990	5800.53	965.98	5.4
1991	5992.1	1015.82	4.23
1992	6342.3	1050.4	3.03
1993	6667.33	1075.43	2.95
1994	7085.15	1108.9	2.61
1995	7414.63	1141.4	2.81
1996	7838.47	1176.75	2.93
1997	8332.35	1222.08	2.34
1998	8793.48	1263.15	1.55
1999	9353.5	1343.93	2.19
2000	9951.48	1426.63	3.38
2001	10286.2	1524.4	2.83
2002	10642.3	1639.9	1.59
2003	11142.2	1756.78	2.27
2004	11853.2	1860.4	2.68
2005	12622.9	1977.85	3.39
2006	13377.2	2093.35	3.23
2007	14028.7	2217.82	2.85
2008	14291.5	2380.97	3.84
2009	13973.7	2460.25	1.64
2010	14498.9	2552	1.64
2011	15075.7	2579.58	3.16

First, we are considering the impact of CPI and Government Expenses separately on GDP using linear equation, than we will consider the combined impact by forming a multi-linear equation. Using Ordinary Least Square Method we will calculate the t-statistic value, F-statistic value, R^2 value and adjusted R^2 value in order to conclude whether the model is a "good-fit" model or not.

Gross Domestic Product (GDP) and Consumer Price Index (CPI):

Estimation Equation:

LGDP = C(1) + C(2)*LCPI

Substituting coefficient:

LGDP = 9.696322038 - 0.6742101136*LCPI

The equation tells us that with one unit increase in CPI the GDP will decrease by 0.6742101136%.

NULL HYPOTHESIS: C (1) = 0

ALTERNATIVE HYPOTHESIS: C (1) ≠ 0

GDP and CPI are two of the most important aspects of a healthy economy. They directly affect each other. From the graph of LGDP vs. LCPI we can say that there is a negative correlation between GDP and CPI.
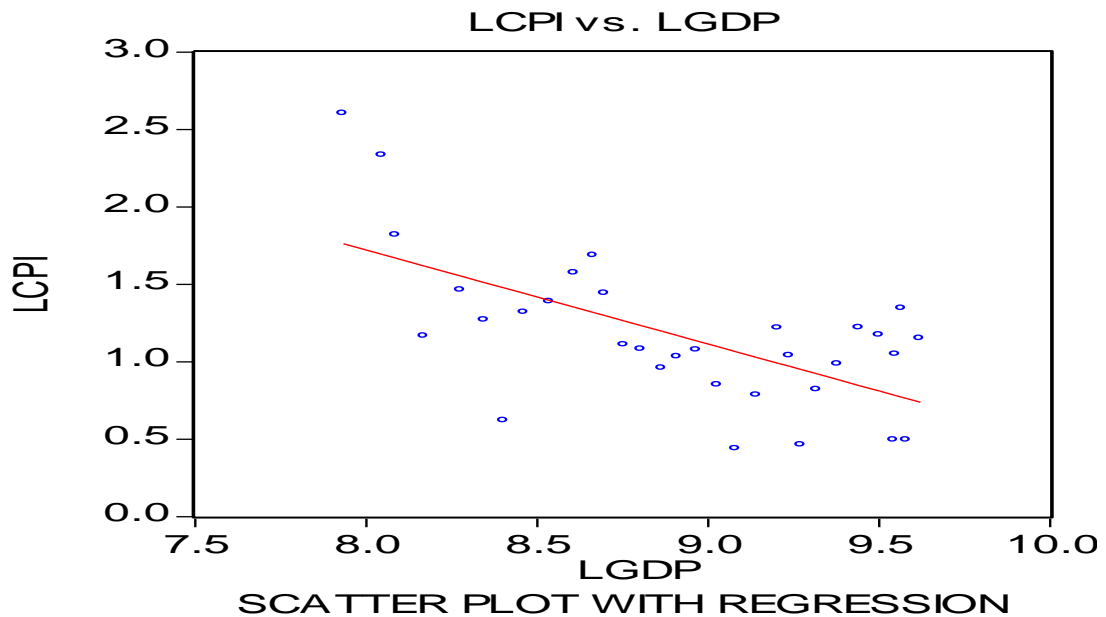
RESPONSE	CPI
R^2	0.409249
T-STATISTIC	-4.55
F-STATISTIC	20.7827

R^2 values indicate that the change in GDP is 40% explained by the explanatory variable CPI AND 60% by other variables.

Since, F-Statistic value is greater than the square of the t-statistic value we can say that this linear model is a good fit one.

From the graph of residual we can say that our $\sum e_i$ (residual) = 0 and which supports the notion of a good fit model.
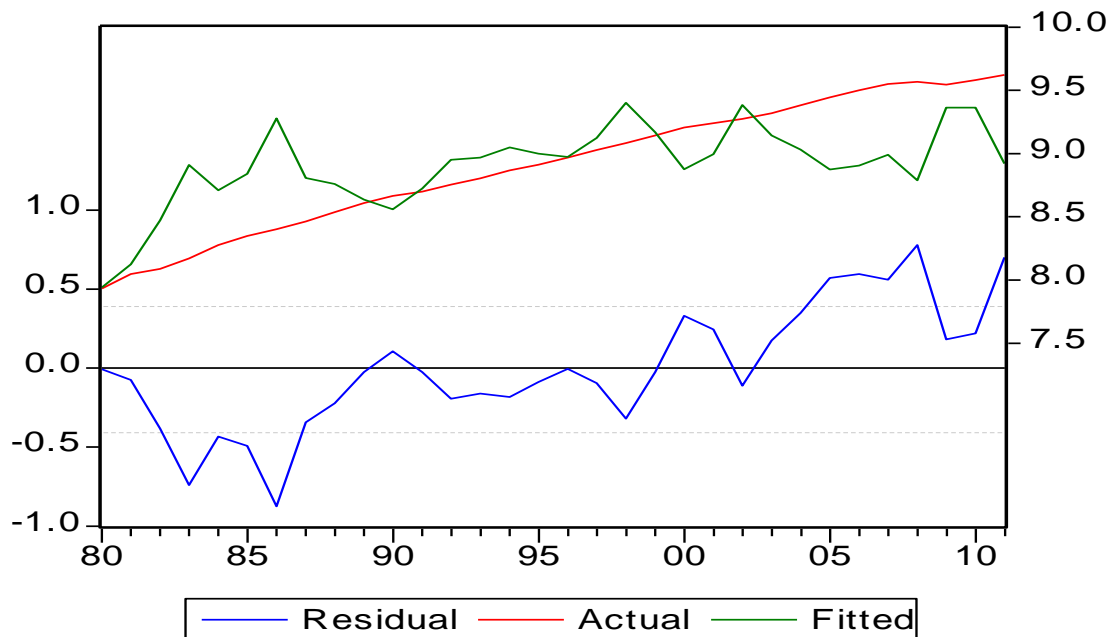
Gross Domestic Product(GDP) & Government Expenses(GEX):

Estimation Equation:

$LGDP = C(1) + C(2) * LGEX$

Substituting coefficient:

$LGDP = 5.558163974 - 0.619382749 * LGEX$

The equation tells us that with one unit increase in GEX the GDP will decrease by 0.619382749* billions.

NULL HYPOTHESIS: $C(1) = 0$

ALTERNATIVE HYPOTHESIS: $C(1) \neq 0$

It is evident from the graph that government spending and GDP are two of the most important aspects of a healthy economy. They directly affect each other. From the graph we can say that there is a positive correlation between GDP and government expenditure.

SCATTER PLOT WITH REGRESSSION
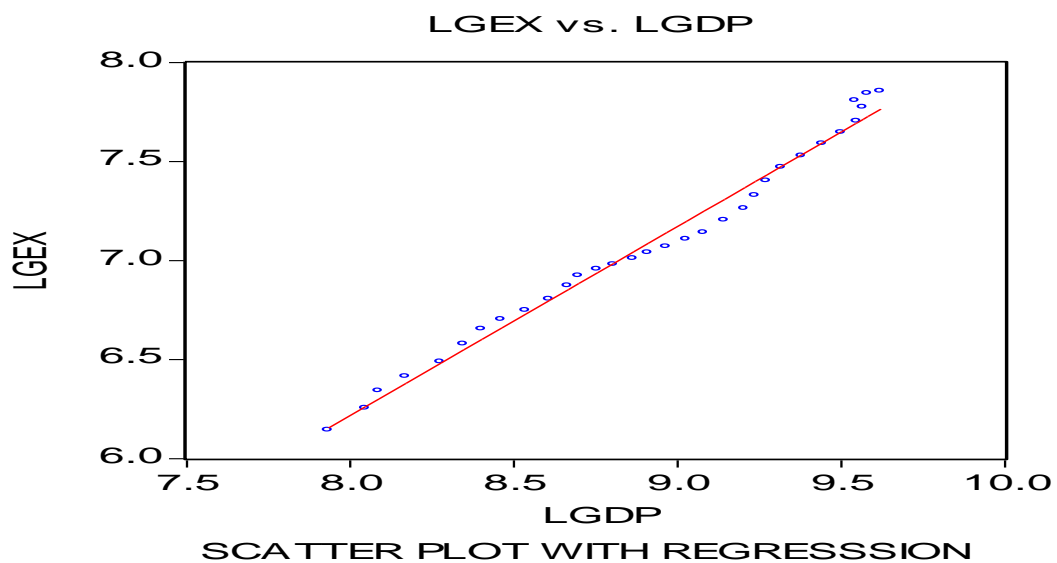
RESPONSE	GOVT. EXPENDITURE
R^2	.393435
T-STATISTIC	C=5.57 LGEX=-4.41
F-STATISTIC	19.45

R^2 values indicate that approximately 40% of the variation in the GDP is due to the explanatory variable Govt. Expenditure and remaining by other factors affecting GDP.

Since, F-Statistic value is greater than the square of the t-statistic value we can say that this linear model is a good fit one.
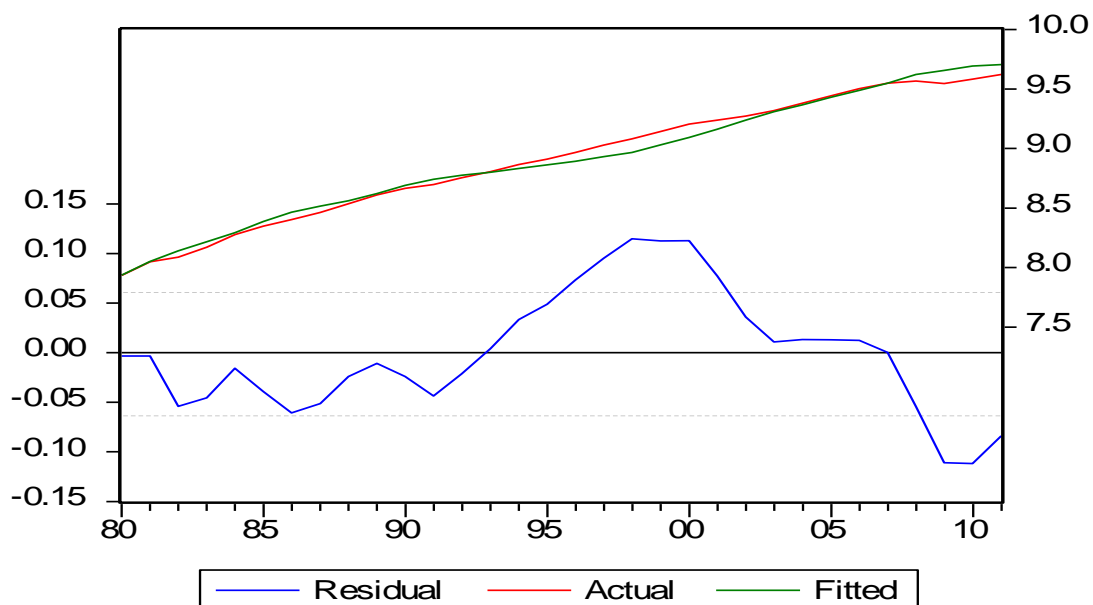
The above graph represents the variation in the residual. Here we can see that summation of the residual is not equal to zero but its near zero, therefore the model can be taken into consideration for the final results.

THE COMBINE EFFECT:

GROSS DOMESTIC PRODUCT, CONSUMER PRICE INDEX AND GOVERNMET EXPENDITURE

Now we are calculating the combined effect of Consumer Price Index and Government Expenditure on the Gross Domestic Product.

Estimation Equation:

LGDP = C (1) + C(2)*LCPI + C(3)*LGEX

Substituting coefficient:

LGDP = 8.917375572e-08 + 1.000000012*LCPI - 1.570650169e-08*LGEX

The equation implies the relationship between the dependent and explanatory variables. It implies that with 1 unit increase in CPI we see that GDP reduce by 1.000000022* % and with one unit increase in government expenditure, GDP will be reduced by 1.570650169e-08 billions.

The inflation can be traced through the variation in CPI.

NULL HYPOTHESIS: C (1) = 0

ALTERNATIVE HYPOTHESIS: C (1) $\neq$ 0

The graph below captures the trend of dependent and explanatory variables throughout the years 1980-2011.

We can see that GDP is increasing as Government expenditure is increasing, CPI has a lot of variation when CPI is high we can see that GDP in those years tend to fall sice the problem f inflation comes into picture and government is not prepared with ready solutions to tackle. Therefore, it sometimes gives ambiguous results.
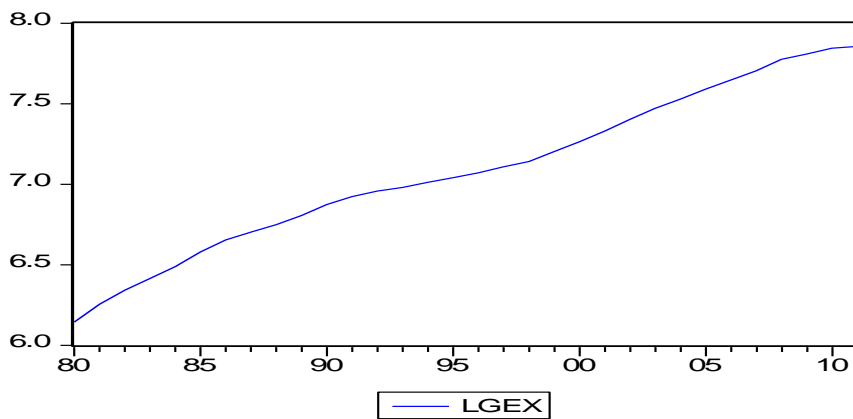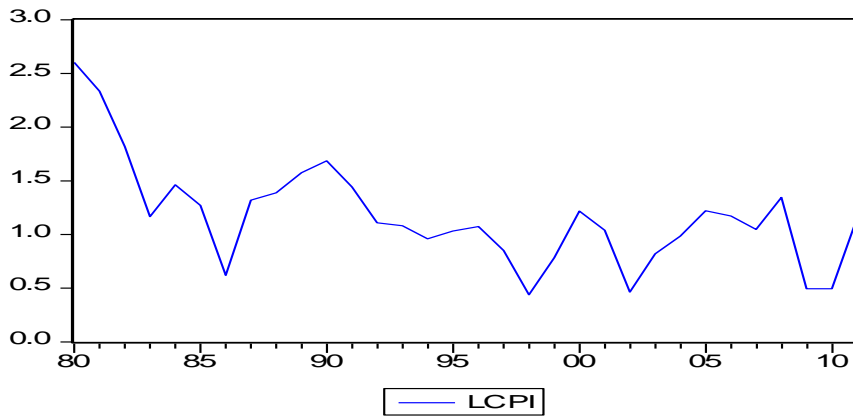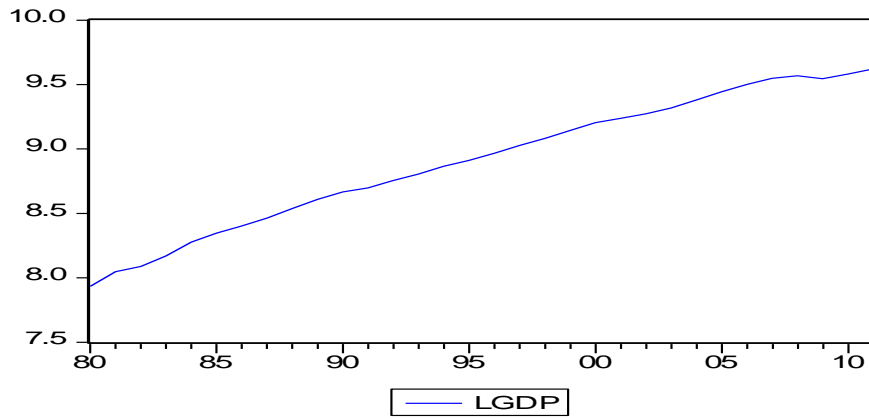
RESPONSE	CONSUMER PRICE INDEX	GOVT. EXPENDITURE
ADJUSTED R^2	0.986198	0.986198
T-STATISTIC	-0.999112	34.81774
F-STATISTIC	1036.090	1036.090

Adjusted R^2 values indicate that approximately 98% of the variation in the GDP is due to the explanatory variables i.e. Consumer Price Index and Govt. Expenditure and remaining by other factors affecting GDP.

Since, F-Statistic value is greater than the square of the t-statistic value we can say that this multi-linear model is a good fit one.
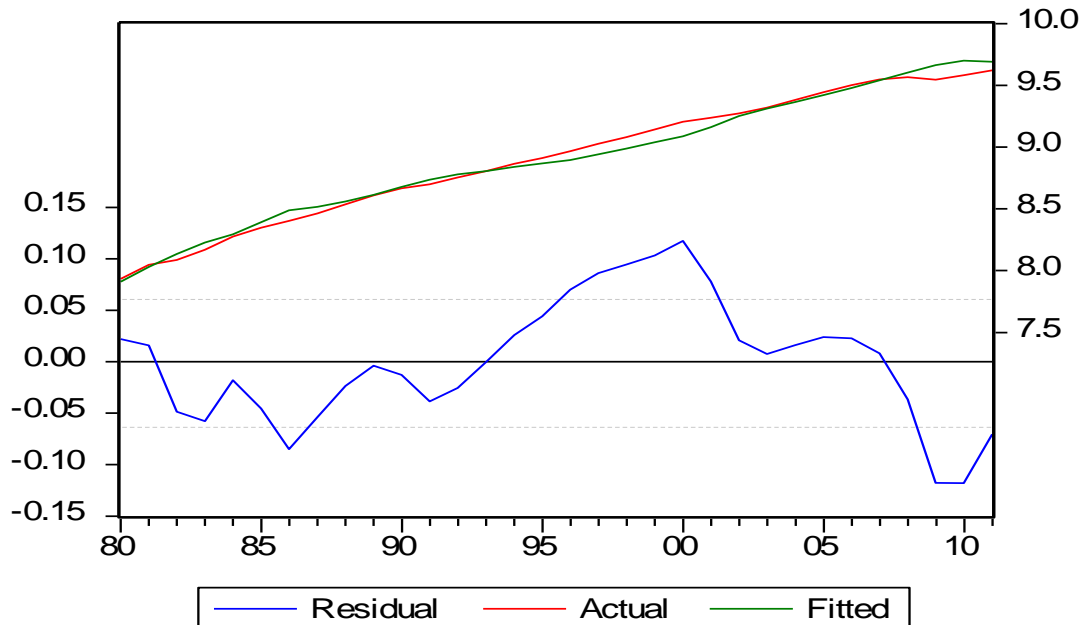
The summation of the residuals is more or less zero & since we know that ∑ei=0 or E(residual)=0 hence we can say that this model is a good fit one.

Use of E-views for making graphs and estimation of equations.

Use of Stata(IFS software) for the required data.

Commands used:

 genr lgdp=log(GDP)

genr lcpi=log(CPI)

genr lgex=log(gex)

V. CONCLUSION

The fiscal policy has the power to affect the level of overall demand in the economy. The primary objective of fiscal policy is to maintain the price stability, economic growth and employment of the country. Hence an appropriate fiscal policy can help in combating rising inflation rates. Inflation generally refers to an increase in the average price level in the economy.

As taken above in the paper, CPI is a measure of inflation and government expenditure is taken as a variable of the fiscal policy. We have seen that, CPI and GDP directly affect each other as there is a negative correlation between them. GDP and government expenditure also directly affect each other though, there lies positive correlation between them.

In essence, policies designed to control inflation must have a quick impact, implying huge reductions in government expenditures, large reductions in taxes, huge amounts of public borrowing, etc. The size of a country's economy, the relative sizes of its domestic and external economies, the historical path through which an inflationary situation has come to hold are all important aspects of the situation. Also important is whether the chief source of inflation is in the labour market and/or goods market or in the money supply. The moral standards of the people, the level of corruption, the government's credibility and the degree of the people's trust in government too are forces to be reckoned with.

ACKNOWLEDGEMENT

REFERENCES

[1] Evaluating Predictive Densities of US Output Growth and Inflation in a Large Macroeconomic Data Set (Authors: Barbara Rossi, Tatevik Sehkposyan)

[2] "Laissez-Faire". U-s-history.com. Retrieved 1 March 2011.

[3] Jump up^ Weil, David N. (2008). "Fiscal Policy". In David R. Henderson (ed.). Concise Encyclopedia of Economics (2nd Ed.). Indianapolis: Library of Economics and Liberty. ISBN 978-0865976658.OCLC 237794267.

[4] Jump up^ "Fiscal Policy". Encyclopedia Britannica (Encyclopedia Britannica Online ed.). 2011. Retrieved 23 Feb 2011.

[5] Effects of inflation uncertainty in the US (Authors: Caglayan, Mustafa; Kandemir, Ozge; Mouratidis, Kostas)