CHAPTER I

INTRODUCTION

1.1. Background of the Study

Fiscal policy plays a crucial role in macroeconomics along with monetary policy. Fiscal policy mainly focuses on government taxation and expenditure (Todaro & Smith, 2012). Prudent government spending, through an efficient allocation of its resources to the different sectors of the economy, translates economic resources into an inclusive and sustainable growth pattern, which serves as a driver for eradicating poverty and inequality within society (Akanbi, 2014). Hence, the government expenditure is regarded as one of the important parts of fiscal instrument to influence the economy. It remains an important demand management tool and, if well-managed, it could put an economy on a long-term sustainable growth and development trajectory (Akanbi, 2014). Additionally, public expenditure is an important instrument of the state policy to make control over the economy of the state (Sharma, 1999). But the debate and controversies about the factors that determine government expenditure and role of fiscal policy on economic growth is being continued among the researchers and policy makers.

The government spending has become one of the key issues in public economics. There are different classifications of determinants of government spending. The controversies among researchers has been continued in the field of Public economics about the estimating determinants of government expenditure. The demonstration effect influences the expenditure outline of a country (Musgrave & Musgrave, 1979). On the other hand, the government expenditures are driven not only by its income, but also by the conception of the role of the state (Martin & Lewis, 1956) Likewise, the unemployment also affects government spending in the short-run (Lybeck, 1986). On the other side, the public expenditure is determined by income as well as economic, demographic, social and institutional variables (Pastor, 1987). Likewise, the political factors are also considered to affect government spending in developing countries (Tayeh & Mustafa, 2011).

There is also a long debate among researchers and policy makers on the impact and contribution of government expenditure on economic growth. The relationship between government expenditure and economic growth has been discussed since classical school of economics through modern economic thoughts. Some studies concluded that government expenditure has negative impact on GDP, some show positive impact and some show neutral impact.

Nepalese economy, despite the presence of great opportunities for higher growth rate through development of potential sectors of the economy including agriculture, tourism, forestry mines, and human resources, has been perpetually bearing the challenge of low economic growth rate (MoF, 2015/16). Therefore, to formulate the effective policy that encouraging economic growth. The study of the government expenditure is required. So it is the one of the important instrument that government may use in order to influence the economy.

1.2 Statement of the Problem

The government expenditure has been regarded as one of the important parts of fiscal instruments to influence the economy. Most of the economists, except classical and new classical economists, argue that the increase in the government expenditure will have multiplier effect on output. However, for over the last three decades, the total government expenditure in terms of both capital and recurrent expenditures has been continuing to rise in Nepal, but the economic growth has not been that much satisfactory (MoF, 2015/16).

Promulgation of constitution from Constitutional Assembly in 2015 indicates the ending of political transition in Nepal and opens the door to use the nation's energy on economic development. In such a situation, the government expenditure might be the hot issue for country for upcoming years. Therefore, the study on government expenditure in Nepalese public economics sector, has been important. In literature of Nepalese public economics sector, there have been pretty much study in the structure and pattern of government expenditure, but there has not been quantitative studies on the factors that determining the government expenditure in Nepal.

In such a background, do only some economic factors like GDP, price level, foreign assistance, affect the government expenditure or some other factors like political instability, demographic factor has also significantly affect government expenditure? Similarly this subject, the second important issue is to empirically check the causality between government expenditure growth and economic growth in Nepal. Some empirical literatures show the contradictory conclusion on this matter. And this subject may raise the next issue: if government expenditure cause economic growth, how strongly does it do? Therefore, the research questions of the study are as given below.

a. What are the factors that determine the government expenditure in Nepal?
b. What is the direction of influence (causal relationship) between government expenditure growth and economic growth in Nepal?
c. How strongly does the government expenditure cause economic growth in Nepal?

1.3 Objectives of the Study

The general objectives of the study is to analyze determinants of government expenditure and its relation with national income in Nepal. However, the specific objectives are as given below.

a. To analyze the determinants of government expenditure in Nepal,
b. To examine the causality between economic growth and government expenditure in Nepal, and
c. To find the influence of government expenditure on GDP growth in Nepal.

1.4 Hypothesis of the Study

As there has three objectives of the study, the hypothesis for each objectives are as below.

a. The hypothesis for the study on first objective is as below.

Null Hypothesis (H_0): There is no significant relationship between the government expenditure and its determinants.

Alternative Hypothesis (H_1): There is significant relationship between the government expenditure and its determinants.

b. The hypothesis for the study on second objective is as below.

Null Hypothesis (H_0): There is no significant causal relationship between the government expenditure and economic growth.

Alternative Hypothesis (H_1): There is significant causal relationship between the government expenditure and economic growth.

c. The hypothesis for third objective as below.

Null Hypothesis (H_0): There is no significant influence of government expenditure on economic growth in Nepal.

Alternative Hypothesis (H_1): There is significant influence of government expenditure on economic growth in Nepal.

1.5 Significance of the Study

After the promulgation of constitution from Constitutional Assembly in 2015, the political transition in the country is driven towards conclusion. And it also opens the door to spend the resources of country for economic development. In such a context, the government expenditure will be the hot issue for upcoming years. Therefore, the study on government expenditure, in Nepalese public economics sector is important. In literature of Nepalese public economics sector pretty much study in the structure and pattern of government expenditure has been done but no any quantitative study is done to determine the government expenditure in Nepal.

Government expenditure remains an important demand management tool, and it could put an economy on a long-term sustainable growth and development trajectory, if well-managed (Akanbi, 2014). Therefore, the study on government expenditure determinants and its relation with national income will be helpful to give important sight to policymaker, researcher, academician, students, and other stakeholders.

The study give an important conclusion that the government expenditure elasticity with respect to GDP in Nepal is less than one. It means that, if the government expenditure

increases by one percent, Nepal's National income increases by less than one perccent. Therefore, it is the clearly indicated that, government of Nepal need to lunch the private investment friendly policy in order to achieve the target of increase in national income of the country rather to increase government expenditure only.

As there is controversy about the determinants and impacts of government expenditure since the era of classical economist, this study is going to present the situation of Nepal to the economists and policy maker.

1.6 Limitations of the Study

The main objectives of this study is to study fiscal issues. There are two key components of fiscal issue: expenditure side and receipt side along with other different issues that are either debt related, budget deficit related or else. However, this study has only considering the expenditure side of fiscal issue. This study does not study the revenue side of fiscal issue.

Even though the study has addresses the expenditure side, it is unable to study the total government expenditure separately on different subheads like educational expenditures, health expenditures, defense expenses and so on. Even the recurrent expenses and capital expenditure is not separate in this study. It would have been more significant if the study is conducted by separating total government expenditure into capital and current expenditure.

The higher government expenditure relative to GDP tend to be associated with lower efficiency in the relative sector as concluded by Hauner & Kyobe (2008). It would be better to study on the determinants of government efficiency in Nepal then its growth determinants. But this study doesn't study about that. However, that may be one of the obvious genuine research question in the zone of public economics.

To analyze the determinants of government expenditure in Nepal, only economic, demographic and political variables are considered as an explanatory variables. It would be quite better if the study undertakes the institutional variable also as an explanatory variable.

This study only check the causal relation between government expenditure and economic growth. It would have been better and reasonable if this study had checked the causality relation between the government expenditure and other economic variables such as money supply, inflation, foreign assistance and others.

The study calculates the elasticity of government expenditure with respect to GDP, but it does not calculate the elasticity of total private investment with respect to GDP. It would have been better if the study had also calculated the private investment elasticity with respect to GDP. If it had been done, it would had been easy to know whether private investment elasticity in Nepal is unitary or greater than unitary or less than unitary.

1.7 Organization of the Study

The study has been divided into seven chapters. The first chapter is introduction that deals with background of the study, statement of the problem, objectives of the study, significance of the study, limitations of the study and finally organization of the study. The second chapter is review of literature. It includes the theoretical review, the review of empirical study and the research gap. The third chapter is research methodology. It includes research design, nature and sources of data, specification of tools and methods of data analysis, model specification, and variable specification. The fourth chapter is determinants of government expenditure growth in Nepal. The fifth chapter is causality test between government expenditure growth and economic growth in Nepal. Similarly, the sixth chapter is impact of government expenditure on GDP growth in Nepal. And finally seventh chapter is summary, conclusion and recommendation.

CHAPTER II

REVIEW OF LITERATURE

2.1 Theoretical Review

There are many theories on government expenditure. Classical economists advocated for "laissez-faire" and proclaimed the idea of free market where the profit motive was the main cause of economic growth. Some economists believe on moderate level of government intervention is needed to track the economy smoothly. Keynesian economists assert that free markets have no self-balancing mechanisms to lead full employment. They criticize the classical economists believes of long run by saying that "we are all dead in the long run", and put forward the idea of 'government intervention' for short run cure of the economy. As there were different theories forwarded by different economists in different period, the brief examinations of these theories are as below.

2.1.1 Classical Approach

Smith (1776) suggested that economy where the profit motive is the main cause of economic growth. The classical economists believed on self-adjusting full employment economy. Therefore, classical economists proclaimed the idea of free markets. They were argued that the government should limit their activities to; Defense against foreign aggression, maintenance of internal peace and order and public development work. All other functions besides these were considered as unjust and wasteful.

Therefore, classical economists has not any clear cut approach on the determinants of government expenditure. The general opinion that the level and structure of public expenditure is determined politically and thus it is beyond the economist's proper orbit of the study (Weber and Henderson, 1947).

2.1.2 Keynesian Approach

Keynes (1936) criticized the classical economists believes of long run by saying that "we are all dead in the long run". And put forward the idea of 'government intervention' to

short term cure. Therefore, Keynesian economists assert that free markets have no self-balancing mechanisms that lead to full employment.

Keynesian economists argued that the employment depends upon effective demand and decrease in effective demand causes unemployment in the economy. They also put forward the view that the presence of trade union affects the wages and price level. They simply suggest the idea that at the time of depression the government expenditure should be increased (have a deficit budget) but at the period of inflation the government expenditure should reduce (have a surplus budget).

In conclusion, Keynesian economist advocate that the government intervention is essential to achieve full employment and price stability. They believe the public sector expenditure is exogenously determined and is an instrument for economic growth.

2.1.3 Neo-classical Approach

Neo-classical economists argued that the government expenditure shrink the role of private sector by crowding-out effect. The neo-classical economist, Solow (1956), on his growth model entitled, 'A Contribution to the Theory of Economic Growth' concluded that the fiscal policy does not have any effect on the growth of output and the economic growth in the long run mainly depends upon the increase in the population growth and the technological progress. However, in extended Solow model, the human capital has an important input to growth (Mankiw, Romer & Weil, 1992).

2.1.4 Endogenous Growth Approach

The literature on endogenous growth theory predicts that fiscal policy changes can affect the long-term growth rate by influencing the determinants of growth (Hjerppe, 2006). Public policies can affect both human capital formation and technological progress and therefore public policies can also influence economic growth (King and Rebelo, 1990).

2.1.5 Central Limit Hypothesis

Clark uses on the inter war data of several western countries to analysis the relation between public expenditure and inflation, and argued that inflation inevitably occurs when

government expenditure financed out of taxes and other receipts twenty-five percent of aggregate national income.

Colin argues by supporting to Clark's statement that when the government share of aggregate economic activity reaches the critical limit of twenty-five percent, the income earners are also affected by reduced incentives due to high tax incidence that their productivity suffers.

2.1.6 Peacock and Wiseman Approach

Peacock and Wiseman (1961) concluded that the governments like to spend more money, that citizens do not like to pay more taxes, and that governments need to pay some attention to the wishes of their citizens. The main argument was that the public expenditure does not increase in a smooth and continuous manner, but in jerks or Step-like fashion.

2.1.7 Baumol's Approach

Baumol (1986) developed the productivity lag hypothesis, means productivity differentials of private and public sector. It is also called "Baumol's Disease". The expansion in public expenditure is made, when the economy is not automatically stabilized.

2.1.8 Stanley Please Hypothesis

Please dealt that the cause and sources of increasing government expenditure in least developed countries with its effectiveness and overall impact on economy (Acharya, 2016). According to Stanley public expenditure especially for consumption is driven by available resources rather than the other way around. His question is, is increasing government saving by taxation is national saving. But increasing in tax rate that implies to more: such expenditure is not only increased in investment but also increased in government consumption. So, please effect is relevant in developing countries (Acharya, 2016).

2.1.9 Rahn Curve

There are certain sectors like national defense, infrastructure and court that can be better handled only by the government sector. But, higher government expenditure might have

the negative impact on the economy through the negative externality in the private expenditure and through crowding out effect. Thus, Per the Rahn Curve 20 percent of the Public expenditure of the GDP is taken as the optimum level of the public expenditure (Acharya, 2016).

2.2 Empirical Review

2.2.1 International Context

Hauner and Kyobe (2008) compiled the large cross-country panel dataset of public sector performance and efficiency, encompassing 114 countries on all income levels from 1980 to 2006, with about 1,800 country-year observations for the education sector and about 900 observations for health. Study regressed these indicators on potential economic, institutional, demographic, and geographic determinants. The most resounding conclusion had been that higher government expenditure relative to GDP tends to be associated with lower efficiency in the respective sector. Moreover, the study find that richer countries exhibit better public sector performance and efficiency, and that institutional and demographic factors also play a significant role.

Liu, Hus and Younis (2008) examined the causal relationship between GDP and public expenditure for United States of America using data from the period 1947-2002. The causality results revealed that total government expenditure causes growth of GDP. On the other hand, growth of GDP does not cause expansion of government expenditure. Moreover, the estimation results indicated that public expenditure raises the US economic growth.

Ighodaro and Okiakhi (2010) used time series data for the period 1961 to 2007 and applied Co-integration Test and Granger Causality test to examine the relationship between government expenditure and economic growth in Nigeria. The results revealed negative impact of government expenditure on economic growth in Nigeria.

Tayeh and Mustafa (2011) analyzed the factors that affect the Jordanian total government expenditures. The study employed a specific methodology to assess the nature of the relationship between Jordanian public spending and its determinants. A main result of this

research was that population, unemployment and inflation rates are significantly related to the public expenditures. This equation was as follows: GEG = F (UNEM, IN, GEMLF, POP, GE (-1), BDGDP, EX, IM, IMF); where: GEG= Government Expenditure growth, UNEM= Unemployment, IN= Inflation rate, GEMLF= Government employees to labor force, POP = Population GE (-1) = Government Expenditure lag one year, BDGDP = Budget deficit to Gross Domestic Product, EX= Export, IM= Import, IMF= Dummy variable indicating International Monitory Fund intervention.

Okafor and Eiya (2011) studied to ascertain the growth in government expenditure and determine the factors responsible for the growth by examined four determinants of growth in public expenditure: inflation, public debt, tax revenue and population. The data were examined by ordinary least square regression analysis and the result indicate that inflation has a negative relation with total government expenditure, population has positive relationship with total government expenditure, and tax revenue has significance positive relationship with total government expenditure.

Akanbi (2014) empirically examined the pattern and drivers of government expenditure with specific reference to capital and recurrent expenditure in Nigeria. The study employs a public choice framework and the model is estimated with time-series data from 1974 to 2012, using the Johansen estimation technique. The results show that capital and recurrent expenditure are resilient to shocks in total government spending and, similarly, total government expenditure is found to be resilient to shocks in capital and recurrent spending. However, whereas total and capital expenditure tend to be resilient to shocks in government revenue, recurrent expenditure was found to be significantly affected by shocks in government revenue.

Gisore, Kiprop, Kalio, Ochieng, and Kibet (2014) investigated empirically how government expenditure contributes to economic growth in East Africa. Hence this study was focused on disaggregated expenditure over the period from 1980 to 2010. The objective of the study was to establish these expenditures that have effects on growth using balanced panel fixed effect model. Employing LLC test, this study tested for panel unit root and found that only GDP was stationary at level. The findings showed that

expenditures on health and defense to be positive and statistically significant effect on growth. In contrast, education and agriculture expenditure were insignificant.

Iheanacho (2016) examined the long and short run relationship between public expenditure and economic growth in Nigeria over the period of 1986-2014, using Johansen co-integration and error correction approach. Two components of public sector expenditure and gross capital formation ratio are derived from Cobb Douglas production function. The result shows recurrent expenditure is the major driver of economic growth but and there was negative and significant long run effect of capital expenditure on economic growth in Nigeria.

2.2.2 Nepalese Context

Basnet (1983) studied the pattern of resources gap and analyzed the trend of public expenditure in Nepal by using data set from 1964/65 to 1980/81. It has used the descriptive analysis. The major conclusion of the research is the growth rate of the regular expenditure is higher than the growth rate of the development expenditure, growth rate of total government expenditure is higher than the growth rate of the total government revenue and there is increasing trend in the budget deficit.

Kanel (1988) examined the growth, pattern and impact of Public expenditure on the economic growth of Nepal by using the data from 1965 to 1981 to use simple Ordinary Least Square (OLS) technique to find out the relationship between the variables and used R^2 to check the significance of the model. The major findings of the research are major expansion of the public expenditure had taken place only after 1970, Over the study period development expenditure grows faster than the recurrent expenditure and elasticity coefficient for total development expenditure, economic services and social services with respect to per capita income being more than unity. At the same time, it found that the elasticity coefficient for the public investment being less than unity.

Rana (1988) analyzed the fiscal system of Nepal with the objectives to find out the trend in revenue, expenditure and the budget deficit in Nepalese economy by using the data between the period 1964/65 to 1986/87. It had used only the descriptive analysis. The major

conclusions were that, there has been the constant increasing trend in revenue and expenditure. The trend of increasing in regular and development expenditure have created a continuous deficit that has compelled the government to rely excessively upon foreign aid. Finally, it found that the budget deficit is also increasing over the period.

Khadka (1998) investigated the role and trend of public expenditure and problem of resource mobilization in Nepalese economy by using the data from 1974/75 to 1994/95. It has used log linear regression model to analyze the data, t- test to check the significance of the individual coefficients, and R^2 to check the overall significance of the model. It found that there is positive and significant relationship between total expenditure and GDP and regular expenditure and total government revenue. However, the relationship between development expenditure and total government revenue and foreign aid is weak.

Upreti (2002) studied the trend, pattern and impact of public expenditure on economic growth in Nepal by using Ordinary Least Square (OLS) techniques to find the relationship among the variables and R^2 has used to check the significance of the model, using the data set from 1974/75 to 1991/92. The major findings of research are the growth of public expenditure has taken place rapidly than the growth of GDP. The growth rate of the development expenditure is decreasing over time but the growth rate of the recurrent expenditure is increasing.

Shrestha (2009) analyzed the relationship between the various Composition of Public Expenditure and Economic Growth in Nepal with the objectives to determine the effect of the various composition of public expenditure on economic growth by using time series model with the application of the endogenous growth model. It has applied Augmented Dickey Fuller (ADF) technique to test the unit root of the variables and run the OLS technique. The major findings of the research are so long as productivity of the expenditure is higher than the interest rate, increase in expenditure will increase the growth rate in an economy and physical infrastructure plays the very important role to enhance economic growth by promoting private market production.

Koirala (2010) examined the impact of various measure of the fiscal policy on the economic growth in Nepal with employing neoclassical (also called the exogenous growth

model) and endogenous growth models that bring understanding for the selection of estimable models and hence established the long run relationship between fiscal policy variables and economic growth. The study categorized government expenditure into productive and unproductive and tax revenue into distortionary and non-distortionary. The key finding of the study had been fiscal policy matter for economic growth. The results provide some supports for the theoretical of endogenous growth model that the productive expenditure components of both the recurrent and capital expenditure of the government have positive impact on growth via productivity enhancement effect of the human capital and capital stock.

Aryal (2011) studied the trend, structure and effect of the public expenditure in economic growth of Nepal with the major objectives to examine the trend and structure of public expenditure, to show the relationship between economic growth and GDP growth rate and to find out the various factors that influence the economic growth. It has used the data set for 23 years and used the simple OLS with two variables that are public expenditures and economic growth and used R^2 technique to check the significance of the model and used t-test for the significance of the individual coefficients. The major findings are the share of public expenditure on the GDP is increasing over time, the share of current expenditure in the total expenditure is higher than the capital expenditure on the total expenditure and there is not any significant relationship between the public expenditure and economic growth.

Sharma (2013) analyzed the effect of public expenditure on the economic growth of Nepal with the major objectives to find the trend and pattern of the public expenditure and its effect on the economic growth of Nepal by using the simple OLS technique and checked autocorrelation to find the relationship between public expenditure and economic growth. The major findings of the research are share of development expenditure over total expenditure is decreasing over time, share of current expenditure over total expenditure is increasing over time and there is very low correlation between the government expenditure and economic growth in Nepal.

Bhusal (2014) examined the relationship between the government spending and economic growth in Nepal with the objectives to test the Wagnerian hypothesis in Nepalese economy,

to check the causality between the economic growth and government spending and to check the long run relationship between them by using the data set for the period of 1975-2012. It has used Augmented Dickey Fuller (ADF) test to check the unit root of the variable, and Johanson co-integration test and error correction model (ECM) are used to check the long run and short run relationship between the variables respectively, and Granger Causality test is used to check the direction of causality among the variables. The findings of the research are Wagnerian hypothesis do not exists in Nepalese economy, there exists both short run and long run relationship between the government spending and economic growth in Nepal and Granger causality test shows that Government Spending Granger Causes economic growth but economic growth does not Granger causes government spending.

Acharya (2016) investigated the relationship between public expenditure and economic growth in Nepal with the objectives to examine the nature and trend of the public expenditure and economic growth, to analyze the long run and short run relationship between public expenditure and economic growth, and to analyze the Causal relationship between the public expenditure and economic growth in Nepal by using the data set for the period of the (1974/75-2014/15). It has used real GDP is taken as the dependent variable and government expenditure is taken as the explanatory variable to find out the relationship between public expenditure and economic growth. Average annual rainfall (RF), openness of trade (OT) and interest rate (INT) has used as the control variable. The Study has used the ARDL and ECM model to check the existence of the long-run and short-run relationship among economic growth and public expenditure respectively after checking the unit root of the concerned variables. It has employed the CUSUM and CUSUM of square to test the stability of long run coefficient in the model and used the LM test to check the serial correlation in the model. And it has used Breusch- Pagan-Godfrey test to check the existence of the heteroscedasticity and employed normality test to check the normality of the data. Granger Causality test has used to check the causal relationship between the public expenditure and economic growth in the country. The research conclude that there is increasing trend and nature of the public expenditure and GDP throughout the study period, and there is positive relationship and bi-directional causality between the public expenditure and economic growth in Nepal.

2.3 Research Gap

By studying above literatures, it is concluded that there has not been any empirical study on the determinants of government expenditure in Nepal. Though, there are been some literatures in the international arena. In national context, most of the studies on this field are like 'nature and trend of public expenditure', 'relationship between public expenditure on economic growth' and so on. But no any empirical study on the determinants of government expenditure is done in Nepal.

Some study on causality test between government expenditure growth and economic growth are conducted but the result seems controversy in Nepalese literature. Some studies show there is bilateral causality between government expenditure growth and economic growth and some show there is unilateral causality between them. For instance, Bhusal (2014) concluded there is unidirectional causality between government expenditure and economic growth. That is, government spending does causes economic growth but economic growth does not Granger causes government spending growth. But, Acharya (2016) concluded there is bi-directional causality between the public expenditure and economic growth in Nepal. Hence, in order to resolve the existing controversy this study rechecks the direction of causality between them.

Though there are some studies on the relationship between the government expenditure and economic growth, till now no study is conduced to check the elasticity of government expenditure with respect the economic growth in Nepal. Hence, this study checks the government expenditure elasticity with respect to economic growth in Nepal by employing exponential regression model.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Conceptual Framework

This thesis uses the following conceptual framework.

Figure: 3.1 A Conceptual Framework for Government Expenditure and Economic Growth

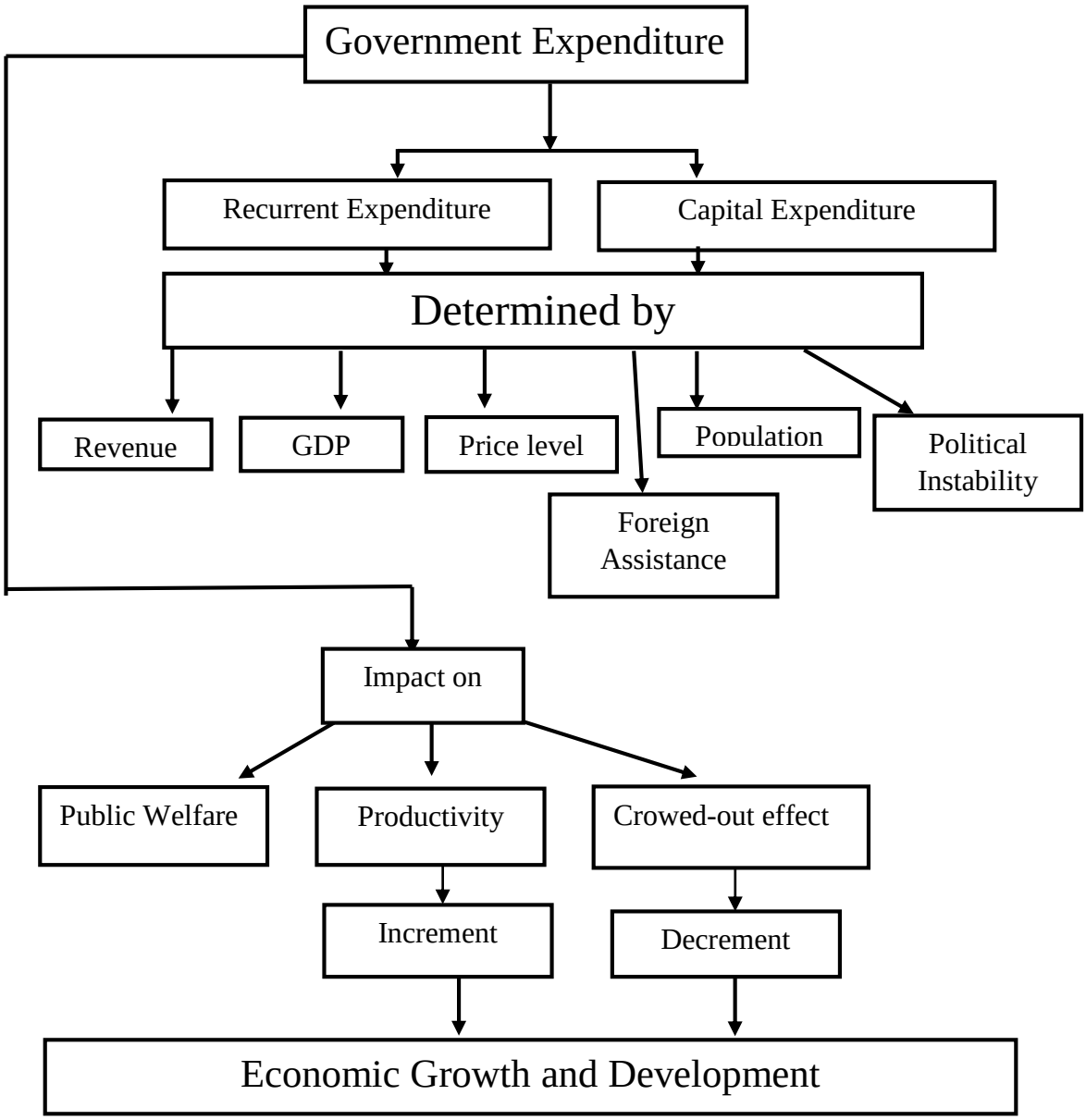


Figure 3.1 shows that the broad conceptual framework for the relationship between government expenditure and economic growth. The total government expenditure, including both recurrent and capital expenditure, is mainly determined by government revenue, gross domestic product, price level, foreign assistance, population and political instability. On the other hand, it has impact on public welfare, productivity and crowd-out effect on private investment. Public welfare is an end in itself. The effect on productivity through the government expenditure on education, health, infrastructure, etc. is positively connected with economic growth and development. But, however, if government expenditure crowed out private investment, it obviously hampers the economic growth and development of the nation. On the basis of this broad conceptual framework, this empirical study has been undertaken.

3.2 Research Design

The main objective of the thesis is to empirically analyze the determinants of government expenditure growth and its causal relationship with national income in Nepal by employing econometric tools.

Firstly, to analyze the determinants of government expenditure growth, this research study has used least square multiple regression model. The real government expenditure growth is used as an independent variable. The explanatory variables are specified by considering economic, demographic and political factors. As economic factors, four variables: real GDP, real tax receipt, inflation, and foreign assistance have been taken. Similarly, total population growth is used as a demographic variable and political instability as a political factor. The frequency of change in government is used as a proxy of political instability and it is incorporated in the regression model as a dummy variable. In such a way there are, in total, six explanatory variables to run the multiple regression model.

Secondly, the causal relationship between government expenditure growth and economic growth is examined by using Granger causality test. And finally it is attempted to find the degree of impact of government expenditure on national income by employing the log-linear regression model.

3.3 Nature and Sources of Data

The nature of data are secondary, covering the period from FY 1974/75 to 2016/17. Secondary data have been gathered from different publications of Economic Survey published by Ministry of Finance (MoF), Quarterly Economic Bulletin of Nepal Rastra Bank (NRB), and different publications from Central Bureau of Statistics (CBS).

3.4 Specification of Tools and Methods of Data Analysis

To analyze the determinants of government expenditure growth, it has used least square multiple regression model.

To examine the causality between GDP and government expenditures the Granger Causality test is conducted.

The government expenditure elasticity with respect to national income is calculated by using log linear regression model.

R^2 test, F-test and t-test is done to test overall significance of model and the significance of coefficient respectively.

3.4.1 Test of Stationary

Since empirical analysis is based on time series data, the underlying time series should be stationary. it is essential to test the stationary. There are several methods to test of stationary, such as, graphical analysis, the correlogram test, and unit root test. However, the study uses unit root test as it is quite popular. Again there are various methods of testing unit root. But this study uses Augmented Dickey Fuller (ADF) test for the purpose.

$$\Delta Y_t = \alpha_1 + \gamma_i Y_{t-1} + \sum_{i=1}^{k} c_i \ \Delta Y_{t-i} + e_t \quad \ldots\ldots (1)$$

In equations (1) above the series of interest is Y_t . The symbol Δ indicates the first difference of the seriesY_t, k is the number of lagged variables that are used to ensure the error term e is white noise.

The optimal number of lags has determined by the Schwarz Information Criterion (SIC) for the significance of the estimated coefficients.

The ADF techniques tests the null hypothesis $\gamma_i = 0$, against the alternative hypothesis $\gamma_i < 0$. Rejection of the null hypothesis is an indication that the series Y_t is stationary. In above equation (1), the alternative hypothesis indicates the series is a mean-stationary.

3.4.2 Testing the Overall Significance of a Multiple Regression: F-Test

To test the overall significance of multiple regression, the null hypothesis that all coefficients are jointly zero. This joint hypothesis can be tested by the analysis of variance (ANOVA) technique.

Given the K variables in the models:

$Y_i = \beta_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots + \beta_k X_k + u_i$ ……. (1)

Null Hypothesis: All coefficients are simultaneously zero. (i.e., $\beta_1 = \beta_2 = \beta_3 = \ldots = \beta_k = 0$)

And F test is computed by:

$$F = \frac{ESS/DF}{RSS/DF} = \frac{ESS/(k-1)}{RSS/(n-k)}$$

If $F > F_\alpha$ (k-1, n-k) reject null hypothesis; otherwise not. Where, F_α (k-1, n-k) critical value of F at α level of significance. Alternatively, if the p-value of F is sufficiently low, we can reject hypothesis. It means that all coefficients are not simultaneously zero or the multiple regression is significance.

3.5 Model Specification

a. To analysis of determinants of government expenditure growth following regression model is used.

RGEG = f (RGDPG, Inflation, RTRG, POPG, RFAG, PI)

Or, $RGEG_i = \beta_0 + \beta_1 RGDPG_i + \beta_2 Inflation_i + \beta_3 RTRG_i + \beta_4 POPG_i + \beta_5 RFAG_i + \beta_6 PI_i + u_i$ ……. (1)

Where, RGEG = Real Total Government Expenditure Growth,

RGDPG = Real Total Gross Domestic Product Growth,

RTRG = Real Total Revenue Growth,

POPG = Population Growth,

RFAG = Real Foreign Assistance Growth

PI = Political Instability,

u_i = Error Term, and

β_i = Coefficients

b. To examine the causality between government expenditure growth and GDP growth, following pair wise Granger Causality model has been used.

$$RGDPG_t = \sum_{i=1}^{n} \alpha_i RGEG_{t-i} + \sum_{j=i}^{n} \beta_j RGDPG_{t-j} + u_{1t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$RGEG_t = \sum_{i=1}^{n} \gamma_i RGEG_{t-i} + \sum_{j=i}^{n} \delta_j RGDPG_{t-j} + u_{2t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where, RGEG = Real Total Government Expenditure Growth,

RGDPG = Real Total Gross Domestic Product Growth

α, β, γ and γ are parameters,

u = error term, and

t= fiscal year

c. To find the impact of government expenditure on GDP (i.e., government expenditure elasticity with respect to GDP), following exponential regression model is used.

$$RGDP_i = \beta_1 RGE^{\beta 2}{}_i e^{ui}$$

Or, $\ln RGDP_i = \ln\beta_1 + \beta_2 \ln RGE_i + u_i$ ..... (1)

Where, RGDP = Real Gross Domestic Product

RGE = Real Government Expenditure,

ln= Natural Log,

β_1 and β_2 are parameters and

u_i = error term.

The nominal value of all variables are converted into real term by applying following formula.

$$\text{Real value} = \frac{Nominal\ Value}{Current\ Consumer\ Price\ Index} * 100$$

3.6 Variables Specification

a. **Real Government Expenditure:** Real government expenditure means the actual total expenditure made by government during the specified fiscal year. It has been taken from the economic survey. Its growth has been calculated by following formula.

$$RGEG_t = \frac{RGE_t - RGE_{t-1}}{RGE_{t-1}} \times 100\%$$

b. **National Income:** The real GDP at producer prices has been used as a proxy of national income. It is collected from different publication of 'Economic Survey' of Nepal. The growth rate of real GDP shall be considered as economic growth in this study. And the growth rate of real GDP is calculated by following formula.

$$RGDPG_t = \frac{RGDP_t - RGDP_{t-1}}{RGDP_{t-1}} \times 100\%$$

c. Foreign Assistance: The total of foreign grant and foreign aid has used as total foreign assistance. Its time series data are also collected from different publication of Economic Survey and Budget Speeches. Real foreign assistance growth is calculated by following formula.

$$\mathrm{RFAG_t} = \frac{\mathrm{RFA_t} - \mathrm{RFA_{t-1}}}{\mathrm{RFA_{t-1}}} \times 100\%$$

d. Government Revenue: Government revenue means the total income received by the government in the fiscal year through the various sources including tax revenue and non-tax revenue. Its time series data are also taken form different publication of Economic Survey and Budget Speeches. The series of real government revenue growth (RGEG) is calculated by following formula.

$$\mathrm{RGRG_t} = \frac{\mathrm{RGR_t} - \mathrm{RGR_{t-1}}}{\mathrm{RGR_{t-1}}} \times 100\%$$

e. Inflation: The percentage change in national consumer price indexes (NCPI) of Nepal from 'Quarterly Economic Bulletin' of Nepal Rastra Bank (NRB) has been used as Inflation or General Price Index. It is calculated by using following formula.

$$\mathrm{Inflation_t} = \frac{\mathrm{NCPI_t} - \mathrm{NCPI_{t-1}}}{\mathrm{NCPI_{t-1}}} \times 100\%$$

f. Population (PoP): The total population of Nepal has been taken from the various publication of 'Statistical Year Book' of Central Bureau of Statistics (CBS). The population growth (PoPG) is calculated by following formula.

$$\mathrm{PoPG_t} = \frac{\mathrm{PoP_t} - \mathrm{PoP_{t-1}}}{\mathrm{PoP_{t-1}}} \times 100\%$$

g. Political Instability (PI): The change of government in Nepal is used as a proxy of political instability. It is dummy variable in the regression model. By supposing 1 if government of Nepal changed in particular fiscal year otherwise 0, as below.

PI_i = 1 if government changed in i^{th} year

= 0 if government not changed in i^{th} year

CHAPTER IV

DETERMINANTS OF GOVERNMENT EXPENDITURE GROWTH IN NEPAL

To analyze the determinants of government expenditure growth, this study has used least square multiple regression model. The real government expenditure growth is used as an independent variable. The explanatory variables are specified by considering economic, demographic and political factors. As economic factors, four variables: real GDP, real tax receipt, inflation, and foreign assistance have been taken. Similarly, total population growth is used as a demographic variable and political instability as a political factor. The frequency of change in government is used as a proxy of political instability and it is incorporated in the regression model as a dummy variable. In such a way there are, in total, six explanatory variables to run the multiple regression model.

However, In order to run the regression the time series data should be stationary. Therefore, first subtopic under this chapter is to test the stationary. Then next topic is regression result analysis. Then the final topic is residual diagnostic.

4.1 Stationary Test

To insure the stationary of the time series data Augmented Dickey-Fuller unit root test of the variables has been done and if the data are not stationary at level then data are making stationary by first difference. The Schwarz Info Criterion is used for automatic lag selection.

4.1.1 Stationary Test for Real Government Expenditure Growth (RGEG)

Table 4.1 shows the result of stationary test. The null hypothesis is that the real government expenditure growth has a unit root or not stationary. Since the p-value is less than five percent, the null hypothesis is rejected. It means, real government expenditure growth does not have unit root or the series is stationary.

Table: 4.1 Stationary Test for Real Government Expenditure Growth

Null Hypothesis: RGEG has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.772836	0.0022
Test critical values:	1% level	-4.198503	
	5% level	-3.523623	
	10% level	-3.192902	

*MacKinnon (1996) one-sided p-values.

Source: Author's Calculation through E-Views.

4.1.2 Stationary Test Real Gross Domestic product Growth (RGDPG)

Table 4.2 shows the result of stationary test. The null hypothesis is that the real GDP growth has a unit root or not stationary. Since the p-value is less than five percent, the null hypothesis is rejected. It means, real GDP growth does not have unit root or the series is stationary.

Table: 4.2 Stationary Test for Real Gross Domestic product Growth

Null Hypothesis: RGDPG has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.435097	0.0000
Test critical values:	1% level	-4.205004	
	5% level	-3.526609	
	10% level	-3.194611	

*MacKinnon (1996) one-sided p-values.

Source: Author's Calculation through E-Views.

4.1.3 Stationary Test for Inflation

Table 4.3 shows the result of stationary test. The null hypothesis is that the inflation has a unit root or not stationary. Since the p-value is less than five percent, the null hypothesis is rejected. It means, inflation does not have unit root or the series is stationary.

Table: 4.3 Stationary Test for Inflation

Null Hypothesis: INFLATION has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.624741	0.0002
Test critical values:	1% level	-4.192337	
	5% level	-3.520787	
	10% level	-3.191277	

*MacKinnon (1996) one-sided p-values.

Source: Author's Calculation through E-Views.

4.1.4 Stationary Test for Real Tax Revenue Growth (RTRG)

Table 4.4 shows the result of stationary test. The null hypothesis is that the real tax revenue growth has a unit root or not stationary. Since the p-value is less than five percent, the null hypothesis is rejected. It means, real tax revenue growth does not have unit root or the series is stationary.

Table: 4.4 Stationary Test for Real Tax Revenue Growth

Null Hypothesis: RTRG has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.397904	0.0000
Test critical values:	1% level	-4.198503	
	5% level	-3.523623	
	10% level	-3.192902	

*MacKinnon (1996) one-sided p-values.

Source: Author's Calculation through E-Views.

4.1.5 Stationary Test for Real Foreign Assistance Growth (RFAG)

Table 4.5 shows the result of stationary test. The null hypothesis is that the real foreign assistance growth has a unit root or not stationary. Since the p-value is less than five percent, the null hypothesis is rejected. It means, real foreign assistance growth does not have unit root or the series is stationary.

Table: 4.5 Stationary Test for Real Foreign Assistance Growth

Null Hypothesis: RFAG has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.584570	0.0000
Test critical values:	1% level	-4.198503	
	5% level	-3.523623	
	10% level	-3.192902	

*MacKinnon (1996) one-sided p-values.

Source: Author's Calculation through E-Views.

4.1.6 Stationary Test for Population Growth (PG)

Table 4.6 shows the result of stationary test. The null hypothesis is that the population growth has a unit root or not stationary. Since the p-value is less than five percent, the null hypothesis is rejected. It means, the population growth does not have unit root or the series is stationary.

Table: 4.6 Stationary Test for Population Growth

Null Hypothesis: POPG has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.330983	0.0005
Test critical values:	1% level	-4.198503	
	5% level	-3.523623	
	10% level	-3.192902	

*MacKinnon (1996) one-sided p-values.

Source: Author's Calculation through E-Views.

4.2. Regression Result

Table 4.7 shows the regression result of the research study. The result shows that only real foreign assistance growth and inflation significantly impact or determine the total government expenditure growth in Nepal.

The p-value for real foreign assistance growth (RFAG) is 0.0228. It is less than 5 percent level of significance. Therefore the real foreign assistance growth significantly determines the government expenditure in Nepal. But the coefficient is about 0.25. Its interpretation is that, if real foreign assistance growth is changed by 1 percent, then the real total government expenditure growth is changed by about 0.25 percent.

Table: 4.7 Regression Result

Dependent Variable: RGEG
Method: Least Squares
Sample Period: 1974 to 2016

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12.47513	6.026464	2.070058	0.0459
RGDPG	0.270026	0.690343	0.391148	0.6981
INFLATION	-0.668190	0.366746	-1.821943	0.0770
RTRG	0.230444	0.241592	0.953860	0.3467
POPG	-170.4506	164.1683	-1.038267	0.3063
RFAG	0.245245	0.102940	2.382402	0.0228
DUMMY	-0.131121	3.060313	-0.042846	0.9661

R-squared	0.327364	Mean dependent var	8.100815
Adjusted R-squared	0.212054	S.D. dependent var	9.937999
S.E. of regression	8.821594	Akaike info criterion	7.343294
Sum squared resid	2723.718	Schwarz criterion	7.632906
Log likelihood	-147.2092	Hannan-Quinn criter.	7.449448
F-statistic	2.839008	Durbin-Watson stat	1.664793
Prob(F-statistic)	0.023321		

Source: Author's calculation through E-View

Similarly, the p-value for inflation is 0.077 and the coefficient is about -0.67. Its interpretation is that, first of all, since p-value is more than 5 percent but less than 10 percent, its coefficient is only significant at ten percent level of significance. Second, there is negative sign with coefficient. It indicates that the inflation negatively impacts or determines the growth in government expenditure in Nepal. Third, the value of coefficient

-0.67 is interpreted as if inflation is increased by one percent then the growth in real government expenditure is decreased by 0.67 percent in Nepal and vice versa.

However, the p-value for the real GDP growth, real tax revenue growth, population growth and political instability are even more than 10 percent. This means that the coefficients of these variables are not significant even at 10 percent level of significance. Therefore it is concluded that the real GDP growth, real tax revenue growth, population growth and change in government does not significantly determine or impact the growth in real government expenditure in Nepal.

The R-square is small but f-statistics is significant at 5 percent. Therefore the model is accepted though R-square is small. F-statistics is significant means that all the independent variables jointly can influence dependent variable.

In order to intemperate the dummy coefficient, as the p-value for dummy is greater than 10 percent level of significance, the dummy coefficient for the year of change in government is not statistically significant. Therefore, the average value of growth in real government expenditure for the year of government change is not statistically difference than the average value for the year when government is not change.

4.3 Residual Diagnostic

4.3.1 Heteroscedasticity Test

To test the heteroscedasticity in residuals, the Breusch-Pagan-Godfrey Test has been used by setting following null hypothesis. The Breusch-Pagan-Godfrey test regressed the square residuals on the original regressors.

Null hypothesis: Residuals are not heteroscedastic.

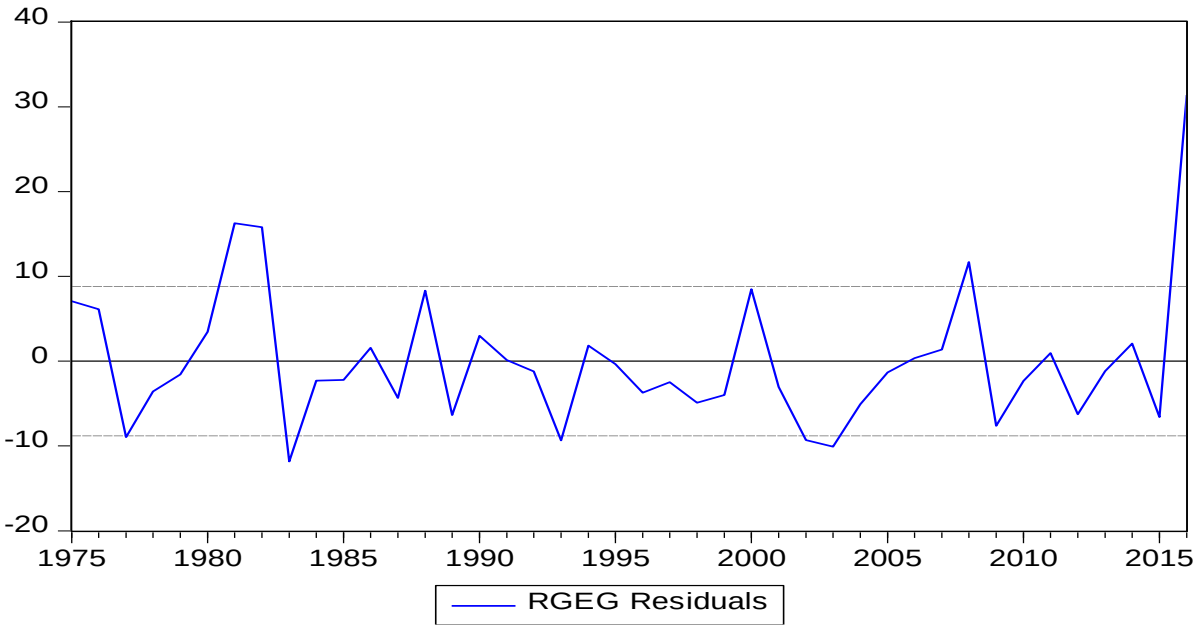
Table: 4.8 Heteroscedasticity Test (Breusch-Pagan-Godfrey Test)

F-statistic	0.749277	Prob. F(6,35)	0.6141
Obs*R-squared	4.780722	Prob. Chi-Square(6)	0.5722
Scaled explained SS	9.588827	Prob. Chi-Square(6)	0.1431

Source: Author's Calculation through E-Views.

Table 4.8 shows that the result of hetreoscedasticity test. Since the corresponding probability values for f-statistic, observed R-squared and Scaled explained SS are more than 5 percent. It means that the null hypothesis is not rejected rather it is accepted. Hence it is concluded that the model is free from hetreoscedasticity.

Figure: 4.1 Regression Residuals



Source: Author's Calculation through E-View.

4.3.2 Serial Correlation

To test the serial correlation, Bueusch-Godfrey Serial Correlation LM test has been used by setting following null hypothesis.

Null hypothesis: There is no serial correlation.

Table: 4.9 Serial Correlation Test (Bueusch-Godfrey)

F-statistic	0.103083	Prob. F(2,33)	0.9023
Obs*R-squared	0.260763	Prob. Chi-Square(2)	0.8778

Source: Author's Calculation from E-Views.

Table 4.9 shows that the result of serial correlation test. The corresponding probability values for f-statistic and observed R-squared with degree of freedom 2 are more than 5

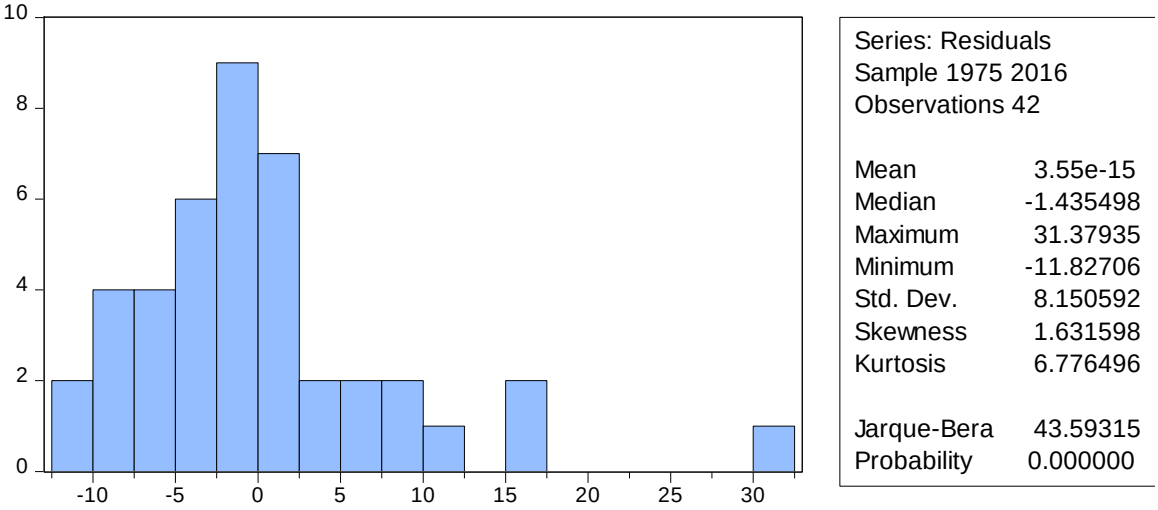
percent. It means that the null hypothesis cannot be rejected rather it is accepted. Hence it is concluded that there is no serial correlation.

4.3.3 Normality test

To test the normality of residuals, Jarque-Bera test has been used by setting following null hypothesis.

Null hypothesis: Residuals are normally distributed.

Figure 4.2: Normality Test



Source: Author's Calculation through E-Views.

Figure 4.2 shows the result of Jarque-Bera (JB). The JB value is 43.59 with p-value 0.00. Since P-value is less than 5 percent level of significant, the null hypothesis is rejected. It means the residuals are not normally distributed. The probable reason of residuals are not normally distributed is that the JB test is a large sample test, and here the sample of 42 observations may not be sufficiently large.

CHAPTER V

CAUSALITY TEST BETWEEN GOVERNMENT EXPENDITURE GROWTH AND ECONOMIC GROWTH IN NEPAL

5.1 Pair-wise Granger Causality Test

Pair-wise Granger Causality test has been used to test the causality between government expenditure growth and GDP growth in Nepal. This study has chosen the Schwarz criterion for the causality between the real government expenditure growth and real gross domestic growth. Table 5.1 shows the result for the pair wise Granger causality test between real government expenditure growth and real GDP growth.

Table 5.1: Results of Pair Wise Granger Causality Test

Sample: 41 (1974-2016)				
Lags: 1				
Null Hypothesis	Observation	F-statistics	Probability	Decision
1. RGDPG does not Granger cause RGEG	41	0.03772	0.8470	Does not Reject
2. RGEG does not Granger cause RGDPG	41	3.70644	0.0617	Reject*

*Null hypothesis rejected at 10 Percent level of significance.

Source: Author's Calculation through E-Views.

Table 5.1 shows that the result of pair wise Granger causality test between RGEG and RGDPG. The p-value for the first null hypothesis (i.e., RGDPG does not Granger cause RGEG) is 0.8470. It is greater than even 10 percent level of significance. Therefore, the null hypothesis is not rejected. It means that the null hypothesis is accepted. In other words, the real GDP growth does not cause the real government expenditure growth in Nepal.

However, the p-value for the second null hypothesis (i.e., RGEG does not Granger cause RGDPG) is 0.0617. This is less than 10 percent level of significance. Therefore, the null

hypothesis is rejected. It means that the null hypothesis is not accepted. In other words, the real government expenditure growth causes the real GDP growth in Nepal.

Therefore, the conclusion is that there is unilateral causality between RGEG and RGDPG. That is, real government expenditure growth causes the real GDP growth but real government expenditure growth does not cause real GDP growth in Nepal.

CHAPTER VI

IMPACTS OF GOVERNMENT EXPENDITURE ON NATIONAL INCOME IN NEPAL

As it is concluded in previous chapter that the change in government expenditure causes the change in GDP, it is quite essential to check the degree of impact or its elasticity. To check the government expenditure elasticity with respect to GDP, the study uses log-linear regression model.

However, in order to run the regression the time series data should be stationary. Therefore, the first subtopic under this chapter is test the stationary. Then next topic is regression result analysis. Then the final topic under this chapter is residual diagnostic.

6.1 Stationary Test

To insure the stationary of the time series data Augmented Dickey-Fuller unit root test of the variables has been done and if the data are not stationary at level then data are making stationary by first difference. The Schwarz Info Criterion is used for automatic lag selection.

6.1.1 Stationary Test for Log of Real Government Expenditure

Table 6.1 shows that the result of stationary test. The null hypothesis is that the log of real government expenditure has a unit root. Since the p-value is less than 5 percent, the null hypothesis is rejected. It means, the log of real government expenditure does not have unit root i.e., the series is stationary.

Table: 6.1 Stationary Test for Log of Real Government Expenditure

Null Hypothesis: D(LN_RGE) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.110447	0.0008
Test critical values:	1% level	-4.198503	
	5% level	-3.523623	
	10% level	-3.192902	

*MacKinnon (1996) one-sided p-values.

Source: Author's Calculation through E-Views.

6.1.2 Stationary Test for Log of Real GDP

Table 6.2 shows that the result of stationary test. The null hypothesis is that the log of real GDP has a unit root. Since the p-value is less than five percent, the null hypothesis is rejected. It means, the log of real GDP does not have unit root i.e., the series is stationary.

Table: 6.2 Stationary Test for Log of Real GDP

Null Hypothesis: D(LN_RGDP) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.412741	0.0000
Test critical values:	1% level	-4.205004	
	5% level	-3.526609	
	10% level	-3.194611	

*MacKinnon (1996) one-sided p-values.

Source: Author's Calculation through E-Views.

6.2 Elasticity of GDP with Respect to Government Expenditure in Nepal

Plotting the log of real GDP against the log of real government expenditure, it seems that the relationship between variables is linear. Hence log-linear model is appropriate. The regression result is shown is table 6.3.

Table: 6.3 Log linear Regression Result

Dependent Variable: Ln RGDP
Method: Least Squares
Sample Period: 1974 to 2016

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.697978	0.254277	18.47580	0.0000
LN_RGE	0.728106	0.023013	31.63945	0.0000

R-squared	0.960655	Mean dependent var	12.72566
Adjusted R-squared	0.959695	S.D. dependent var	0.547782
S.E. of regression	0.109973	Akaike info criterion	-1.531765
Sum squared resid	0.495858	Schwarz criterion	-1.449849
Log likelihood	34.93295	Hannan-Quinn criter.	-1.501557
F-statistic	1001.055	Durbin-Watson stat	0.358530
Prob(F-statistic)	0.000000		

Source: Author's Calculation through E-Views.

Table 6.3 shows that the result of log-linear regression. The p-value for constant and that for the slope is too small. It indicates that the coefficient is significant even at 1 percent level of significance. The real government expenditure elasticity with respect to real GDP is 0.73. It suggests that if RGE increases by 1 percent, an average, the RGDP increases by 0.73 percent exponential rate and vice versa.

The elasticity less than one indicates that the GDP is not that much responsive to change in government expenditure in Nepal.

6.2 Residual Diagnostic

6.2.1 Heteroscedasticity Test

To test the heteroscedasticity in residual, Breusch-Pagan-Godfrey Test has been used by setting following null hypothesis. The Breusch-Pagan-Godfrey test regressed the square residuals on the original regressors.

Null hypothesis: Residuals are not heteroscedastic.

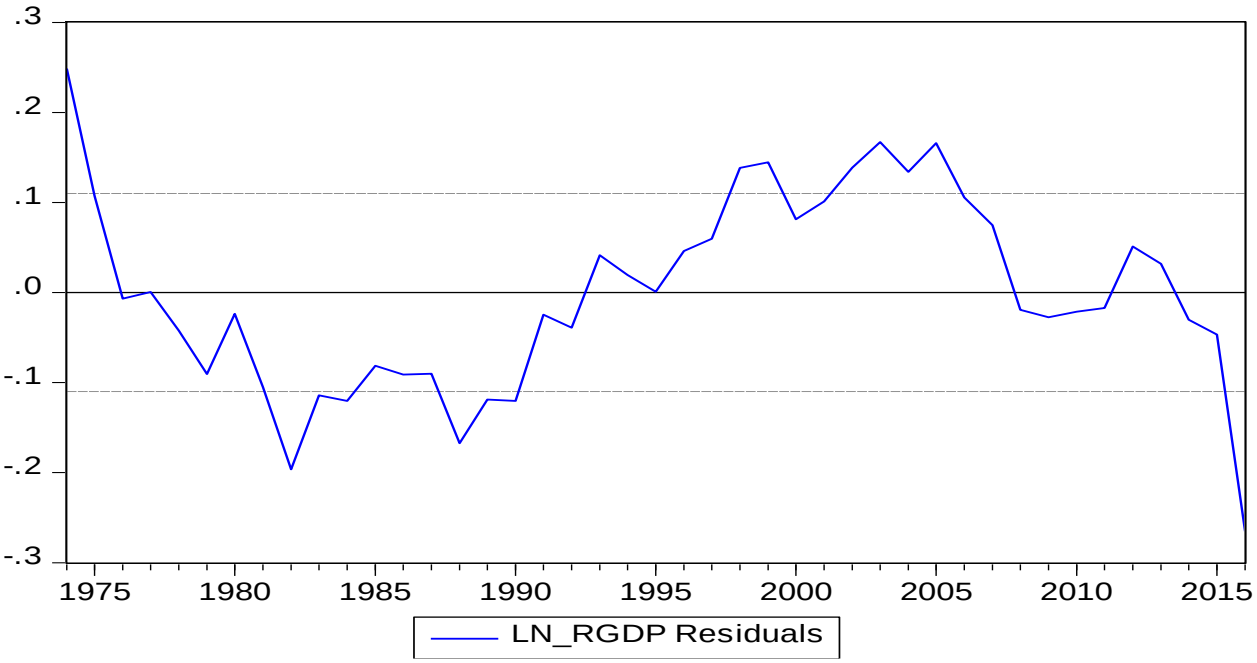
Table: 6.2 Heteroskedasticity Test (Breusch-Pagan-Godfrey Test)

F-statistic	0.075916	Prob. F(1,41)	0.7843
Obs*R-squared	0.079473	Prob. Chi-Square(1)	0.7780
Scaled explained SS	0.063140	Prob. Chi-Square(1)	0.8016

Source: Author's Calculation through E-Views.

Table 6.2 shows that the result of heteroskedasticity test. The corresponding probability values for f-statistic, observed R-squared and Scaled explained SS are more than 5 percent. It means that the null hypothesis is not rejected rather it is accepted. Hence it is concluded that the model is free from hetreoscedasticity.

Figure: 6.1 Regression Residuals



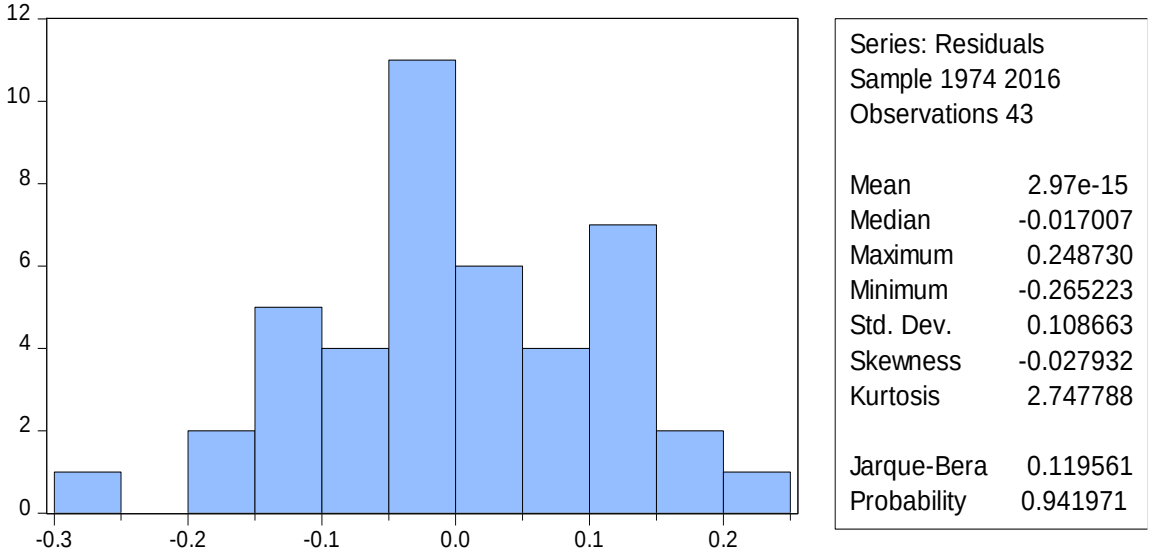
Source: Author's Calculation through E-View.

6.2.2 Normality Test

To test the normality of residuals, the Jarque-Bera test has been used by setting following null hypothesis.

Null hypothesis: Residuals are normally distributed.

Figure: 6.2 Normality Test



Source: Author's Calculation through E-Views.

Figure 6.2 shows the result of Jarque-Bera (JB) test. The JB value is 0.119 with a p-value 0.94. Since, P-value is more than 5 percent level of significance, the null hypothesis is not rejected. It means the residuals are normally distributed.

CHAPTER VII

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary

This study has tried to analyze the determinants of government expenditure growth and its relation with national income in case of Nepal by employing econometric tools.

To analyze the determinants of government expenditure growth, this is used has used least square multiple regression model. The real government expenditure growth is used as an independent variable. The explanatory variables are specified by considering economic, demographic and political factors. As economic factors, four variables: real GDP, real tax receipt, inflation, and foreign assistance have been taken. Similarly, total population growth is used as a demographic variable and political instability as a political factor. The frequency of change in government is used as a proxy of political instability and it is incorporated in the regression model as a dummy variable. In such a way there are, in total, six explanatory variables to run the multiple regression model.

The study is used pair wise Granger Causality test to test the causality between government expenditure growth and GDP growth in Nepal. This study had use the Schwarz criterion for the causality between the real government expenditure growth and real gross domestic growth. And log linear regression model had been used to find out the government expenditure elasticity with respect to GDP in Nepal.

To ensure the stationary of time series data the Augmented Dickey-Fuller unit root test of all variables has been done. If the data are not stationary at level, then they are made stationary by first difference. And the Schwarz Info Criterion had been used for automatic lag selection.

The regression result shows that real foreign assistance growth and inflation significantly determine the total government expenditure growth in Nepal. The coefficient of foreign assistance growth and inflation are 0.25 and -0.67 respectively. The coefficients of real foreign assistance growth 0.25 indicates that if real foreign assistance growth is changed by Rs. 1 million then the real government expenditure will be positively changed by Rs. 0.25 million, in an average. Similarly, the coefficient of inflation -0.67 indicates that if

inflation is changed by. 1 then the real government expenditure will be negatively changed by Rs. 0.67 million, in an average.

Contrast to this all remaining variables (real GDP growth, real tax revenue growth, population growth and political instability) have not significantly impact on the growth of government expenditure in Nepal. The result of causality test shows that there has unilateral causality between government expenditure growth and GDP growth. It means government expenditure growth does causes GDP growth but GDP growth does not cause government expenditure growth in Nepal. The government expenditure elasticity with respect to GDP in Nepal is 0.73. This is less then unitary. It indicates that the GDP is less responsive to change in government expenditure in Nepal.

5.2. Conclusions

The following conclusions are made based on thesis.

i. The real foreign assistance growth and inflation has significantly determined the total government expenditure growth in Nepal. The coefficient of real foreign assistance growth 0.25 indicates that if real foreign assistance growth is changed by Rs. 1 million then the real government expenditure will be positively changed by Rs. 0.25 million, in on average. Similarly, the coefficient of inflation -0.67 indicate that if inflation is change by. 1 then the real government expenditure will be negatively changed by Rs. 0.67 million, in on average.

ii. As explanatory variables classified into three broad categories (economic variable, demographic variable and political variable), only some economic variables (foreign assistance growth and inflation) have been significantly determined the real government expenditure growth in Nepal. The demographic variable (population growth) and political instability (dummy) does not have significantly determine or impact the real government expenditure growth in Nepal.

iii. There has been unilateral causality between government expenditure growth and GDP growth in Nepal. It means the government expenditure growth does cause the GDP growth but the GDP growth does not cause the government expenditure growth in Nepal.

iv. The government expenditure elasticity with respect to GDP in Nepal is 0.73 (i.e., less then unitary). It indicates that the GDP is not that much elastic to change in government expenditure in Nepal.

5.3. Recommendations

Following recommendations are made based on the thesis.

i. As regression result shows that the foreign assistance growth has significantly impact on government expenditure but government revenue does not have significance impact on it, one of the important concern of the authors. And likes to recommend that either this might be evil indicator for the economy or this is the indication that government expenditure in Nepal is exogenously determined by the situation of the nation rather by its revenue collection. It should be subject of discussion for concerned stakeholders.

ii. Since the study conclude that the government expenditure elasticity with respect to GDP in Nepal is less than one. It means that, if the government expenditure increases by one percent, Nepal's National income increases by less than one perccent. Therefore, the clear recommendation is that, the government of Nepal needs to lunch the private investment friendly policy in order to achieve the target of increases national income of the country rather by increases government expenditure only.

iii. Next, as the government expenditure elasticity is less than unitary, it is recommended that the government of Nepal should need to enhance the quality of its expenditure along with size in order to improve the growth performance of the country.

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APPENDIX A

All are Nominal (Rs. In Million)

FY	GDP*	GE	TR	FA
1974/75	16601	1513.8	1007	386.8
1975/76	17394	1913.4	1112	505.7
1976/77	17280.3	2330.4	1331.5	556.9
1977/78	19727	2674.9	1553.4	848.4
1978/79	22215	3020.5	1797.9	989.38
1979/80	23351	3470.7	1857.1	1340.5
1980/81	27307	4092.3	2400.4	1562.2
1981/82	30988	5361.3	2676	1723.2
1982/83	33821	6979.2	2835.3	2075.9
1983/84	39290	7437.3	3406.3	2547.5
1984/85	46587.03	8394.8	3916.6	2678.3
1985/86	55734.31	9797.1	4644.5	3674
1986/87	63864.5	11513.2	5975.1	3990.9
1987/88	76906.12	14105	7290.4	5892.6
1988/89	89269.62	18005	7776.6	7347
1989/90	103415.8	19669.3	9287.9	7935
1990/91	120370.3	23549.8	10730.4	8421.5
1991/92	149487.1	26418.2	13512.7	8460.7
1992/93	171491.9	30897.7	15148.4	10714.2
1993/94	199272	33597.4	19580.7	11557.2
1994/95	219175	39060	24575.2	11249.4
1995/96	248913	46542.4	27893.1	14289
1996/97	280513	50723.76	30373.4	15031.91
1997/98	300845	56118.32	32937.9	16457.12
1998/99	342036	59579	37251	16189
1999/00	379488	66272.5	42889.6	17523.92
2000/01	441518.5	79835.1	48893.6	18797.45
2001/02	459442.6	80072.2	50445.6	14384.85
2002/03	492230.8	84006.1	56229.7	15885.57
2003/04	536749.1	89442.6	62331	18912.38
2004/05	589411.7	102560.5	70124.1	23657.3
2005/06	654084.1	110889.2	72282.1	22041.8
2006/07	727827	133604.6	87712.1	25854.3
2007/08	815658.2	161349.9	107622.7	29300.6
2008/09	988271.5	219661.9	143474.4	36351.73
2009/10	1192774	259689.1	179945.8	49769.35
2010/11	1366954	295363.5	199819	57997.78

2011/12	1527344	339167.5	244561.1	51893.35
2012/13	1695011	358638	296776.5	47198.92
2013/14	1964540	435052.3	363493.4	60204.59
2014/15	2130150	531340	407947.7	63705.59
2015/16	2247427	601031.9	485239	73999.83
2016/17R	2599234	935881.7	580988.6	222987.9

Source: Economics Survey and Budget Speeches.

*GDP at producer prices.

APPENDIX B

At Constant 2000/01 Prices (Rs. In Million)

FY	RGDP	RGE	RFA	RTR
1974/75	143079.6	13498.15	3448.992	8979.149
1975/76	148042	17180.16	4540.612	9984.497
1976/77	149537.7	20373.56	4868.707	11640.66
1977/78	154214.8	21036.14	6672.048	12216.36
1978/79	157500	22964.96	7522.289	13669.49
1979/80	155131.2	24036.6	9283.736	12861.49
1980/81	170692.7	24995.8	9541.929	14661.66
1981/82	178222.8	29656.98	9532.185	14802.77
1982/83	178949	33815.66	10058.16	13737.61
1983/84	194692.1	33919.7	11618.52	15535.3
1984/85	205170.2	36763.58	11729.15	17152.08
1985/86	214537.7	37036.35	13888.96	17557.78
1986/87	218184.3	38424.15	13319.23	19941.29
1987/88	234977.2	42489.24	17750.59	21961.26
1988/89	245146.3	50074.09	20432.9	21627.67
1989/90	256508.9	49861.86	20115.3	23544.92
1990/91	272839.4	54367.67	19442.09	24772.48
1991/92	284047.9	50382.35	16135.46	25770.17
1992/93	294974.5	54127.8	18769.55	26537.56
1993/94	319219.1	54022.3	18583.18	31484.41
1994/95	330291.1	58338.37	16801.63	36704.48
1995/96	347920.8	64284.53	19736.02	38526.05
1996/97	366224.8	64815.61	19208.01	38811.6
1997/98	376999.4	66197.5	19412.92	38853.74
1998/99	393903	63099.55	17145.61	39452.18
1999/00	417992.2	67885.38	17950.4	43933.41
2000/01	441518.5	79834.25	18797.25	48893.08
2001/02	442049	77822.5	13980.69	49028.28
2002/03	459488.3	77944.04	14739.23	52172.05
2003/04	481004.3	79824.73	16878.71	55628.47
2004/05	497739	87557.96	20196.71	59866.33
2005/06	514485.6	87686.25	17429.68	57157.49
2006/07	532038.2	99762.62	19305.42	65494.67
2007/08	564516.9	112910.1	20504.09	75312.65
2008/09	590107.2	136537	22595.43	89180.52
2009/10	618529.1	147310.4	28232	102075.5

2010/11	639694.1	152927.9	30029.03	103458.6
2011/12	670279.4	162127.1	24805.79	116903.8
2012/13	697954.2	156078.7	20540.9	129156.7
2013/14	739754.4	173572.2	24019.74	145022.5
2014/15	764335.7	197722.4	23706.15	151805.7
2015/16	767491.6	203438.3	25047.59	164244.6

APPENDIX C

All Variables are in Percentage except Years and Dummy
(at Constant 2000/2001)

Years	Inflation	POPG	RFAG	RGDPG	RGEG	RTRG	Dummy
1974/75	16.7						1
1975/76	-0.7	0.023622	31.6504	3.5	27.27789	11.19647	0
1976/77	2.7	0.023077	7.225808	1.0	18.58773	16.58735	1
1977/78	11.2	0.022556	37.03941	3.1	3.252156	4.945586	0
1978/79	3.4	0.022059	12.74333	2.1	9.169089	11.89499	1
1979/80	9.8	0.021583	23.41636	-1.5	4.666398	-5.91101	0
1980/81	13.4	0.056338	2.781135	10.0	3.990576	13.99661	0
1981/82	10.4	0.026667	-0.10212	4.4	18.64785	0.962413	0
1982/83	14.2	0.025974	5.517916	0.4	14.02261	-7.19564	1
1983/84	6.2	0.031646	15.51336	8.8	0.307666	13.08587	0
1984/85	4.1	0.018405	0.952203	5.4	8.384162	10.40712	0
1985/86	15.8	0.03012	18.414	4.6	0.741944	2.365329	1
1986/87	13.3	0.023392	-4.10207	1.7	3.747124	13.57527	0
1987/88	10.8	0.017143	33.27044	7.7	10.57953	10.12956	0
1988/89	8.3	0.011236	15.11108	4.3	17.85122	-1.519	0
1989/90	9.7	0.016667	-1.55434	4.6	-0.42382	8.86479	1
1990/91	9.8	0.010929	-3.34676	6.4	9.036581	5.213699	1
1991/92	21.1	0.021622	-17.0076	4.1	-7.33032	4.027436	0
1992/93	8.9	0.021164	16.32484	3.8	7.43405	2.977809	0
1993/94	8.9	0.020725	-0.99296	8.2	-0.19491	18.64095	1
1994/95	7.7	0.020305	-9.5869	3.5	7.989419	16.57985	1
1995/96	8.1	0.0199	17.46491	5.3	10.19254	4.962793	0
1996/97	8.1	0.019512	-2.67535	5.3	0.826143	0.7412	1
1997/98	8.3	0.019139	1.066795	2.9	2.132038	0.108579	1
1998/99	11.4	0.018779	-11.6794	4.5	-4.67987	1.540215	1
1999/00	3.4	0.023041	4.693836	6.1	7.584583	11.35865	1
2000/01	2.4	0.040541	4.717727	5.6	17.60153	11.28906	1
2001/02	2.9	0.021645	-25.6237	0.1	-2.51991	0.276529	1
2002/03	4.7	0.021186	5.425629	3.9	0.156183	6.41214	1
2003/04	4.0	0.020747	14.51553	4.7	2.412874	6.62506	1
2004/05	4.5	0.012195	19.65788	3.5	9.687752	7.618145	1
2005/06	8.0	0.012048	-13.7004	3.4	0.146523	-4.52482	1
2006/07	5.9	0.011905	10.76172	3.4	13.77225	14.58632	0
2007/08	6.7	0.015686	6.208982	6.1	13.17873	14.99051	1
2008/09	12.6	0.015444	10.19963	4.5	20.92543	18.41372	1
2009/10	9.6	0.007605	24.94561	4.8	7.89046	14.45939	0

2010/11	9.6	0.015094	6.365223	3.4	3.813384	1.355031	1
2011/12	8.3	0.011152	-17.394	4.8	6.015365	12.9957	0
2012/13	9.9	0.014706	-17.1931	4.1	-3.7306	10.48117	1
2013/14	9.1	0.014493	16.93617	6.0	11.2081	12.28414	1
2014/15	7.2	0.010714	16.93617	3.3	13.91365	4.677335	1
2015/16	9.9	0.014134	16.93617	0.4	2.890873	8.193969	1
2016/17	4.5	0.006969	16.93617	7.5	49.07926	14.63196	1

APPENDIX D

Real GDP and Real Government Expenditure in Logarithm Form

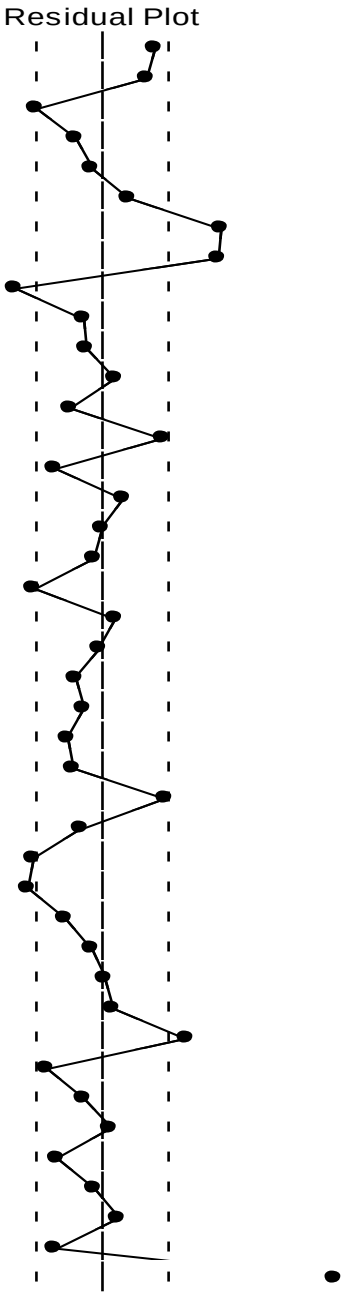
Years	ln RGDP	ln RGE
1974/75	11.8712	9.5103
1975/76	11.9053	9.7515
1976/77	11.9153	9.9220
1977/78	11.9461	9.9540
1978/79	11.9672	10.0417
1979/80	11.9520	10.0873
1980/81	12.0476	10.1265
1981/82	12.0908	10.2975
1982/83	12.0949	10.4287
1983/84	12.1792	10.4318
1984/85	12.2316	10.5123
1985/86	12.2762	10.5197
1986/87	12.2931	10.5564
1987/88	12.3672	10.6570
1988/89	12.4096	10.8213
1989/90	12.4549	10.8170
1990/91	12.5166	10.9035
1991/92	12.5569	10.8274
1992/93	12.5946	10.8991
1993/94	12.6736	10.8972
1994/95	12.7077	10.9740
1995/96	12.7597	11.0711
1996/97	12.8110	11.0793
1997/98	12.8400	11.1004
1998/99	12.8839	11.0525
1999/00	12.9432	11.1256
2000/01	12.9980	11.2877
2001/02	12.9992	11.2622
2002/03	13.0379	11.2637
2003/04	13.0836	11.2876
2004/05	13.1178	11.3801
2005/06	13.1509	11.3815
2006/07	13.1845	11.5105
2007/08	13.2437	11.6343
2008/09	13.2881	11.8244
2009/10	13.3351	11.9003
2010/11	13.3687	11.9377

2011/12	13.4154	11.9961
2012/13	13.4559	11.9581
2013/14	13.5141	12.0643
2014/15	13.5468	12.1946
2015/16	13.5509	12.2231
2016/17	13.6232	12.6224

APPENDIX E

Actual Fitted and Residual Table

obs	Actual	Fitted	Residual
1975	27.2779	20.2038	7.07404
1976	18.5877	12.4710	6.11672
1977	3.25216	12.2072	-8.95500
1978	9.16909	12.7457	-3.57657
1979	4.66640	6.22363	-1.55723
1980	3.99058	0.52629	3.46428
1981	18.6479	2.36546	16.2824
1982	14.0226	-1.76852	15.7911
1983	0.30767	12.1347	-11.8271
1984	8.38416	10.6884	-2.30419
1985	0.74194	2.95569	-2.21375
1986	3.74712	2.18243	1.56470
1987	10.5795	14.9096	-4.33005
1988	17.8512	9.53097	8.32026
1989	-0.42382	5.92549	-6.34931
1990	9.03658	6.04176	2.99482
1991	-7.33032	-7.44492	0.11460
1992	7.43405	8.63673	-1.20268
1993	-0.19491	9.13086	-9.32577
1994	7.98942	6.15270	1.83672
1995	10.1925	10.5287	-0.33617
1996	0.82614	4.55163	-3.72549
1997	2.13204	4.60554	-2.47350
1998	-4.67987	0.23143	-4.91130
1999	7.58458	11.5606	-3.97599
2000	17.6015	9.10084	8.50069
2001	-2.51991	0.52348	-3.04339
2002	0.15618	9.45363	-9.29745
2003	2.41287	12.4906	-10.0778
2004	9.68775	14.7801	-5.09239
2005	0.14652	1.46029	-1.31377
2006	13.7723	13.4223	0.34993
2007	13.1787	11.8178	1.36096
2008	20.9254	9.25224	11.6732
2009	7.89046	15.5103	-7.61985
2010	3.81338	6.14793	-2.33455
2011	6.01537	5.05334	0.96203
2012	-3.73060	2.52821	-6.25881
2013	11.2081	12.3977	-1.18957
2014	13.9137	11.8293	2.08440
2015	2.89087	9.46951	-6.57864
2016	49.0793	17.6999	31.3793

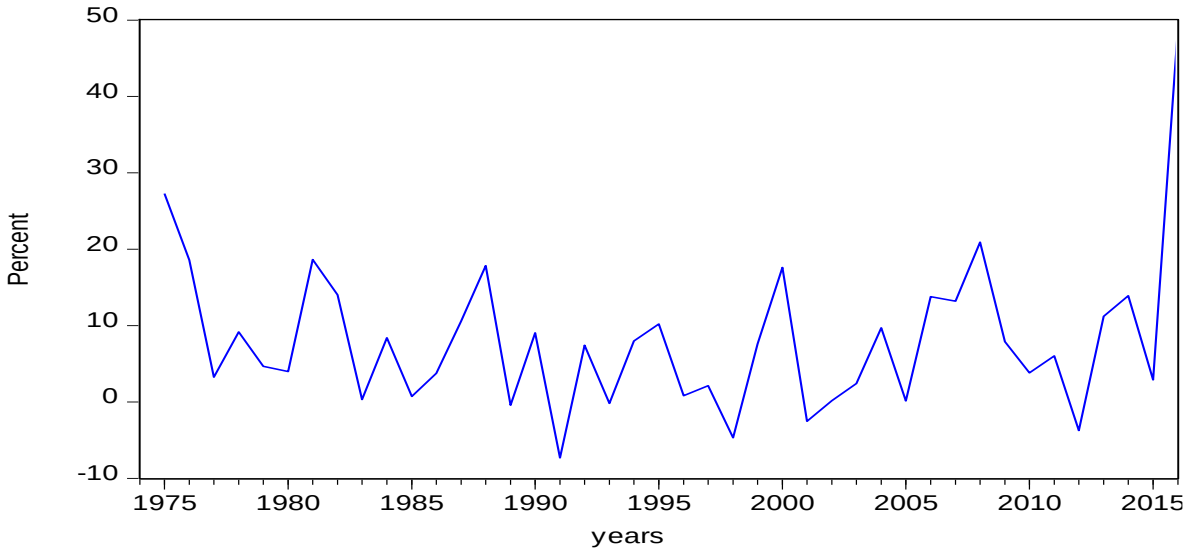


Source: Author's Calculation from E-Views.

APPENDIX F

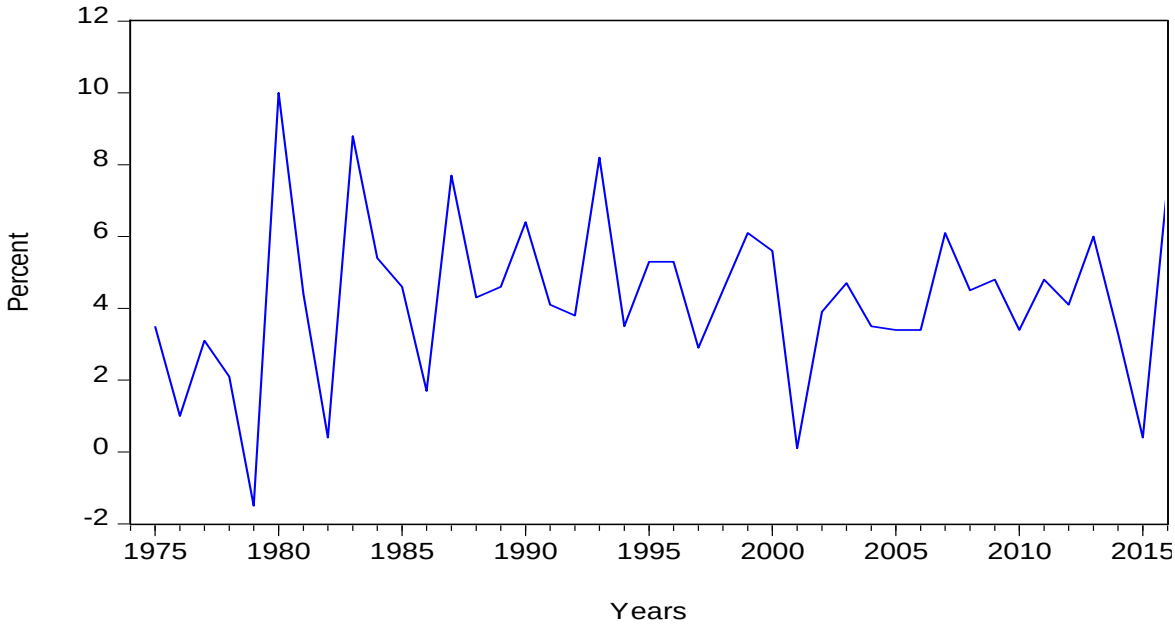
Figures

Figure 1: Real Government Expenditure Growth



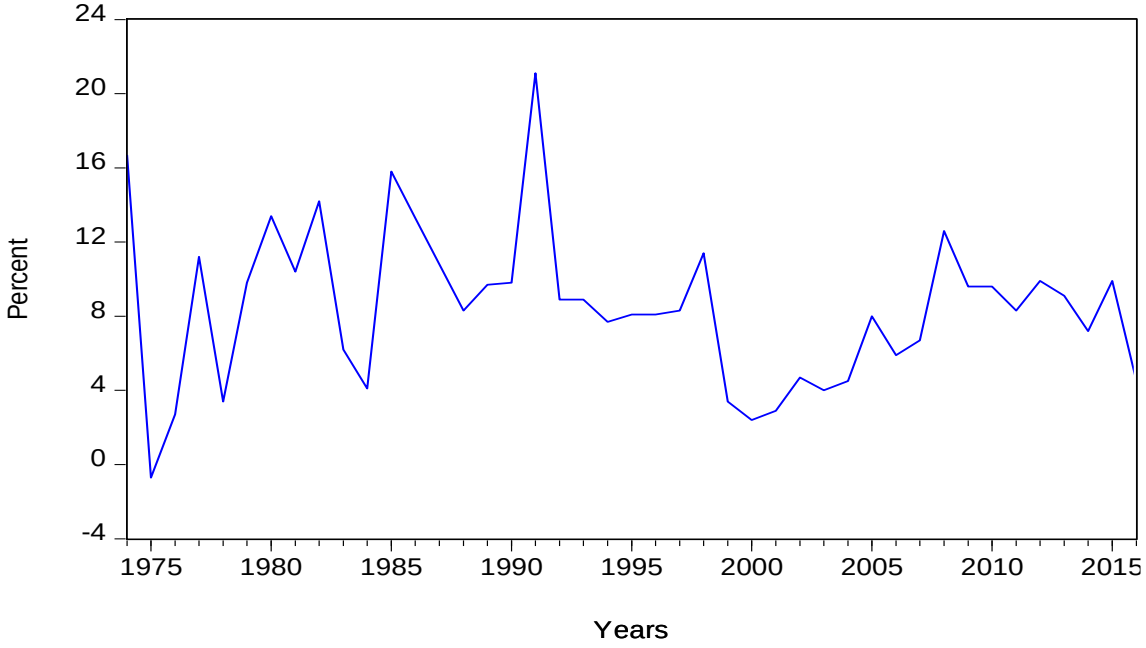
Source: Author's Calculation through E-Views.

Figure 2: Real Gross Domestic product Growth



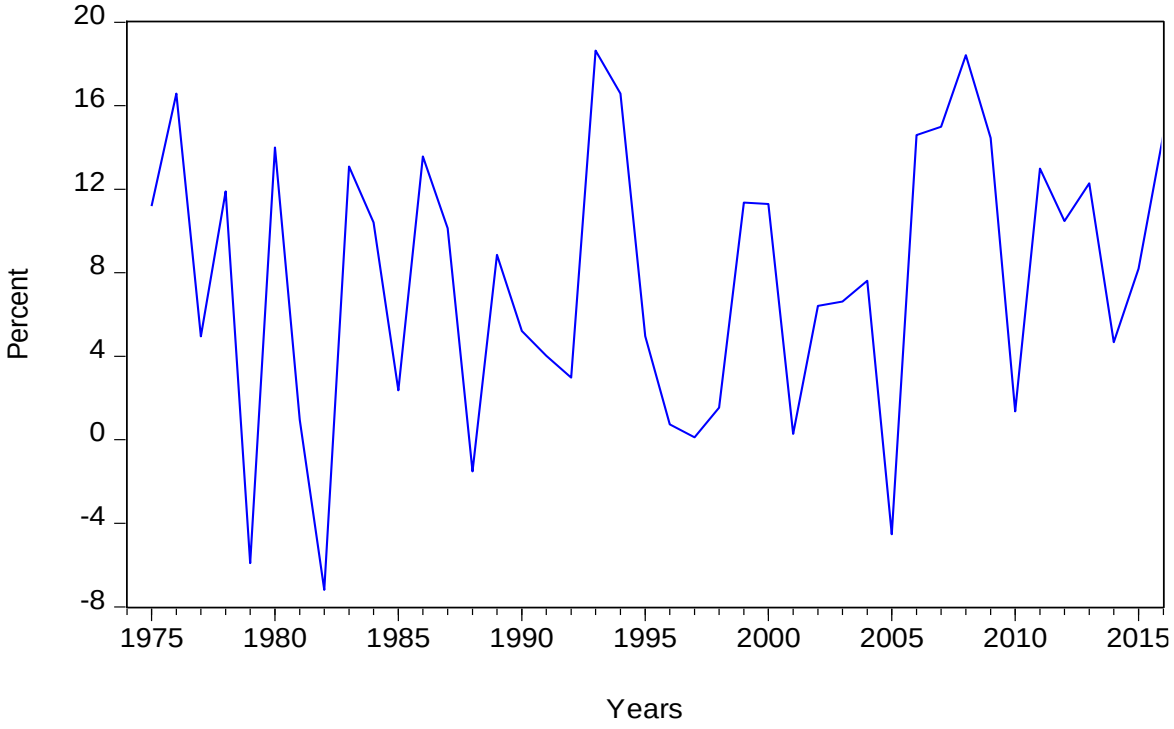
Source: Author's Calculation through E-Views.

Figure 3: Inflation



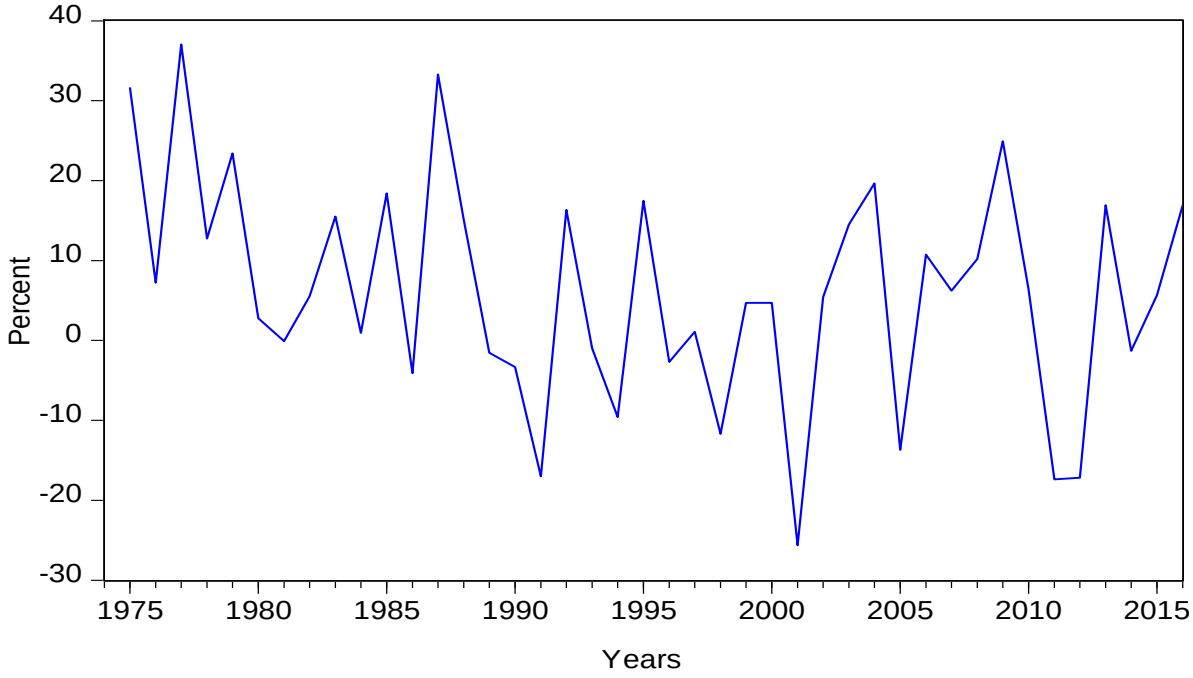
Source: Author's Calculation through E-Views.

Figure 4: Real Tax Revenue Growth



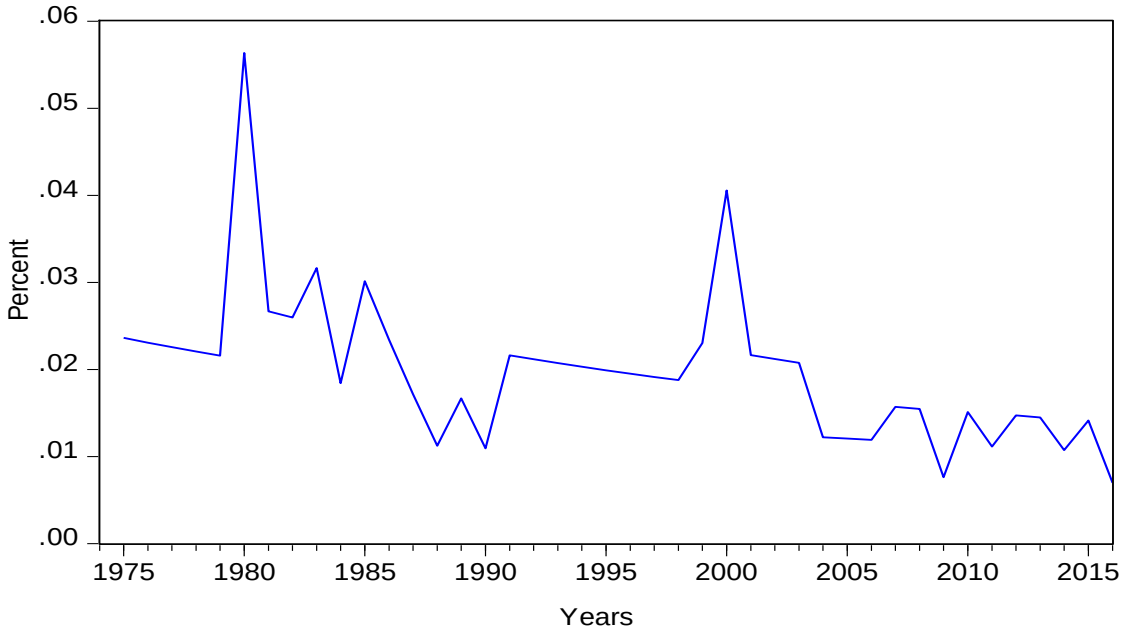
Source: Author's Calculation through E-Views.

Figure 5: Real Foreign Assistance Growth



Source: Author's Calculation through E-Views.

Figure 6: Population Growth



Source: Author's Calculation through E-Views.