CHAPTER-ONE
INTRODUCTION

1.1. Background of the Study

Deficit budget is associated with the role of government in the economy. Before the 1930s, most economists agree with an 'invisible hand'. They believe an individual's rational effort and market ensures optimum utilization and allocation of resources thereby full employment in the economy so that the government does not need to intervene in the economy. Government 'intervention' was almost always a bad thing from the perspective of first capitalists because government operates substantially in the interest of the Crown and aristocracy (William et al. 2019). But the critics of the 'invisible hand' believe that the market may allocate resources fairly but not equitably (William et al. 2019).

The concept of deficit budget was strongly originated after Great Depression 1930. Before it, classical economists prescribe the balanced budget is best for the economy and there should be a minimum role of the government in the economy. The classical economists argued that the self-adjusting tendencies of the economy. Government policy ensures an adequate demand for output where consider by classical economists to be unnecessary (Froyen, 2014). But after 1930, the main spirit of classist (self-adjusting tendencies of the economy) do not become true or classist views does not work. In 1936, the prominent economist John Maynard Keynes wrote a book entitled "The General Theory of Employment Interest and Money". He has advocated about the role of government in the economy and suggested that the government expenditures boost the economy from depression to recovery and it maintains the stability in the economy. He also suggested that if the government does not have the required money to finance its expenditure, then the government can use the tool of deficit finance.

With the given resources, a country running in deficit either by cutting tax or raising government expenditure or both. Running into the deficit cause decreased private investment and net export which leads to a twin deficit.

Government deficit decreases national saving which is induced to increase the interest rate and decrease private investment which is known as the crowding-out effect. On the other hand, an increase in interest rate leads to international capital inflow result trade deficit through currency appreciations. But the inflow of capital is insufficient to offset the private investment (Ball & Mankiw, 1995). Hence, the deficit budget doesn't have a single effect on the economy. However, the classical economist concludes, that the government deficit has an inverse effect in the economy thereby living stander of the people. By contrast, a decrease in the national saving increase in aggregate demand which courage to firm use more their existing capacity and over the long-term economy is in equilibrium with a higher level of national saving, investment, and economic growth (crowding-in effect). On the other hand, if private saving rises by the same amount fall in public saving (equal to deficit rise) then there is no change in national saving and no further adjustment, this is the Ricardian Equivalence Hypothesis advanced by Barrow (Gale & Orszag, 2003).

If the rise in private saving is less than the public saving fall (deficit) and infinitely elastic of capital flow then the gap offset by capital inflow (and fall in net foreign investment) with keeping domestic investment constant and thereby domestic output remains constant. However, in the case of perfect elasticity of capital flow, the interest rate does not change, nations require to borrow from abroad (increase in capital inflow) that must be pay in the future. As this result, currency appreciations leads to trade deficit as well as a decrease in future national income (GNI). Alternatively, in the case of perfectly inelastic, there is no capital inflow as result decreases national saving and investment thereby decrease in gross domestic product. So, the deficit hit only in interest rate thereby investment, not to exchange rate. However, an increase in government expenditure leads to higher economic growth (Barro, 1990). According to him if the government spends on consumption services and not the government agent's consumption stimulates to

increase the utility of consumer & productivity of the private sector leads to higher economic growth.

There are various methods to finance the deficit budget these are foreign aid, internal borrowing, printing new currency, and drawing upon its accumulated cash, increasing tax, etc.

There is debate among the economists about which methods of financing to the deficit budget is the best. All the tools of deficit financing have their merit and demerits, which methods of finance are preferable is depend upon the situation or condition of macroeconomics indicators of the economy and fiscal space also.

Foreign aid is one of the methods/tools of financing to deficit budget. But in the economic literature, the researcher has been found controversy among economists about the effect of foreign aid (except grant) on economic growth and development since the debt crisis of the 1980s. According to the debt overhang hypothesis, the government, in an attempt to pay the accumulated debt, raises the tax rate on the private sector (as a means of transferring resources to the public sector). This will discourage private sector investment; and more government public spending on infrastructure decreases (Road construction, Telecom, Electric power supplies) as the available resource is used to pay debt obligation. As a result, overall investment (private and public investment) will decrease in the country. According to Solow when countries are forced to pay part of their external debt, they used their income from the export and in some cases transfer resources including foreign aid and foreign exchange resources to service their forthcoming debt; this is the case for debt crowding-out effect. Those countries which transfer income from export which can be used in investment towards debt payment will discourage public investment. This, in turn, will decrease economic growth (Ejigayahu, 2013).

The Harrod-Domar growth model provides the most basic direct relationship between savings and the rate of economic growth. According to the model, capital accumulation in the form of savings is essential for growth. External borrowing is, therefore, seen as capital helping to fill the financing gap in developing countries to promote growth (Eaton, 1993).

Money financing is the method of financing the government deficit. An increase in government expenditure is financed by an equivalent increase in seigniorage revenue. It leads to increasing inflation and instability in the economy. Ultimately fall in economic growth along with higher inflation (Fischer &Easterly, 1990).

Debt financing by restraining credit to the private sector option assumes that the government through the central bank has the power to impose an arrangement with the commercial banking system whereby a certain amount of credit is allocated to the government with an equivalent reduction in the credit extended to the private sector. In an economy that is financially repressed, such credit rationing on the official lending rate is negligible. A decrease in the credit allocated to the private sector leads to an increase in borrowing in the informal financial market. Private financial wealth will increase with the reduction of bank credit to the private sector. The policy of private expenditure effects is incorporated by including credit restraint as well as the size of domestic credit allocated to the private sector (Kaplanoglou & Rapanos, 2013).

According to Baumol and Blinder (2005) the use of bond financing at the market rate of interest is equivalent to using fiscal policy in the deregulated financial market. Financial institutions, in this case, are assumed to be free to choose the value of Treasury bills in their portfolio and the rate at which they lend to the government is determined by market forces. Just like in credit restraining, additional government spending, in this case, is reflected in the change of the public sector borrowing requirement (PSBR). However, unlike credit restraining, PSBR is financed by the creation of new credit by the banking system without affecting the private sector access to bank credit. The government sector will then be expected to raise the Treasury bill rate as an incentive to the banks in their search for additional finance. Such resources are expected to be supplied from the banks' funds or by mobilizing additional savings from the private sector. They can also approach the central bank as a lender of last resort. As the increase in the Treasury bill rate is translated into an increase in the deposit rate, private agents

swap their idle balances (inflation hedges) for bank deposits. This will increase the financial wealth of the private sector.

The theoretical roots and empirical evidence show the dissimilarities in collusion of the impact of the budget deficit in economic growth. It implies the controversies among the economist about the effect of the deficit budget on economic growth. However, deficit financing delicate as a fiscal weapon for stimulating economic development but only if it is wisely used. It has the potential of benefiting the economy as it is a useful tool for mobilizing additional resources for economic development and helps the utilization of un-utilized and under-utilized resources of the country besides helping in building up social and economic overheads. With deficit financing, a country may be able to ensure higher levels of employment through the productive use of resources (Kuncoro, 2011).

The effects of deficit financing on the economy depends upon the method for which it is financed. When the government borrows funds, it competes with the private business borrowers for funds. The additional demand for funds raises the interest rate in the money market. As a result, thereof, the private investment is depressed- the crowding-out effect (Blanchard, 1991). In case the deficit financing is financed by printing of notes by the central bank, it creates an inflationary impact on the economy, which not only discourages foreign investment but also reduces exports, increases imports, increases inequality in the distribution of income, lowers savings rate in the economy and encourages wasteful expenditures. Hudson (2011) notes that deficit financing creates inflationary pressure in the economy and if the time lag between the injection of created money into the economy and the completion of development projects is long and the extra demand for goods is not matched by additional output and greater inflationary pressure in the economy. In case, the time lag is short, then the lesser inflationary effect on the economy.

In the context of Nepal, the government fiscal deficit has increased since 1978/79. Nepal is the least developing country (IMF), the country has the aim to upgrade the least developing country to a developing country by 2030. Government expenditure has been rapidly going increasing. The average economic growth of the country is about 4 per cent from the last decade. In the last three fiscal years, Nepal has been achieving about 7 per cent growth rate. In the context of Nepal, the deficit budget has played an important role in capital expenditure. Most of the capital expenditure is finance by internal loan and foreign aid.

1.2. Statement of the Problem

A benevolent government always tie with the problem of peoples of the nation. Immense responsibility over government to build infrastructure (non-human capital formation) and to provide sound health and educations services (Human capital formations) induced to increase government expenditure of the nations. Hence, due to enormous liabilities subject to inadequate resources, the deficit budget is the common feature for least developed and developing countries even developed countries. However, the impact of the deficit budget on economic growth and development is a contentious topic in the existing literature. Theoretically, Keynes and his follower argued the deficit is beneficial to the country. By contrast, Neo-classical economists argued economic growth has an inverse association with a deficit budget. And Ricardo asserts the deficit budget has neither a positive nor negative impact on deficit rather it has a neutral role in economic growth. And empirical evidence also gives the mixed result of the effect of the deficit budget on growth. Although to infer the exact associations among the given variable, the researcher has to employ an appropriate econometrics model.

In the context of Nepal, in 2015 AD Nepal has replaced the unitary government with the federal government system. With this new political and administering system, the mechanism of the revenue and expenditure has been

changed. In this regard, we need the fresh result of deficit expenditure and growth. Therefore, to address these theoretical, empirical, and methodological issues, we need to administer new research on the impact of deficit budget on economic growth. So, the research has concerned to find the answer to the following questions:

a. What are the trend and patterns of the budget deficit and economic growth in Nepal?
b. Whether there is any relationship between budget deficit and economic growth?

1.3. Objectives of the Study

The general objective of the study is to find out the impact of the government deficit budget on economic growth. However, the following are the specific objective of the study:

a. To analyse the trend and patterns of government deficit budget and economic growth in Nepal and other control variables.
b. To find out the relationship between government deficit budget and economic growth in Nepal**.**

1.4. Hypothesis of the Study

The following hypothesis has been tested to analyse the relationship between deficit budget and economic growth:

H_0: There exists no relationship between budget deficit and economic growth in Nepal.

H_1: There exists a significant relationship between budget deficit and economic growth in Nepal.

1.5. Significance of the Study

Many theorists such as the Keynesians, classical, and neo-classical theorists have tried to explain the relationship between government financing and economic growth. While some of them argued that deficit financing negatively impacts economic growth, others advocate that it is the much-needed intervention to stimulate development and subsequent growth of the economy. The finding of this study will prove, or falsify one of the schools of thought or even both. For achieving higher economic growth the governments have to employ appropriate fiscal policies, monetary policies or a mix of both. The findings will inform policymakers and national planners on the long-run effect of the deficit on economic growth. This can inform their future policy and decision making on matters relating to the national debt. This also can inform government officials on how deficit affects the economy and can inform their decisions on how to deal with the past and present deficit. The findings will also shed more light on the deficit-economic growth nexus and hence inform their contributions and debate on the issue on formal and informal forums. Thus politicians can use the results from this study to mobilize the electorate for or against debt as a budget deficit fixing policy.

The findings of this study are also expected to add knowledge to individuals interested in learning issues about the nexuses between deficit budget and economic growth. The findings of this study will be available in libraries of academic institutions and online libraries as a source of information. At the end of the study, the researcher provided recommendations which other scholars may use to come up with their study.

1.6. Limitations of the Study

Generally, the economic growth of the county depends upon major four components i.e. private investment expenditure, consumption expenditure (capital goods and consumer goods) and government expenditure (recurrent and capital), and foreign direct investment. The recurrent expenditure of the government

includes the expenditure on administration regulation defence etc. Capital expenditure includes all expenses of the government in development activates such as infrastructure development in all sectors of the economy of the country. All the government expenditures made through the government budgetary system. The recurrent expenditure of the government facilitated the capital expenditure and capital expenditure enhanced the economic growth of the country. Most of the developing country has a deficit budget. These countries trying to finance their recurrent expenditure by tax and non-tax revenue then the remaining part of the deficit budget is financing by the grand, loan, or borrowing. Therefore, in the context of Nepal, most of the portion of capital expenditure financing by grand and borrowing. Therefore, there are the following limitations of the study:

a. Economic growth is affected by private investment, government expenditure, consumption expenditure, and foreign expenditure. However, in this study, the research has picked the government's current expenditure and gross private investment expenditure and only.
b. Government expenditure is composed by the major three-component i.e. recurrent expenditure, capital expenditure, and financial management. All these components affect the economic growth of the country. However, for this analysis, we just take the deficit budget and recurrent expenditure.

CHAPTER-TWO

LITERATURE REVIEW

2.1. Theoretical Review

Theoretically: economist does not come into the same conclusion about the impact of deficit budget on economic growth. Generally, three different views or thought have been found in the theoretical ground:

2.1.1. Keynesian Theory

According to Keynesian economics, government expenditure is one important component of Aggregate Demand (AD) in the economy. Whenever AD falls short (during recessions), the government can increase expenditure, which in turn will increase AD, and in turn, will stimulate the economy. This solution based on government stimulus worked well to increase output, employment and income that brought the US economy out of the Great Depression of 1929–1933 and during the most recent Great Recession of 2007–2009. The same practice was followed by several other countries over the years to stimulate AD and the pace of economic growth (Briotti, 2005).

Keynesian theory was first developed by Keynesian 1930s where Eisner (1989) suggested that increased aggregate demand changes the profitability of private investment and leads to a higher level of investment at any given rate of interest. Thus, deficits may stimulate aggregate saving and investment even though they raise interest rates. In Eisner's view, increased consumption is supplied from otherwise unutilized resources. Many traditional Keynesians argue that deficits need not crowd out private investment.

The Keynesian macroeconomics theory indicates that budget deficit should be applied as a means of improving the economic status and as a proper policy, should enable politicians to maximize social welfare. Thus, in the Keynesian perspective, governments deal with the variables of production growth and unemployment; it also follows the policy that minimizes the difference between real unemployment and normal level of unemployment. Therefore, Keynesian

theory predicts that budget deficit negatively correlated with unemployment; whereas, budget deficit positively associated with economy's real growth rate. Therefore, economic growth rate variable is introduced as changes in gross domestic product (GDP) growth to examine this theory. The variable coefficient demonstrates that financial policies must be employed in a way that leads to improved economic production level (Roubini & Sachs, 1989).

The Keynesian view as in Krugman (1994) was however objected on two major issues. First, he Keynesian outlook on budget deficits presupposes that the government can and will "fine-tune" fiscal policy. If we grant that deficits stimulate aggregate demand, it follows that there are circumstances in which this stimulation may be detrimental. Even the most steadfast Keynesian is willing to concede that at full employment real deficits crowd out private investment and raise the rate of inflation. Recognizing the real cost of crowding out, many Keynesians (such as Eisner) argue for a policy of nominal deficits, which would preclude real deficit from rising once the economy achieved full employment. This policy would channel all the effects of inappropriately timed deficits into inflation. Advocates of this strategy adopt the purist view that Inflation is costless. Inflation interacts with the tax system produce significant distortions of behaviour. It then redistributes resources in undesirable directions. Besides, higher rates of inflation are associated with greater price variability. Formal models of price adjustment suggest a causal relationship. Thus, inflation adds significant randomness and uncertainty to the economic environment If Keynesian analysis implies that deficits can have either positive or detrimental effects then the proper management of fiscal policy becomes critical.

The second critique of the Keynesian school of thought on deficit financing was its view on the effects of temporary deficits. Keynesian view primarily describes the effects of temporary deficits. Indeed, it is essentially compatible with the neoclassical paradigm which primarily concerns the effects of permanent deficits in failing to distinguish between temporary and permanent deficit, it is

argued that Keynesians provide misleading advice to policymakers (Hollander, 1987).

2.1.2. Ricardian Equivalence Hypothesis

Another theory is the Ricardian Equivalence, which postulates that fiscal deficit cannot stimulate the economy. If the agents are rational then they will see that the increased deficit implies future taxes of which the present value equals the value of the deficit. Thus, they will act as if the deficits do not exist, which means that consumers and investors will ignore the stimulus (Seater, 1993).

This is the idea that consumers anticipate the future so if they receive a tax cut financed by government borrowing, they anticipate future taxes will rise. Therefore, their lifetime income remains unchanged, and so, consumer spending remains unchanged. Similarly higher government spending, financed by borrowing, will imply lower spending in the future. If this theory is true, it would mean a tax cut financed by higher borrowing would have no impact on increasing aggregate demand because consumers would save the tax cut to pay the future tax increases. In this case, the marginal net-wealth effect of government bonds is close to zero. Fiscal effects involving changes in the relative amounts of tax and debt finance for a given amount of public expenditure would not affect aggregate demand, interest rates, and capital formation (Barro, 1979).

David Ricardo initially introduced this theory, which was finally completed by Robert Barro. This theory created based on the two assumptions of rational expectations that households are prospective and households' visions until taxation. As taxes reduced and budget deficit supplied through borrowing, the government would have no choice of increasing taxes in the future to pay the debts and interests. According to this perspective, Ricardo believes that people found out by experience that increased government bond as a result of reduced taxes offers a temporary income (revenue) for the individual at present. Following increased government debt, these consumers save more to provide higher tax paying in the future; thus, increased public saving offers more credit to families

and economic enterprises. As a result, increased loan demand by the government would be compromised by higher saving; therefore, the interest rate remains unchanged, and the decrease in taxes may not lead to permanent revenue, households save temporary income with no change to pay the future tax liabilities, in term of savings, caused by current tax cuts. So, any reduction in current tax must be consistent with an increase in future taxes; further, augmenting of private saving would compromise reduction in public sector savings. National saving and thus interest rate remain unchanged, which consequently leads to unchanged private sector investment. In another word, the effects of tax cut resulted from budget deficit cause properly increasing of private sector saving; according to logical consumption by consumers and regarding permanent consuming of consumers, no change in national savings may lead to no change in interest rate.

Ricardo believed that budget deficit increased due to increasing costs of government, which may be paid now or in a later time. Therefore, tax cuts generated by the policy of budget deficit do not affect consumption and saving; it employs no change on other economic variables including economic growth through this (Arjomand, et al. 2016).

2.1.3. Neo-Classical Theory

Neo-classical paradigm mentioned the budget deficit increases current consumption as individuals shift taxes to future generations. Increased consumption leads to a decrease in saving and increase in interest rates, therefore, must rise to bring equilibrium in the capital markets. Increased interest rate, thus, result in a decline in private sector in the form of investments; crowding-out effect of budget deficit (Bernheim, 1989).

Marshal (1890) and Fisher (1989) postulated that governments should not intervene in the economy. They claim that an unobstructed free market is the best means of inducing rapid and successful development. Competitive free markets that are unrestrained by excessive government regulation are seen as to be able to naturally ensure that the allocation of resources occurs in such a way that the

greatest efficiency possible is achieved. The proponents of neoclassical growth theories suggested three alternative approaches to achieving economic growth; the free-market approach, the public choice approach and the market-friendly approach.

The free market and public choice approach contend that the market should be completely free and any government intervention will distort the situation. The market-friendly approach advocates free markets while recognizing the possibility of the presence of market imperfections especially in markets of developing countries.

Neoclassical theories also have its base on good governance. The notion of good governance has been elaborated, in part, through a component of the neoclassical counter-revolution called new institutionalism. The basic premise of this perspective is that development outcomes depend on institutions such as property rights, price and market structures, money and financial institutions, firms and industrial organizations, and relationships between government and markets. The essence of good governance is to ensure the existence of these institutions and their proper role and functioning, as seen from the perspective of neoliberal theory. According to neoliberal thought, good governance requires freeing the market from state control and regulation; reducing government expenditures for social services like education and health care; maintaining roads, bridges, the water supply, and so forth; and selling state-owned enterprises, goods, and services (including banks, key industries, railroads, toll highways, electricity, schools, and hospitals) to private investors(Catao & Terrones, 2003).

The Solow growth model in Solow (1988) as a neoclassical model agrees that market price allocation is more efficient than government intervention. Additionally, it is noted that state-owned enterprises hardly fulfil their promises leading to inefficiency besides the lack of incentives to promote economic growth.

Neo-classical school of thought provides the basis for monetary policies adopted by the government. A review of the theory by this school of thought is

relevant in this study as it may explain the negative effect of deficit financing as a fiscal policy by the government on economic growth.

2.2. Empirical Review

In the empirical ground, enormous research has been done. However, the researchers cannot found a similar conclusion. Some of the conclusion of empirical study mentions as:

Hussain & Haque (2017) the study on the impact of fiscal deficit in economic growth in Bangladesh, using two data (secondary) set from two sources one is the official source of Bangladesh from 1993 to 2014. And the other is the World Bank from 2001 to 2014. The author analyzed the relationship using the VECM model. A researcher found that the fiscal deficit has a positive and significant effect on economic growth or real Gross domestic product which support the Keynesian theory. But from VECM for the World Bank data indicate that the impact of fiscal deficit in economic growth has negative. It contradicts with the Keynesian argument but it supports with Neoclassical argument which asserts that fiscal deficit leads to a drop in GDP.

Ahamad (2013) Analyzed the role of deficit budget in economic growth in the case of Pakistan. To achieve the objective of the research the researcher used the time series data. The period is taken from 1971 to 2007. The data of the relevant variable are collected from the World Bank and Economic Survey of Pakistan. The author analysed the relationship by using the OLS method concludes that the budget deficit has neither negative nor positive impact on economic growth in Pakistan. Means that the government policy of deficit finance has worthless. The conclusion follows the Ricardian approach.

Rahama (2012) investigated the relationship between budget deficit and economic growth in the case of Malaysia. To find the relationship between the relevant variable author collect the information from secondary data sources and used the autoregressive distribution lag (ARDL) model to explore the relationship and conclude the budget deficit positively associated with the economic growth.

Meanwhile, the author found a positive relationship between non-productive expenditure and economic growth.

Dao and Bui (2016) examined the effect of budget deficit on growth in the Vietnamese economy. An Autoregressive Distributed Lag (ARDL) was employed to analyse the quarterly data from 2003 to 2015, and the researcher has found the long-run relationship between macro variables under study. Moreover, the budget deficit does not affect economic growth. While useful expenditure has a substantial positive influence.

Catao and Terrones (2003) conducted a panel study in 107 including both advanced and developing country in fiscal deficit and inflation with secondary data from 1960 to 2001. Authors found the deficit budget has a strong positive impact on inflation among high-inflation and developing country groups, but not among low-inflation advanced economies. They found that 1 percentage point reduction in the ratio of fiscal deficit to Gross Domestic Product (GDP) typically lowers long-run inflation by 1.5 to 6.0 percentage points, depending on the size of the inflation tax base.

A-L-Khedair (1997) analyzed the relationship between the budget deficit and economic growth in seven major industrial countries (G7) with the data covering 1964-1993 and found that the budget deficit has a significant positive impact on economic growth in France, Germany, and Italy. The author concludes that budget deficit positively and significantly affects economic growth in all G7 country.

Awe (2014) investigated the short-run and long-run implication of budget deficit and economic growth in Nigeria. Employed OLS methods with data sate from 1980 to 2011. The author found that there was a significant relationship between budget deficit and economic growth in Nigeria. But the inverse relationship between the interest rate and gross domestic product. And the author suggests that the budget deficit should be finance appropriately to help or promote economic growth in the nation. The budget should be prepared according to target

and goals which should be linked by implication and performance review. The public fund should be spending accordance with budgetary allocation beside this there should be effecting monitoring and evaluation, minimizing corruption, promotion transparency, responsibility, accountability and ensure that the people derive the expected benefits.

Thung (2018) examined the effect of a fiscal deficit on economic growth in Vietnam. The author collects the required information (time series data) from 2003 to 2016. Investigator uses the error correlation model and the empirical result strongly indicate that there is a cointegration relationship between fiscal deficit and economic growth in Vietnam in which fiscal deficit hard harmful effect on economic growth in both short-run and long run. The particular correlation analysis has confirmed that fiscal deficit can hart not only in Vietnam but also in other emerging countries which are need to argent solution. So that reduced the fiscal deficit rate and have more sustainable growth in future.

Nayabi (2015) estimated the relationship between budget deficit and economic growth in Pakistan using time series data from the period of 1976 to 2007. The author used Cointegration test, VAR Granger Causality test and vector error correction model. Economic growth was measured as growth in GDP. The technique of time series econometrics such as Granger Causality, Johansen cointegration and error correction models have been used. Johansen cointegration shows that all variables are no cointegrated and the error correction term is also insignificant. Hence, the deficit budget has no significant on the economic growth of Pakistan. The results showed that GDP cause investment and investment cause deficit. However, the budget deficit does not cause GDP growth. The results of this study also support the classical view about the budget deficit.

Çınar (2014) examined the Role of Budget Deficit Policies in Economic Growth from A Keynesian Perspective by employing panel data from 2000 to 2011 of best five (Luxembourg, Ireland, Slovakia, Slovenia and Finland) and worst five (Austria, Belgium, Italy, Portugal and Greece) country of Eurozone on

the basis of debt. The author used the ARDL. Authors find that in the short-run as well as long-run public debt has a negative impact on economic growth for the two groups of countries. In other words, an increase in public debt will reduce economic growth. On this conclusion ground, the Keynesian argument of the positive impact of deficit budget in economic growth has failed.

Eminer (2015) studied the impact of budget deficit on economic growth in North Cyprus time-series data during the period from 1983 to 2010. To explain the impact of budget deficit on economic growth, the author used the Granger Causality test and with other econometric methods such as; Dickey-Fuller and Augmented Dickey-Fuller unit root tests, Co-Integration test results. The researcher found that productive and non-productive expenditures and budget deficit an important instruments of economic growth. Budget deficits and all kinds of government expenditures have positively related to economic growth. The relation is in both direction and bivariate causality. The share of non-productive expenditures is also caused economic growth and this contradicts with the theory. But this shows that North Cyprus economy is dependent on government spending. And today, nonproductive expenditure and productive expenditure have an impact on the next year economic growth rates. As there is a significant long-run relationship

2.3. Methodological Review

In order to scrutinize the empirical relationship among the relevant variable, the various econometrics model has been employed. Among them, Ordinary Least Square (OLS), Vector Autoregressive (VAR) Model, Granger Cointegration test, Johansen Cointegration test, Auto-Regressive Distribution lag (ARDL) approach to bound test and Granger Causality test model are most prominent linear econometrics model that used to the analyzed relationship among time series variable. But each model has its limitations.

OLS and VAR model applied only for stationary time series that means the series must be integration order zero (Brooks, 2014). If we make stationary from

first and second-order differencing, we lose long rung information that contains in the series and also may appear under-differencing and over-differencing problem (Maddala & Kim, 1998). Non-stationary time series treat as stationary that gives a nonsense result which is known as spurious regression (Granger & Newbold, 1974). To solve this problem Engle and Granger introduced two-step cointegration tests in 1987 with the limitations of all variable must be first order integrations (Das, 2019). The estimation of the coefficient of Engle and Granger cointegration model based on the OLS method. Johansen and Juselius introduced a new approach of cointegration tests in 1990 with the limitation of all variable must have the same order of integrations i.e. first order (Johansen & Juselius, 1990). Johansen Juselius cointegration model based on maximum likelihood methods. Johansen Juselius cointegration model is more appropriate for large sample size, tabulated critical value is inappropriate when applied to 100 and smaller sample size (Maddala & Kim, 1998). Even 100 observations are not sufficient to detect the true cointegration rank if a stationary root is close to unity, say 0.8 or higher (Toda, 1995). For the satisfactory performance of the Johansen cointegration tests, we need at least a sample size of 300 (Toda, 1994).

By relaxing some limitation contain on Granger and Johansen cointegration test, Pesaran and shin introduce Autoregressive Distribution Lag (ARDL) approach to cointegration is an alternative model for Johansen Juselius cointegration model. Previous cointegration model based on the assumption of all variable must have an integrated order one. But Pesaran and Shin relax this assumption. Autoregressive Distributed Lag (ARDL) approach to cointegration or bound procedure for a long-run relationship, irrespective of whether the underlying variables are I(0), I(1) or a combination of both. However, it is not applicable if the variable is integrated with order two i.e. I(2) (Nkoro & Uko, 2016). ARDL approach to bound test is reliable for small sample size (Narayan, 2004).

2.4. Research Gap

The impact of deficit budget on economic growth is a debatable topic in the existing literature. Theoretical, empirical and methodological evidence produced a dissimilar argument. Means that economist or/and researcher found contentious result about effect of deficit budget in economic growth.

In the theoretical ground, economists assert combative argument. Neoclassical claim deficit budget discourages to the private investment thereby inverse effect in economic growth, Ricardian theory state increase in government expenditure just equal to decrease in private expenditure so there is no any effect of deficit policy in the economy and Keynesian theory assert an increase in effective demand via deficit leads to increase in growth and employment in the economy. And empirical evidence also provides disputatious result in which existing literature provide positive, negative and neutral result. In the methodological root, there is also debate that we mention above methodological review section.

Such a discourse create controversy in policymaking and implication process. Hence, we need empirical evidence so that a country follows the appropriate path for policy-making and implication. Therefore, these ambiguities induced to the economist or/and researcher to administer new research in order to provide new evidence in the existing literature.

CHAPTER-THREE
RESEARCH METHODOLOGY

3.1. Research Design

The research based on descriptive and analytical research design. To find the answer to the given questions, the researcher has been employed economic growth as the dependent variable and deficit budget as an independent variable, government recurrent expenditure, and gross private capital formation treated as a supportive variable. All the information of the relevant variable is collected from the secondary sources. First, the researcher tries to find the trend and pattern of the relevant variable.

In order to scrutinize the empirical relationship among the dependent and independent variables, first, the researcher has to find the nature of the series i.e. stationary and non-stationery. For this purpose, the researcher employed the unit root test, particularly the ADF test. Autoregressive Distribution Lag approach to bound test has been used to analyses short run as well as the long-run relationship between economic growth and deficit budget, supportive variable. Normality test, Heteroskedasticity Test, Stability test, Serial Correlation test, and Regression specification Error test applied to diagnose problems that contain in the regression model.

3.2. Conceptual Framework

The conceptual framework can be shown with the help of a flowing diagram:

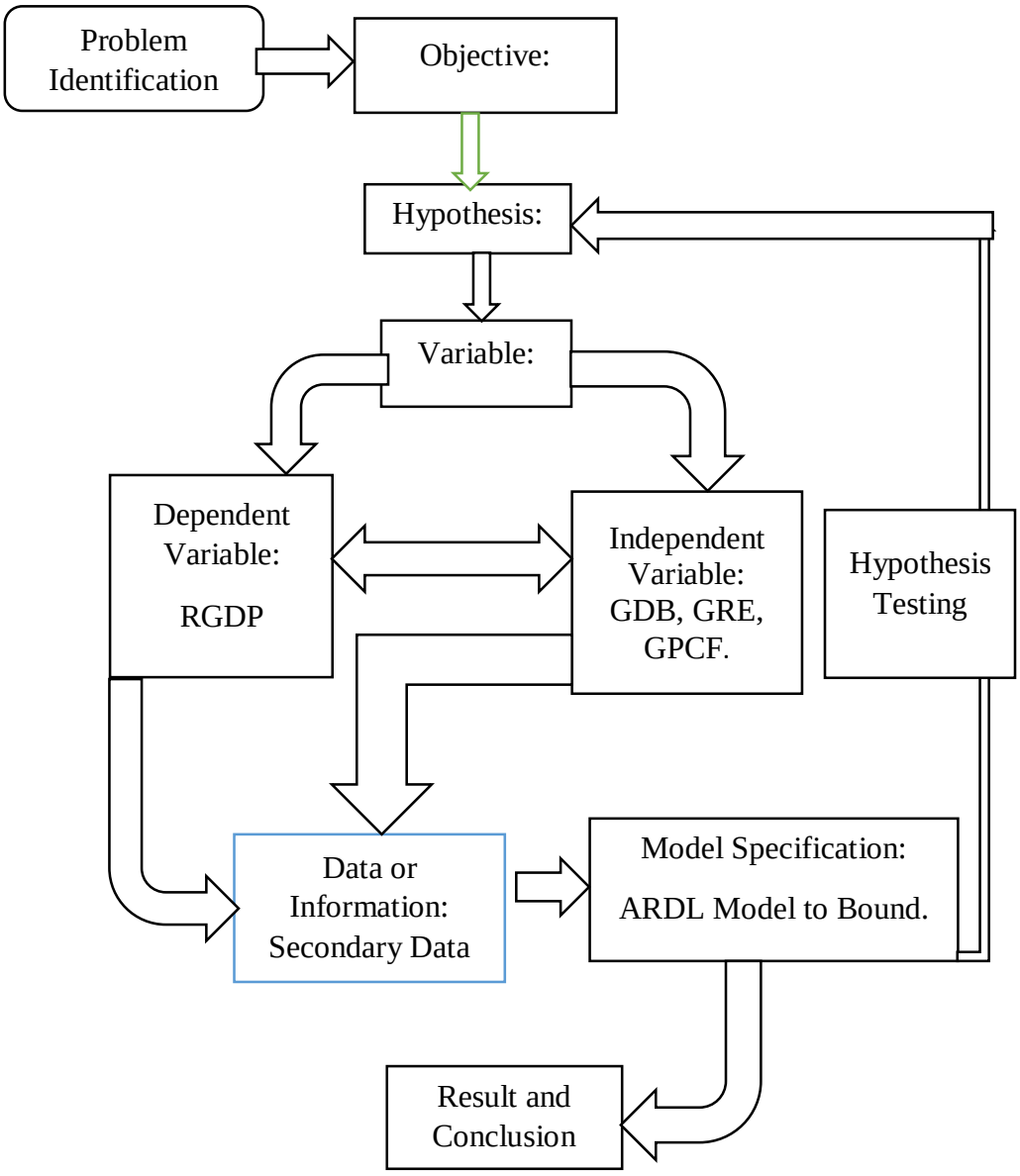


Chart: 3.1. Conceptual Framework

3.3. Methodological Framework:

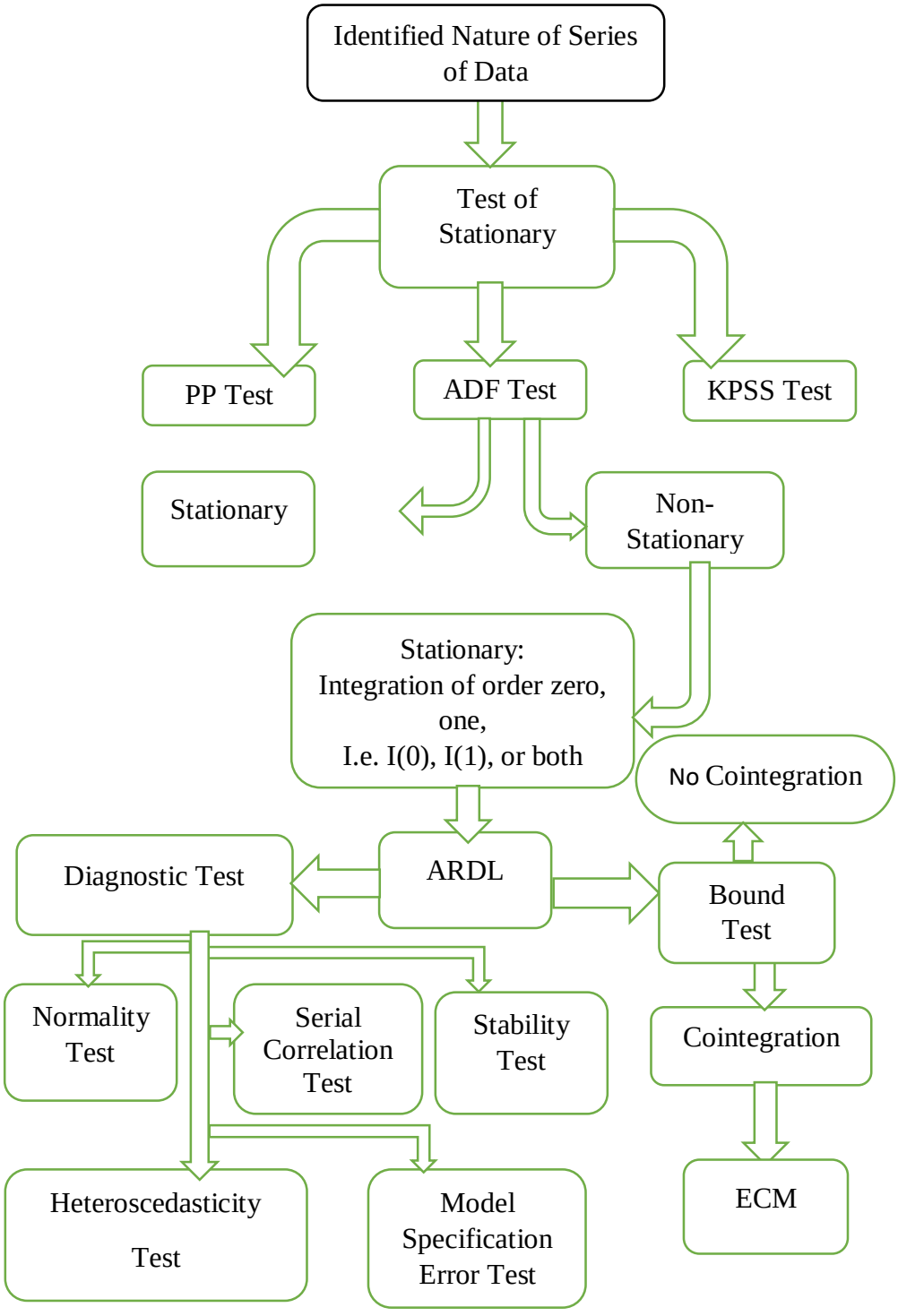


Chart: 3.2. Model Selection and Analysis Procedure

3.4. Variables Selection and Sources

The following table summarizes all the relevant variable. The researcher has been employed the following variable to address the given research question of the study.

Table.3.1. List of Required Variables:

No.	Code	Variable	Source	Unit
1.	GDB	Government fiscal budget	Ministry of Finance	NC Rs. Million
2.	RGDP	Real Gross Domestic Product	World Bank	NC Rs. Million
3.	GPCF	Gross Private Capital Formation	Ministry of Finance	NC Rs. Million
4.	GRE	Government Recurrent Expenditure	Ministry of Finance	NC Rs. Million
5.	NGDP	Nominal Gross Domestic Product	World Bank	NC Rs. Million

In this analysis, gross private investment is taken as a proxy for private investment.

3.5. Nature and Source of Data

Which types of data are used to study is depend upon the objective and research design of the study. However, in this study researcher/we have been used the secondary or the researcher have been collected require all information or data from secondary sources. The required data and corresponding source listed in Table 3.1.

3.6. Study Period Cover

The major determinant of the study period of research: objective, availability of data, etc. However, some theory and book state that the small sample size is not good to analyse and thereby generalised the result so in this study or thesis the researcher cover study period from 1990 to 2017. Our sample size is 28 years.

3.7. Unit Root Test

A non-stationary time series is a stochastic process with unit roots and structural breaks. However, unit roots are major sources of non-stationary. The presence of a unit root implies that a time series under consideration is non-stationary while the absence of it entails that a time series is stationary. The variable or data said to be weakly stationary if it's mean and variance must be constant (not depending time) over the time, otherwise, the variable is non-stationary (Maddala, 1998).

There has tree renowned technics to test whether the data has stationary or not? These technic are Argument Dickey-Fuller (ADF), Kwiatkowski-Phillips-Schmidt-Shin (KPSS) and Philips-Perron (PP) test. Among them, ADF test becomes most popular in the existing literature (Elder & Kennedy, 2001). So, the researcher goes through ADF test to identifying the nature of stationary or non-stationary of the data.

Augmented Dickey-Fuller Test is used to check the stationary of the variables. A time-series data usually show a trend with the time. This trend can be removed by differencing. The Augmented Dickey-Fuller was employed to test the order of integration of the variables. The Augmented Dickey-Fuller test is a type of statistical test known as unit root test.

The Augmented Dickey-Fuller test is given as:

$$\Delta y_t = \alpha_0 + \alpha_1 t + \rho_1 y_{t-1} + \sum_{i=1}^{k} \beta_i \Delta y_{t-i} + e_t \quad \ldots\ldots\ldots 1.1$$

Where,

$\alpha_0 =$ Intercept

$\alpha_1 = coefficient\ of\ trend$

$\rho_1 = coefficient\ of\ y_{t-1}(\sigma - 1)$ and it is first difference operator.

$$\Delta y_t = first\ difference\ of\ y_{t-1}\ i.e.\ y_t - y_{t-1}$$

Null Hypothesis of ADF is ρ = 0

Alternative Hypothesis of ADF ρ < 0

If the Null hypothesis rejected then the series has stationary otherwise non-stationary.

The researcher also draws the conclusion of this test with help of P-value if P-value is less than 5% then the series has stationary.

However, if the null hypothesis does not reject then we have to go further to make the series stationary. So non-stationary time series can be converted into stationary series by differencing.

If a time series become stationary after differencing one time, then the series is said to be integrated of order one and denoted by I(1). Similarly, if a time series become stationary after differencing two times, then the series is said to be integrated order two and denoted by I(2).

3.8. Model Specification

When analysing the possible relationships between two or more variables the researcher often postulate specifications according to the following equation.

$$y = f(X) \ldots\ldots\ldots\ldots .1.2$$

Where, Y is the dependent variable and X is a vector of independent variables and f is some function.

Which model is appropriate for time series data analysis is primarily depend upon the nature of data. So, the researcher first identifies the trend, cycle, seasonality and residual component of the data series. The presences of these components the level data becomes non-stationary. Therefore first we have tested the unit root which answers whether data are unit root or not? In another word, whether data are stationary or not? After testing unit root then it gives the idea

about which model is appropriate for obtaining the answer to the underlying research question. Here we select the Autoregressive Distribution Lag model (ARDL). The ARDL model gives a more robust result even the sample size is small (Nkoro and Uko, 2016). We can use this ARDL model for stationary as well as non-stationary (mixed) {except I(2)} variable nature of data.

3.8.1. Autoregressive Distribution Lag (ARDL) Approach to Cointegration

The ARDL model is the standard least square regressions that include lag of both dependent and independent variable and explanatory variable as regressors. ARDL model is a linear time series model in which both dependent and independent variable are relets not only contemporaneously but across historical (lagged) value as well. The ARDL model used to analyse the short-run and long-run relationship among the underlying variable (Green, 2008).

Modelling time series in order to keep their long-run information intact can be done through Cointegration. Granger (1981) and Engle and Granger(1987) were the first to formalize the idea of Cointegration, providing tests and estimation procedure to evaluate the existence of the long-run relationship between the set of variables within a dynamic specification framework. Following the shortcomings of Engle and Granger (1987), Johansen (1999) and Johansen and Juselius (1990) proposed a new procedure for testing the Cointegration of several, say k, I (1) time series. This test permits more than one Cointegration relationship, so, it is more applicable than the Engle and Granger (1987) test. However, when one Cointegration vector exists, Johansen and Juselius (1990) Cointegration procedure cannot be applied. Hence, it becomes imperative to explore Pesaran and Shin (1995) and Pesaran et al. (1996b) proposed Autoregressive Distributed Lag (ARDL) approach to Cointegration or bound procedure for a long-run relationship, irrespective of whether the underlying variables are I(0), I(1) or a combination of both. In such a situation, the application of ARDL approach to Cointegration will give realistic and efficient estimates. Unlike the Johansen and Juselius (1990)

Cointegration procedure, Autoregressive Distributed Lag (ARDL) approach to Cointegration helps in identifying the Cointegration vector(s). That is, each of the underlying variables stands as a single long-run relationship equation. If one cointegrating vector (i.e. the underlying equation) is identified, the ARDL model of the cointegrating vector is reparameterized into ECM. The reparameterized result gives short-run dynamics (i.e. traditional ARDL) and the long-run relationship of the variables of a single model. The re-parameterization is possible because the ARDL is a dynamic single model equation and of the same form with the ECM. Distributed lag Model simply means the inclusion of unrestricted lag of the regressors in a regression function.

This cointegration testing procedure specifically helps us to know whether the underlying variables in the model are cointegrated or not, given the endogenous variable. However, when there are multiple cointegrating vectors ARDL Approach to cointegration cannot be applied. Hence, Johansen and Juselius (1990) approach becomes an alternative.

Requirements for the Application of Autoregressive Distributed Lag Model (ARDL) Approach to Cointegration Testing: i) underlying variable must be integrated in the order I(0), I(1) and both, ii) If the F-statistics (Wald test) establishes that there are multiple long-run relations, ARDL approach cannot be applied.

Nkoro and Uko (2016) have mentioned the numerous advantages of the ARDL approach:

i. Each of the underlying variables stands as a single equation endogeneity is less of a problem in the ARDL technique because it is free of residual correlation,
ii. When there is a single long-run relationship, the ARDL procedure can distinguish between dependent and explanatory variables,

iii. The Error Correction Model (ECM) can be derived from ARDL model through a simple linear transformation, which integrates short-run adjustments with long-run equilibrium without losing long-run information.

iv. It is irrespective of whether the underlying variables are I(0), I(1) or a combination of both.

The simple ARDL (1,1; 1) model discussed in Hendry, Pagan, and Sargan (1984) is given as:

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \beta_1 x_t + \beta_2 x_{t-1} + \varepsilon_t \ldots\ldots\ldots 1.3$$

Where,

$\varepsilon_t \sim iid(0, \sigma^2)$

$y_t = dependent\ varible$

$x_t = explainetory\ variable$

$\alpha_1, \beta_1, \beta_2 = parameter\ or\ coefficient\ of\ respective\ varible$

$\alpha_0 = parameter$

$ARDL(1,1)\ means\ the\ model\ cosider\ one\ lag\ lenth\ for\ both\ varible$

$where\ , first\ 1\ stand\ for\ p\ and\ second\ 1\ stand\ for\ q$

ARDL model for lag order p, q i.e. ARDL $(p, q_1 .. q_k)$ given as:

$$y_t = \alpha_0 + \sum_{i=1}^{p} \theta_i y_{t-i} + \sum_{j=1}^{k} \sum_{i=0}^{q_j} \beta_j x_{jt-i} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots 1.4$$

$where,$

$p = lag\ lenth\ for\ endogeneous\ varible\ and$

$q = lag\ lenth\ for\ exogeneous\ variable$

$p \geq 1$

$\theta_i, \beta_i = coefficient\ of\ the\ respective\ variale$

i = 1,2…..

k = is a regressor $x_{jt}\ j = 1,2..k$

Pesaran and Shin (1998) and Pesaran et al. (2001), ARDL (p, q) approach to cointegration is given as:

$$\Delta y_t = \alpha_0 + \sum_{i=1}^{p} \theta_i \Delta y_{t-i} + \sum_{i=0}^{q} \beta_i \Delta x_{t-i} + \gamma_1 y_{t-1} + \gamma_2 x_{t-1} + \varepsilon_t \ldots 1.5$$

In equation 1.4, the first part of the model representing the short-run dynamics of the model. The second part with γs represents the long-run relationship.

$\alpha_{0,}$ is intercept and trend coefficient respectively and

θ_i, β_i are the coefficient of respective

the variable which depicts the short − run relationship.

Similarly, γ_1, γ_2 are the coefficient of respective

the variable which depicts long − run relationship and ε_t residual which

$\varepsilon_t \sim iid(0, \sigma^2)$.

As the model tries to capture the long-run relationship between the variables, the researcher has to define what is a long-run relationship means in the context of the ARDL model. The definition of a long-run relationship, that is the commonly employed in econometrics is that the variables converge to some long-term values and are no longer changing dramatically (Brooks 2014). Hence, in the long-run equilibrium, the system is stable implying that the states of the system remain constant over a period of time and there is no tendency for change i.e. $y_t = y_{t-1}; x_t = x_{t-1} = x_t$.

Step for ARDL Cointegration Approach

Nkoro and Uko (2016) suggest the following step for ARDL approach:

a) Choosing the Appropriate Lag Length for the ARDL Model

Before analysing the relationship between the given variable first, the researcher has to identify optimum lag length for the model. The issue of finding the appropriate lag length for each of the underlying variables in the ARDL model is very important because we want to have Gaussian error terms (i.e. standard normal error terms that do not suffer from non-normality, autocorrelation, heteroskedasticity etc.). In order to select the appropriate model of the long run underlying equation, it is necessary to determine the optimum lag length(k) by using proper model order selection criteria such as; the Akaike Information

Criterion (AIC), Schwarz Bayesian Criterion (SBC) or Hannan-Quinn Criterion(HQC).

$$AIC = -ln(\sigma_p^2) + \frac{2k}{n} \dots\dots\dots\dots\dots\dots\dots\dots 1.5$$

$$SBC\ or\ SIC = \ln(\sigma_p^2) + \frac{[kln(n)]}{n} \dots\dots\dots *$$

$$HQC = nln(\sigma_p^2) + 2n^{-1}kln[\ln(n)] \dots\dots\dots\dots **$$

Where,

Ln = Naturel logarithm

σ_p^2 = Maximum likelihood estimator $[(n-k-1)^{-1}\sum_{i=k}^{n}\varepsilon_i^2]$

n = Number of observation

K = Number of regression parameters to be estimated partly defined by the lag p.

The model with the smallest AIC, SBC estimates or small standard errors and high R^2 performs relatively better (Nkoro & Uko 2016). Both criteria are best for large sample size. For the small and medium size of the sample, both are overestimated. However, for our model we select AIC. AIC gives minimum value among all.

b) Determination of the Existence of the Long Run Relationship of the Underlying Variables

At the first stage, the researcher has to identify whether there is exist a long-run relationship between the underlying variable or not. In order to establish a long-run relationship, the researcher has to compute bound F-statistic (bound test for cointegration). The F-statistic has carried out the joint null hypothesis of the coefficient of the lagged variable ($\gamma_1 y_{t-1}, \gamma_2 x_{t-1_t}$) are zero. Means that there is no long-run relationship between underline variable. From equation 1.5, the following joint hypothesis will be considered for identification of long-run relationship among underline variable.

$H_0: \gamma_1 = \gamma_2 = 0$ *The long reletionship does not exist in equestion* 1.5

$H_1: \gamma_1 \neq 0 \cup \gamma_2 \neq 0$ *then thre exist long run realtionship in equation* 1.5

Hypothesis test using F-statistic is not similar to regular hypothesis testing due to F-test in the ARDL framework has a non-standard distribution and that depends on (i) The mix of I(0) and I(1) independent variables, (ii) The number of independent variables and (iii). If the model includes an intercept and/or trend term.

Pesaran and Pesaran (1996a), Pesaran et al. (2001) and Narayan (2005), gives the two set of critical value assuming that:

i. Lower critical bound: all variable are I(0). Means there is no cointegration among the underline variable.
ii. Upper critical bound: all variable are I(1). Means there is cointegration among underling arable.
iii. However, the value is fall in between lower and upper bound than the result is inconclusive and additional information is need before the conclusion.

c) ARDL Model into Error Correction Model

To define an ECM-term, which is the second step in the ARDL approach a few assumptions have to be made. Given that the F-bound test produces satisfactory results it is possible to determine the long-run equilibrium relationship without spurious regression as the linear combination of the non-stationary variables are stationary in a simple OLS framework:

$$y_t = \alpha_0 + \beta_1 x_t + \varepsilon_t \dots\dots\dots\dots\dots\dots 1.7$$

To capture the convergence of the model towards equilibrium an error correction term is defined by $ECT_{t-1} = y_{t-1} - \alpha_0^{\wedge} - \beta_1^{\wedge} x_{t-1}$ which $\alpha_0^{\wedge}, \beta_1^{\wedge}$ $are\ estimeted\ from$ 1.6. note that ECT_{t-1} is the residual from equation 1.6. Furthermore, if the model is moving towards equilibrium, in the long run, the difference between the independent and dependent variables (ECT_{t-1}) cannot increase as that would impose divergence. Hence difference must be decease. In this way, the short-run dynamic are estimated by using equation 1.4 by replacing the lagged variable $y_t\ and x_t$ with an error correction term ECT_{t-1}. The equation can be specified as follows:

$$\Delta y_t = \alpha_0 + \alpha_1 t + \sum_{i=1}^{p} \theta_i \Delta y_{t-i} + \sum_{i=0}^{q} \beta_i \Delta x_{t-i} + \lambda\, ECT_{t-1} + \varepsilon_t \ldots\ldots\ldots\ldots 1.8$$

In equation 1.7, all the coefficient are defined as before equation 1.4. And λ is the coefficient of ECM. And ECM coefficient must be statistically significant and negative for the model to converge to equilibrium. The ECM coefficient detects the existence of a stable long-run relationship between underlying variable. And it gives the speed of adjustment towards equilibrium. For instance and let we have annual data if λ = -0.5 then Y will after a shock in X return to equilibrium in long-run with a speed of 50 per cent per annum.

Based on the above theoretical and mathematical framework, the ARDL model can be specifying by employing our variable in the model.

$$\begin{aligned}\Delta \ln(GDP)_t = {} & \alpha_0 \\ & + \sum_{i=0}^{p} b_i \Delta \ln(GDB)_{t-i} + \sum_{i=0}^{q} c_i \Delta \ln(\mathrm{GBD})_{t-i} + \sum_{i=0}^{r} h_i \Delta \ln(GPCF)_{t-i} \\ & + \\ & \sum_{i=0}^{u} m_i \Delta \ln(GRE)_{t-i} + \gamma_1 \ln(GDP)_{t-1} + \gamma_2 \ln(GDB)_{t-1} \\ & + \gamma_3 ln(GPCF)_{t-1} \\ & + \gamma_4 \log(GRE)_{t-1} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1.9\end{aligned}$$

Where,

All the dependent and independent variables are the same as to define in table 3.1. The coefficient of the respective variable in equation 1.9 b_i, c_i, h_i, m_i are short-run coefficient which explains the short-run relationship and $\gamma_1, \gamma_2, \gamma_3, \gamma_4$ are long-run coefficient which explains the long-run relationship. And ε_t residual which $\varepsilon_t \sim iid(0, \sigma^2)$.

Similarly, the error correction equation can be specified as below:

$$\Delta \ln(GDP)_t = \alpha_0 + \sum_{i=0}^{p} b_i \Delta \ln(GDB)_{t-i} + \sum_{i=0}^{q} c_i \Delta \ln(\mathrm{GDD})_{t-i} + \sum_{i=0}^{r} h_i \Delta \ln(GPCF)_{t-i} + \sum_{i=0}^{u} m_i \Delta \ln(GRE)_{t-i} + \lambda ECM_{t-1} + \varepsilon_t \dots\dots\dots\dots\dots\dots 2.0$$

Where,

Except, λ, all coefficients are the same as the equation 1.9 and λ is the coefficient of error correction term. Which can be defined the same as defined in equation 1.8.

3.8.2. Diagnostic test

The ARDL model tries to find the best linear unbiased estimator (BLUE) and thereby diagnostic tests need to be conducted. The researcher validates the results and ensures that the results are statistically robust by utilizing tests for stability, serial correlation, heteroscedasticity, miss speciation and normality in the residuals. If these tests give a significant result then the model provides a satisfactory result and the researcher can conclude that result can be used for analysis:

3.8.2.1. Test for Stability

The cumulative sum (CUSUM) of recursive residuals and the CUSUM of square (CUSUMSQ) tests are applied to assess the parameter stability (Pesaran & Pesaran, 1997). The cumulative sum test identifies systematic changes in the regression coefficients, while the cumulative sum of squares test detects sudden changes from the constancy of the regression coefficients. It detects our regression coefficient are changed suddenly or systematically.

H_0: Regression coefficient or parameters are stable (desirable).

H_1: Parameters are unstable (not desirable).

3.8.2.2. Test for Normality of the Residual

To test normality, the researcher employed the Jarque-Bera test. The normality in residual If $\varepsilon_t \sim N(0\ \sigma^2), \forall t$. Followings hypothesis will be tested for normality:

H_0: Normality in Residual (residual normally distributed).

H_1: Non-normality in Residual (residual non-normal distribution).

3.8.2.3. Test for Heteroscedasticity

The presence of Heteroscedasticity means there the variance of residuals are not constant $[var(e_t) \neq \sigma^2]$ in such a case, the researcher cannot generalize the result. The basic assumption of the linear regression model is the residuals are constant (homoscedasticity). To detect heteroscedasticity we have taken Breusch-Pagent test. The fowling hypothesis can be considered:

H_0: Homoscedasticity.

H_1:: Heteroscedasticity.

3.8.2.4. Test for Serial Correlation

The serial correlation test is used to detect the correlation between lagged residuals. It reflects the efficiency of the model. The mathematically following condition would be true: $coveriance(e_i, e_j) = 0, \forall i, j$ otherwise the series has a serial correlation. To detect serial correlation, the researcher goes for the Breusch-Godfrey test. The model of the residuals under the simplest form of the Breusch-Godfrey test is:

$$\varepsilon_t = \rho\varepsilon_{t-1} + v_t \qquad v_t \sim N(0, \sigma_v^2) \dots\dots\dots\dots\dots .2.2$$

Following hypothesis has been tested for the serial correlation.

$$H_0: \rho = 0, No\ Serial\ correlation\ in\ the\ model.$$

$$H_1: \rho \neq 0, there\ is\ serial\ correlation\ inthe\ model.$$

3.8.2.5. Regression Specification Error Test

Ramsey Regression Speciation Error Test (RESET) (Ramsey 1969) for functional form i.e. it tests if non-linear combinations of the fitted values can

describe the explanatory variable. The intuition behind the test is that if non-linear combinations of the explanatory variable have any power in explaining the response variable, the model is misspecified. Mathematically if the researcher utilized OLS on y_t (Brooks 2014):

$y_t = \beta_0 + \beta_1 x_t + \epsilon_t$ and $y_t^{\wedge} = \beta_0 + \beta_1^{\wedge} x_t$ is the fitted then the RESTE test, tests if $y_t^{\wedge 2}, y_t^{\wedge 3}, \ldots \ldots . y_t^{\wedge t}$ have the explanatory power on $y_{t,}$ in

$$y_t = \beta_0 + \beta_1 x_t + \beta_2 y_t^{\wedge 2} + \beta_3 y_t^{\wedge 3} + \cdots + \beta_i y_t^{\wedge t} + \epsilon_t$$

And then the following Hypothesis will be considered for the RESET test:

H_0: No power in non-linear combination (no miss-specification).

H_1: Powers in non-linear combination (miss-specification).

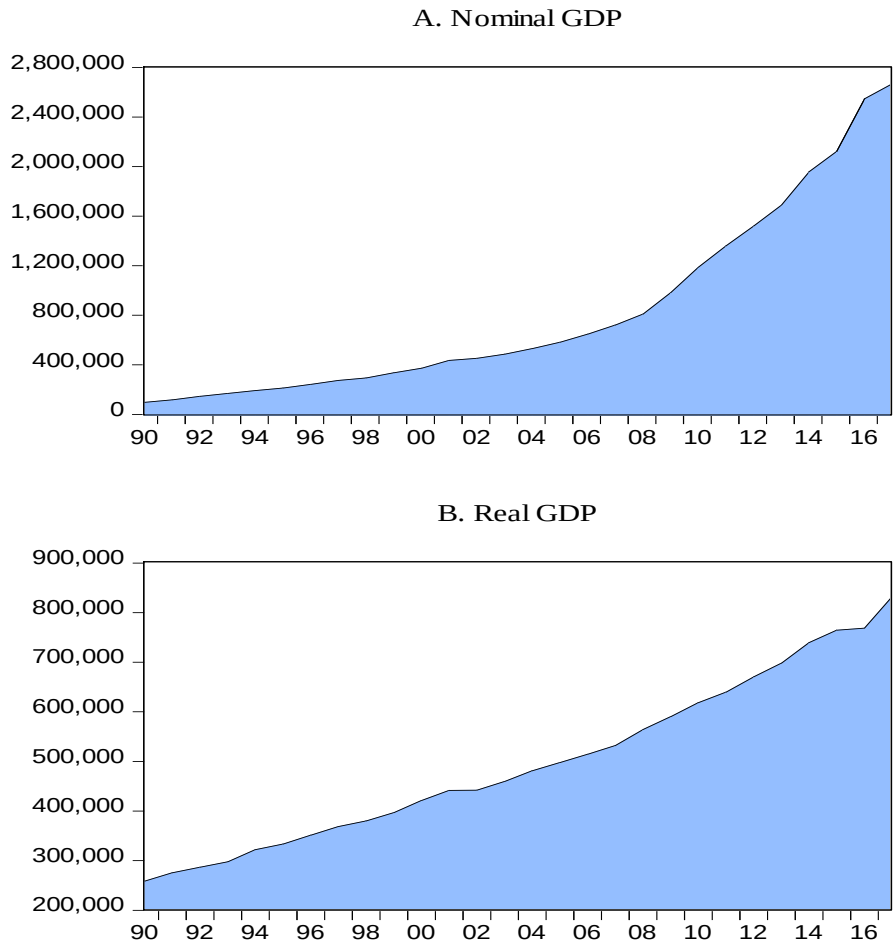
CHAPTER-FOUR

PRESENTATION AND ANALYSIS OF THE DATA

4.1. Graphical Presentation

In this section, the researcher answers the first question of the research. The research portrayed trend and pattern of level, growth rate and ratios of the variable.

Figure: 4.1. Total Real and Nominal GDP: (Rs. in million)



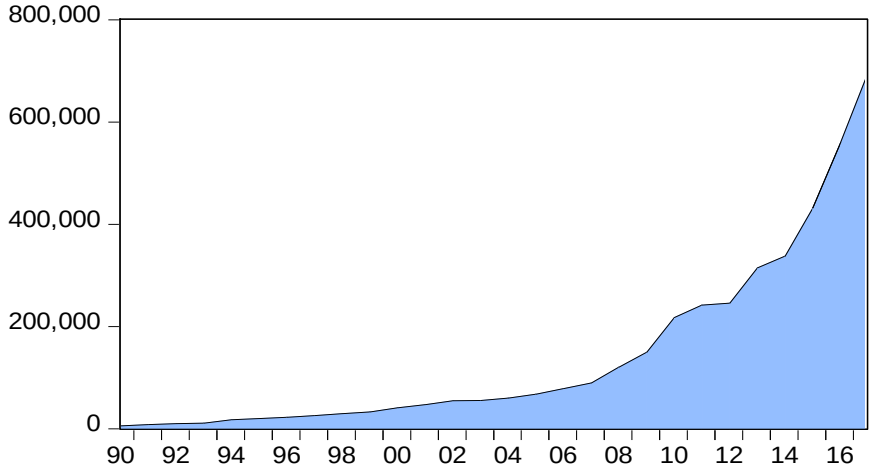
Sources: World Bank, Economic survey and Budget speech of Ministry of Finance, GoN

Figure A shows the nominal gross domestic product. The nominal gross domestic product has a clear upward trend which means the nominal gross

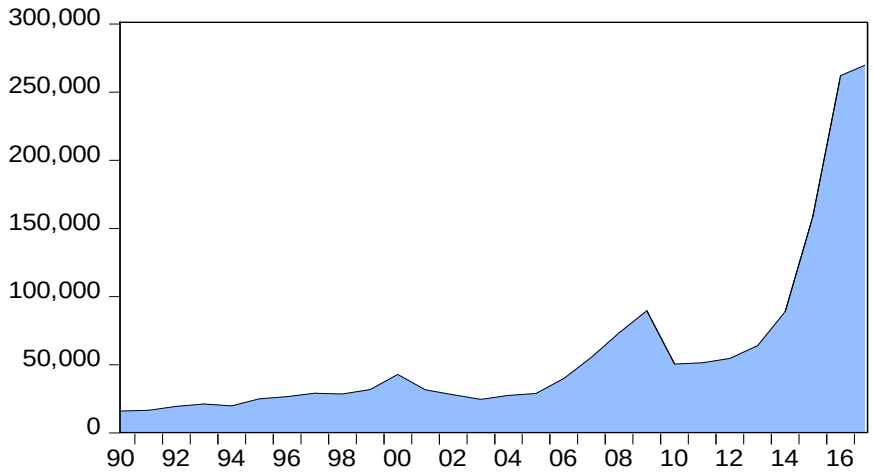
domestic product has increased over time. Figure B shows the real domestic product which also has an upward trend.

Figure: 4.2.Total GRE and Capital Expenditure of the government: (Rs. in million)

A. Recurrent Expenditure



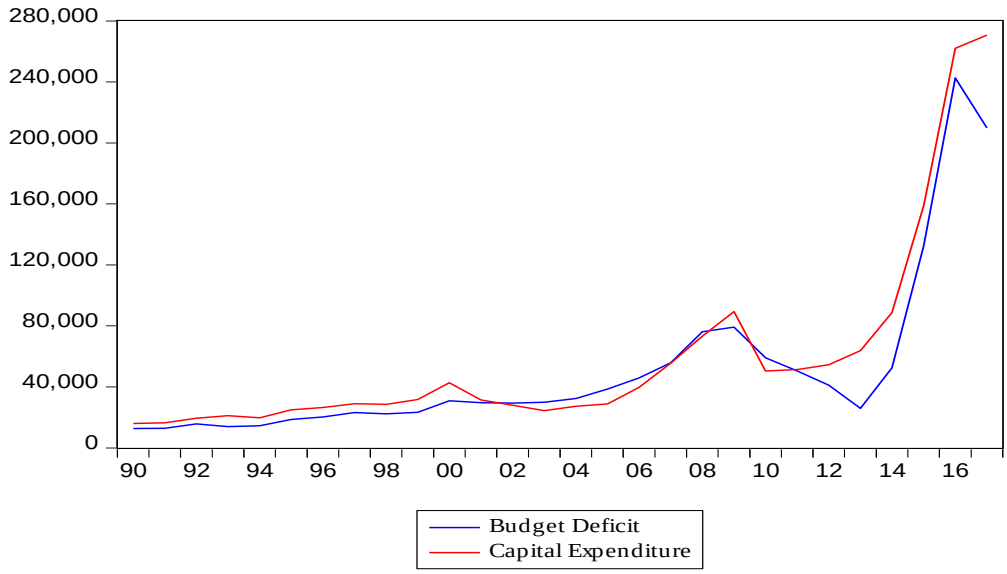
B. Capital Expenditure



Sources: World Bank, Economic survey and Budget speech of Ministry of Finance, GoN

The above figure A shows the recurrent expenditure of the government. It has an upward trend, it means the recurrent expenditure has increased over time. Similarly, Figure B shows the capital expenditure which also has an upward trend.

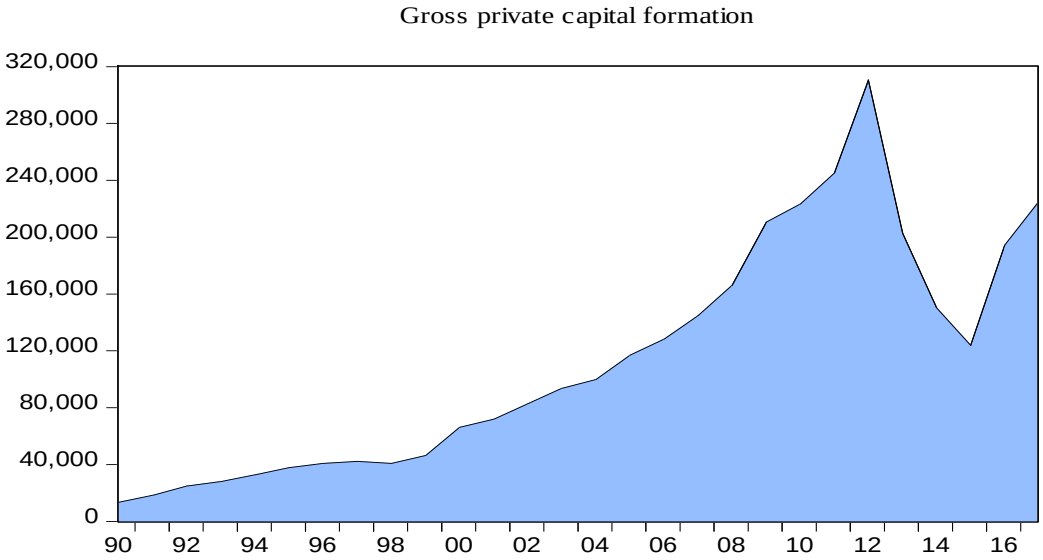
Figure: 4.3. Total Capital Expenditure and Budget Deficit: (Rs. in million)



Sources: World Bank, Economic survey and Budget speech of Ministry of Finance, GoN

The figure shows the capital expenditure and budget deficit. In the figure, the researcher has seen the vertical distance between the budget deficit and growth very small. Both are increases and decrease in the same direction.

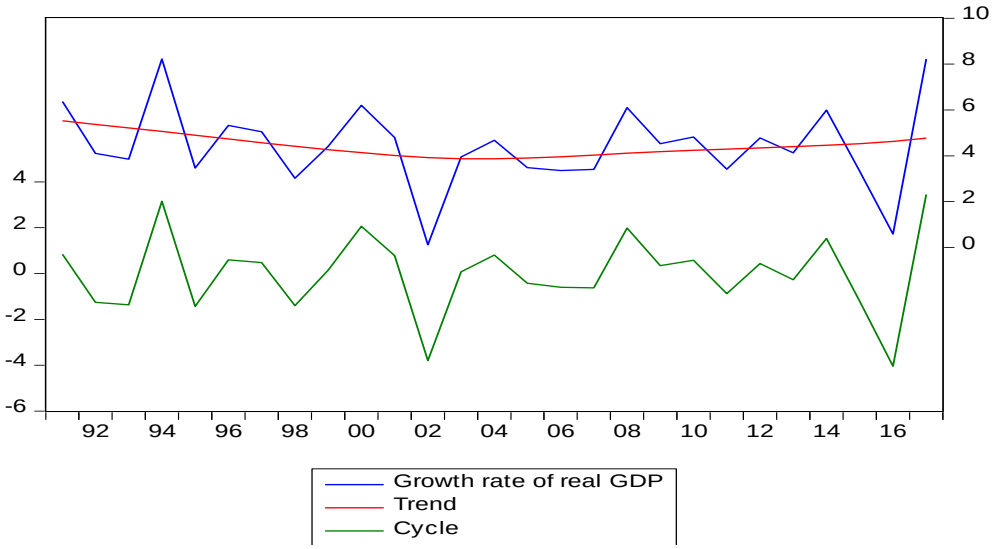
Figure: 4.4. Total Gross Private Capital Formation: (Rs. in million)



Sources: World Bank, Economic survey and Budget speech of Ministry of Finance, GoN

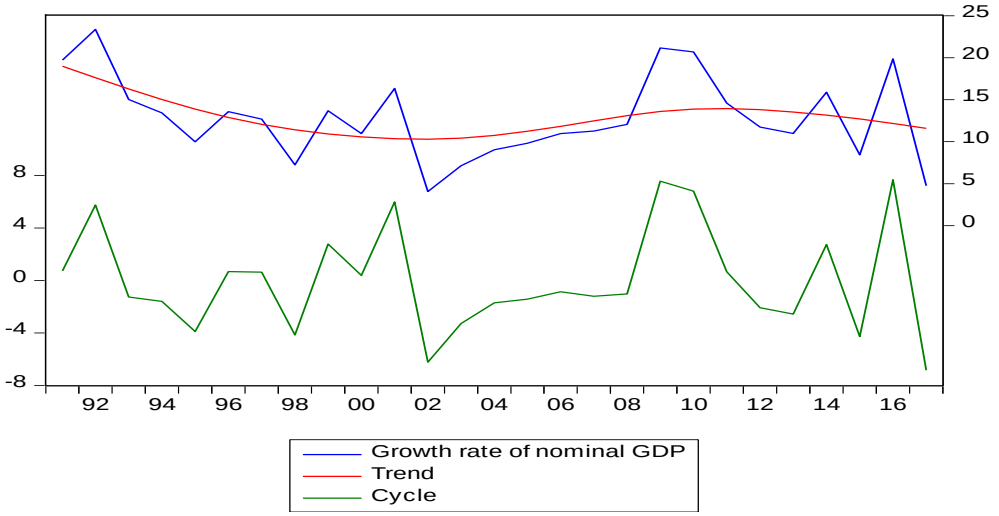
The above figure shows the gross capital formation of the private sector. Private capital formation has increased over time. It was a peak in 2012, and it is starting to decrease from 2013 to 2015. On average, the gross private capital formation has an upward trend.

Figure: 4.5. Growth Rate of Real GDP: (In. percentage)



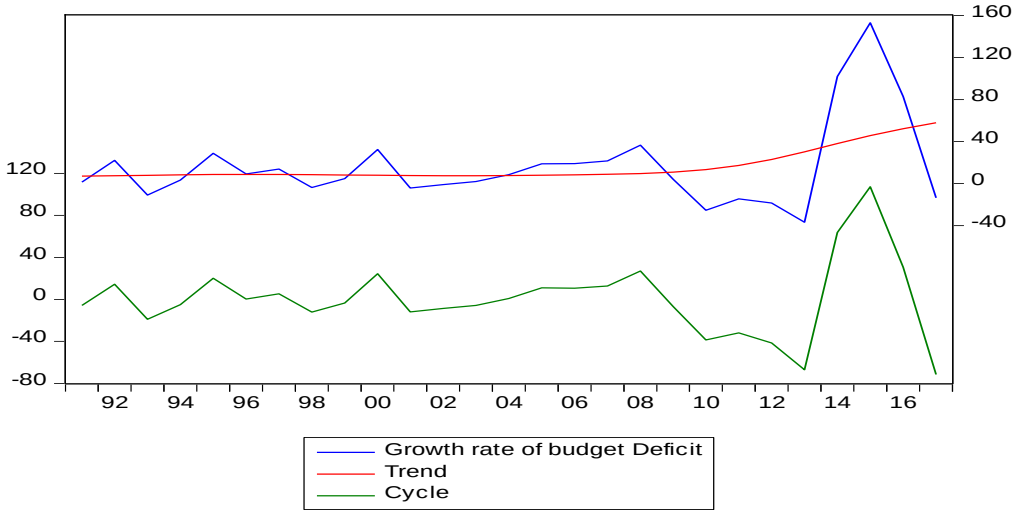
In the above figure, the growth rate of real GDP and its trend. The minimum growth rate was 0.1 percentage in 2002 and 0.6 percentage in 2016. And the highest growth rate in 1994 and 2017. The figure shows a smooth trend in the growth rate of real GDP.

Figure. 4.6: Growth Rate of Nominal GDP. (In. percentage)



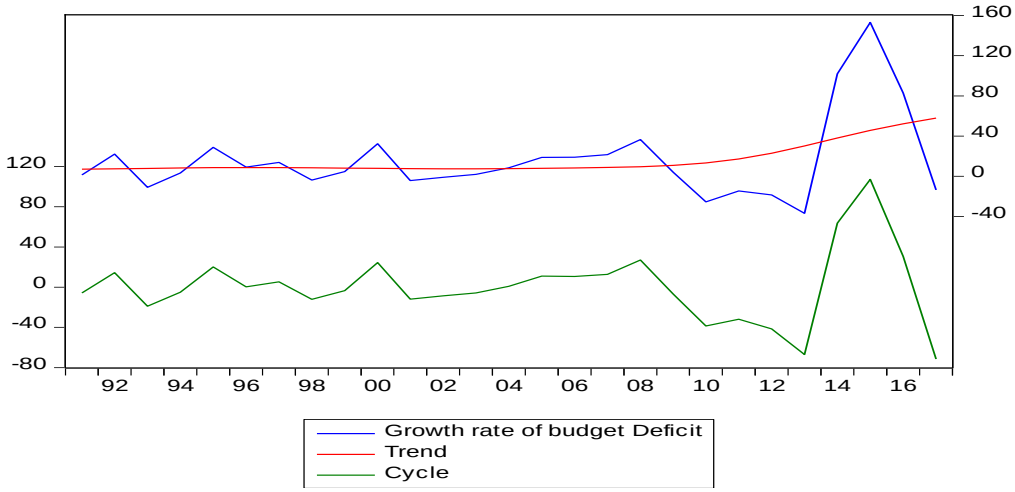
The above figure shows the growth rate of nominal GDP. In the figure, the highest nominal growth rate is in 1991 at that time the nominal growth rate is 23.38 per cent but at the same time, the real growth rate is 4.11 per cent. That means the nominal GDP growth rate is higher due to the higher inflation rate. The trend of the growth rate of nominal GDP remains smooth.

Figure. 4.7: Growth Rate of Budget Deficit. (In. percentage)



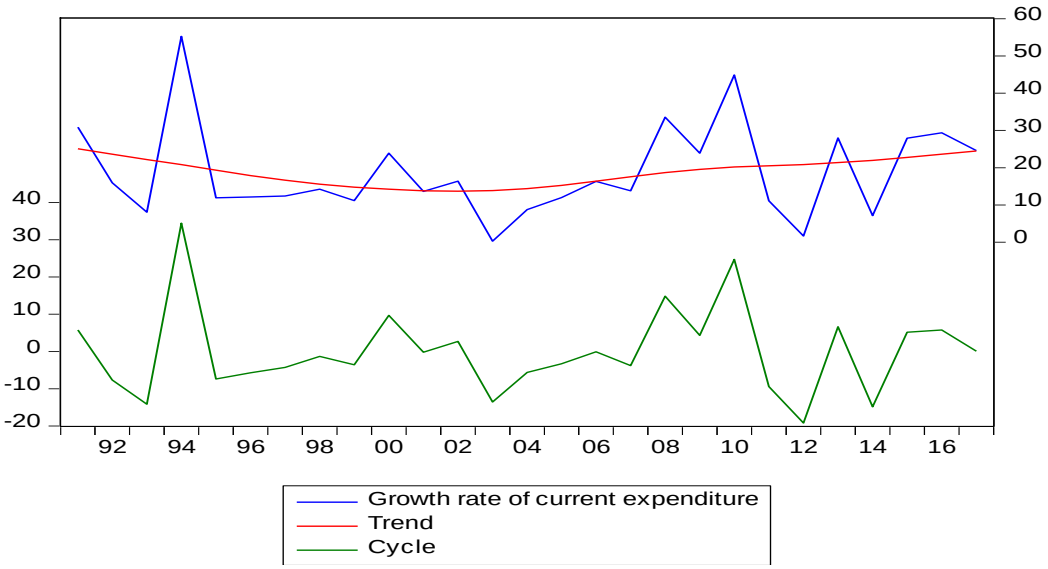
The figure shows the growth rate of the deficit budget. In 2013, it was decreased by 37 percentage with the compare to the previous year. In 2015, it was increased by 153 percentage. On average, the growth rate of the deficit budget follows an upward trending.

Figure .4.8: Growth Rate of Capital Expenditure: (In. percentage)



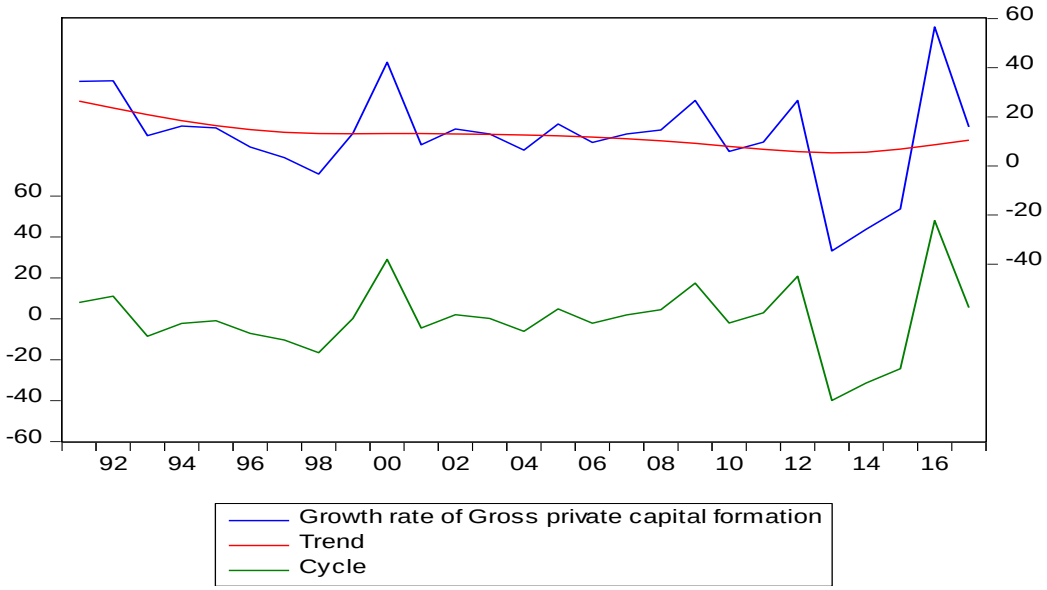
Capital expenditure follows the same path as Deficit budget. The growth rate of the highest deficit budget realizes in 2015 and lowest in 2010.

Figure.4.9. Growth Rate of Recurrent Expenditure: (In. percentage)



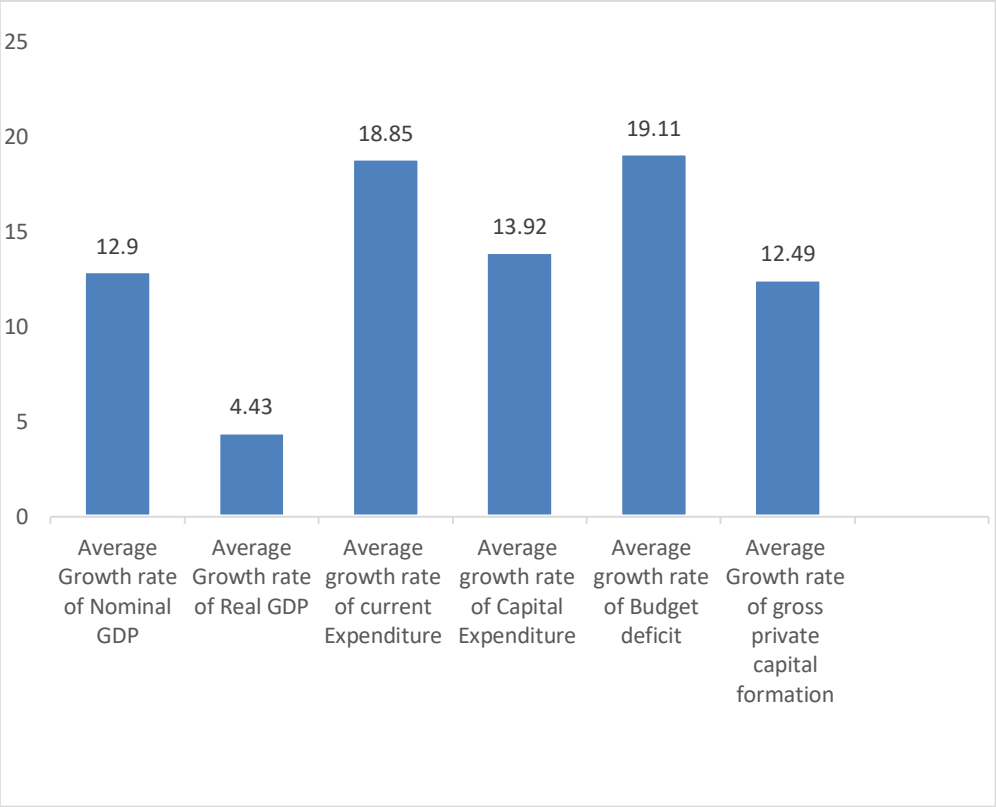
The figure depicts the growth rate of government recurrent expenditure. The growth rate of recurrent expenditure in 1994 remains about 55 percentage. The minimum growth rate is in 2012. And the growth rate remains positive for each fiscal year. The trend line shows a smooth trend path of the recurrent expenditure.

Figure.4.10: Growth Rate of Gross Private Capital Formation. (In. percentage)



The figure shows the growth rate of gross private capital formation. The highest growth rate remains in 2015 and lowest in 2013. The smooth line shows the trend of the growth rate of capital formation. Which is smooth over time.

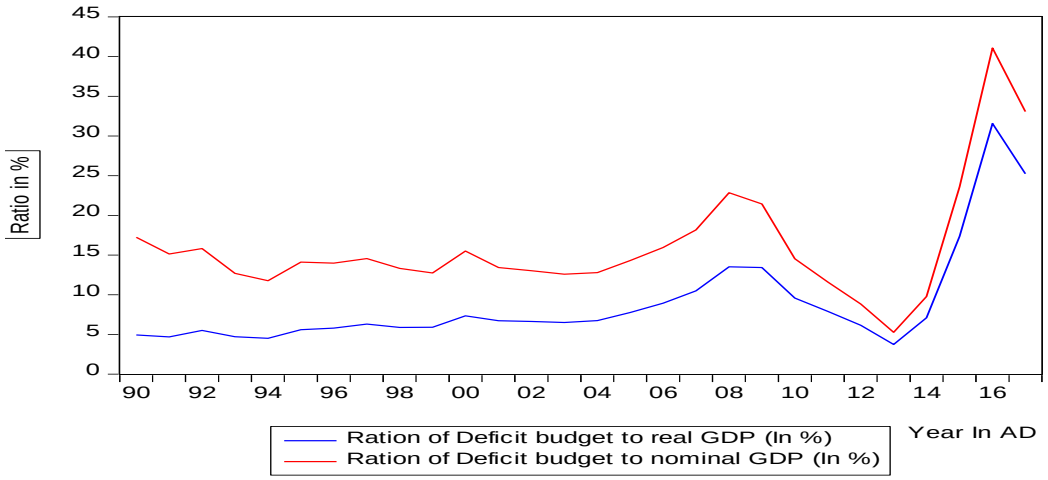
Figure: 4.11. Average Growth Rate of Relevant Variable: (In. Percentage)



Sources: World Bank, Economic survey and Budget speech of Ministry of Finance, GoN

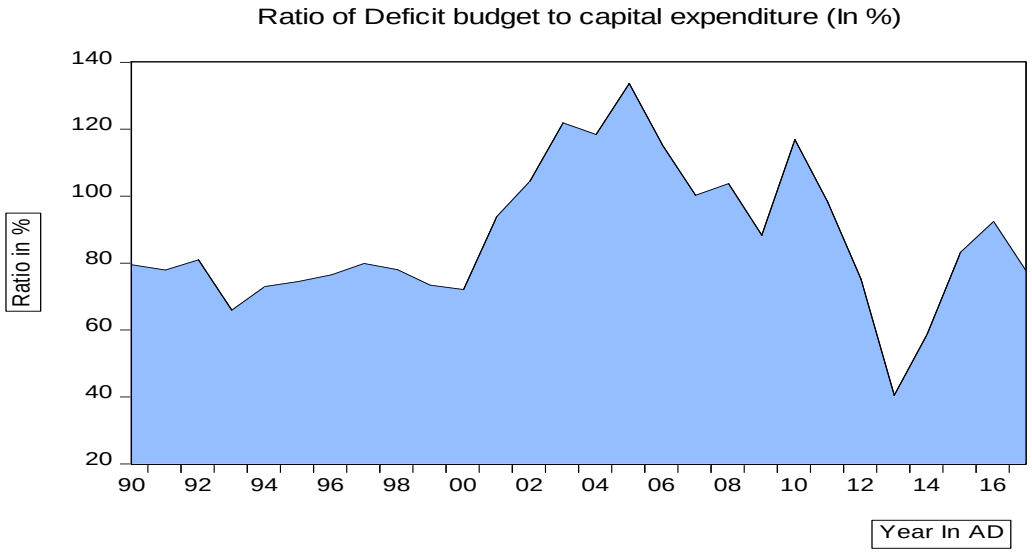
The above figure shows the average growth rate of the relevant variable. Where the average growth rate of nominal and real GDP is 12.9 percentage and 4.43 percentage respectively. The average growth rate of recurrent and capital expenditure is 18.85 and 13.92 percentage respectively, similarly, the average growth rate of the budget deficit, gross private capital formation is 19.11, 12.49 percentage respectively.

Figure: 4.12. Ratio of Deficit Budget to Nominal and Real GDP. (In Percentage)



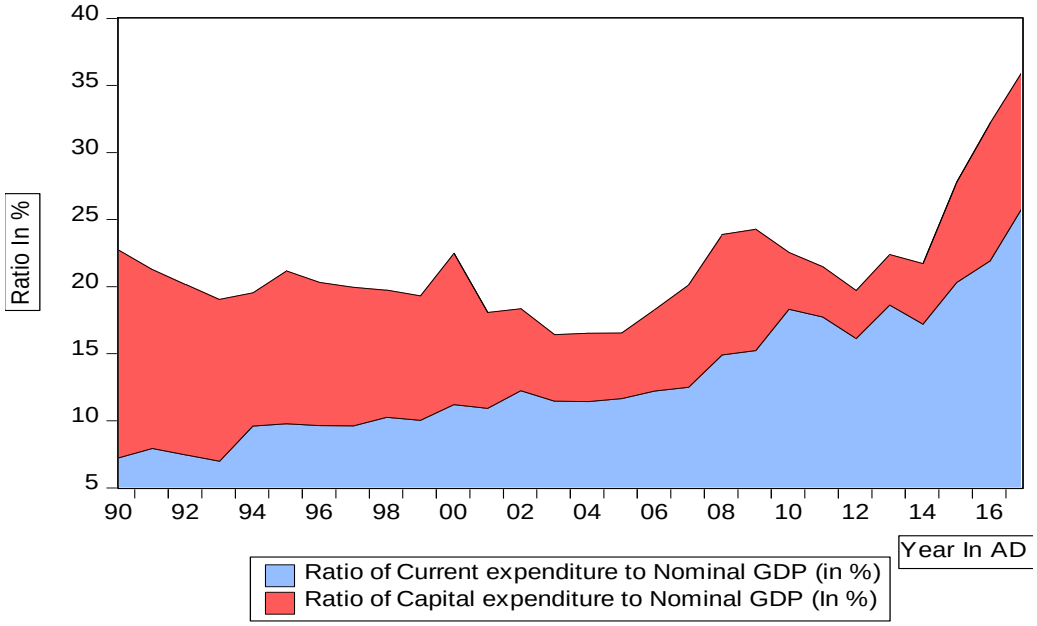
Above figure shows the ratio of Deficit budget to GDP. The figure the ratio of deficit budget to real GDP in 1990 is 4.91. It means the budget deficit in 1990 is equal to 4.91 per cent of total real GDP. Similarly, the ratio of deficit budget to nominal GDP in 1990 is 12.30 per cent that means the budget deficit in 1990 is equal to 12.30 per cent of total nominal GDP. On an average, the ratio of deficit budget to real GDP has been increasing over the time and the ratio of deficit budget to nominal GDP has been Decreasing over the period which is represented by the linear line of the respective variable

Figure: 4.13. Ratio of Defect Budget to Capital Expenditure: (In percentage)



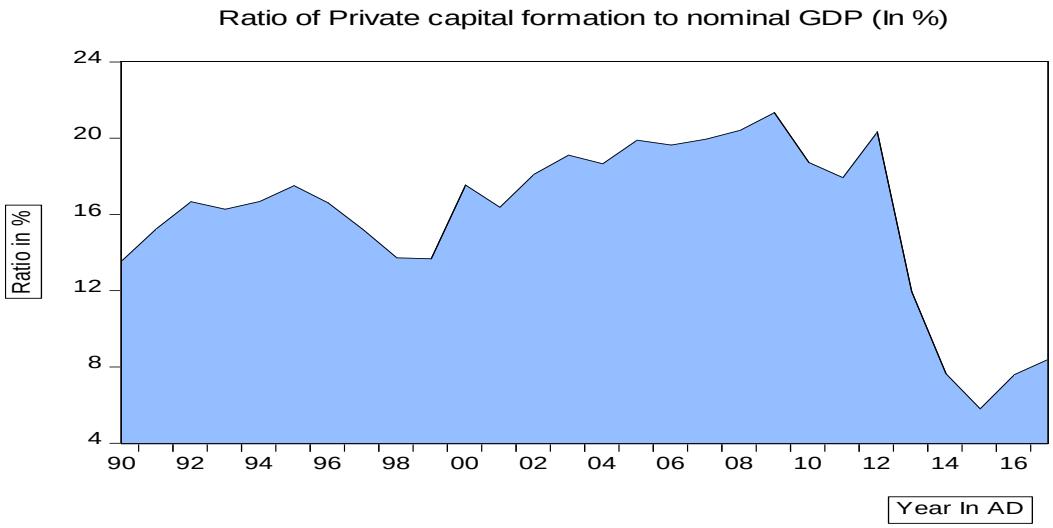
Above figure shows the ratio of Deficit budget to Capital expenditure of the government in percentage. In 1990, the ratio of deficit budget to capital expenditure is 79.66 percentage. It means the deficit budget is equal to 79.66 percentage of Capital expenditure of the government. Similarly, the ratio of deficit budget to capital expenditure in 2005 is 133.93. It means the deficit budget is greater than capital expenditure by 33.93 percentage. On average, the ratio of deficit budget to capital expenditure is 87.84 percentage. It means the deficit budget is equal 87.85 percentage of a percentage of capital expenditure.

Figure: 4.14. Ratio Of GRE and Capital Expenditure to Nominal GDP. (In percentage)



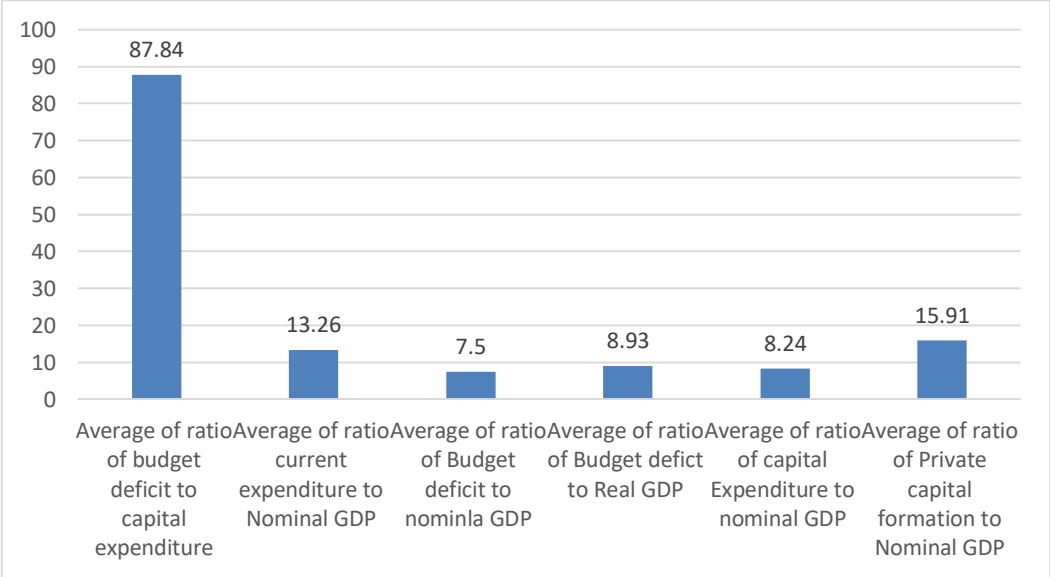
The above figure shows the ratio of recurrent expenditure to nominal GDP and ratio of capital expenditure to nominal GDP. The ratio of recurrent expenditure to nominal GDP is going up over period i.e. in 1990, it was 7.32 percentage it means the recurrent expenditure equal to 7.32 per cent of total nominal GDP. And in 2017, it remains 26.15 percentage. The ratio of capital expenditure goes on decreased over the time period i.e. in 1990, it was 15.45 percentage it means the capital expenditure is equal to 15.45 per cent of total nominal GDP.

Figure: 4.15. Ratio of Gross Private Investment to Nominal GDP.



The figure shows the ratio of private capital formation to nominal GDP. The ratio goes to decrease over the time period, which represents the trend line in the figure.

Figure: 4.16. Average of Ratio of Relevant Variable: (In percentage)



Sources: World Bank, Economic survey and Budget speech of Ministry of Finance, GoN

Above figure shows the average of the ratio of budget deficit to capital expenditure, nominal GDP and real GDP. In the figure, the average of the ratio of budget deficit to capital expenditure is 87.84 per cent, an average of the ratio of current expenditure to nominal GDP is 13.26 percentage. The average ratio of Budget deficit to nominal GDP is 7.5 percentage, Average of the ratio of Budget deficit to real GDP is 8.24 percentage and Average ratio of Capital expenditure to nominal GDP is 8.91 per cent.

4.2. Descriptive Analysis

In this section, the researcher cannot take all the variables as the researcher analyzed in the graphical presentation section. Here, the researcher just took those variables which are employing in the model. Therefore, we took Real GDP (RGDP), Government Deficit Budget (GDB), Government Recurrent Expenditure (GRE) and Gross private Capital Formation (GPCF) for descriptive analysis.

Table: 4.1. Descriptive Statistic:
Observations: 28 (In. million)

Variables	Mean	Median	Std. Dev	Skewness	Kurtosis
RGDP	598080.9	470246	167660	0.3828	2.0210
GPCF	114219.3	97276	82137.4	0.6237	2.3553
GDB	51430.23	30410.8	55912.7	2.3914	7.9703
GRE	144315.8	59203.4	179559	1.6872	5.0946

In the above table, the mean of RGDP, GPCF, GDB, GRE is 498080.9, 114219.3, 51430.23, and 144315 respectively. It is the average value of the respective variable. The standard deviation of the respective variables is 167660.3, 82137.42, 55912.77, and 179559.8. Less value of SD considers as best for analysis. It measures how far observation from the sample average.

Kurtosis: Peakness of distribution of the series. In the table, the kurtosis of RGDP and GPCF is 2.02 and 2.35 that means series has a normal distribution and also implies that more value of series fall below its sample mean (2.02 and 2.35 < 3).

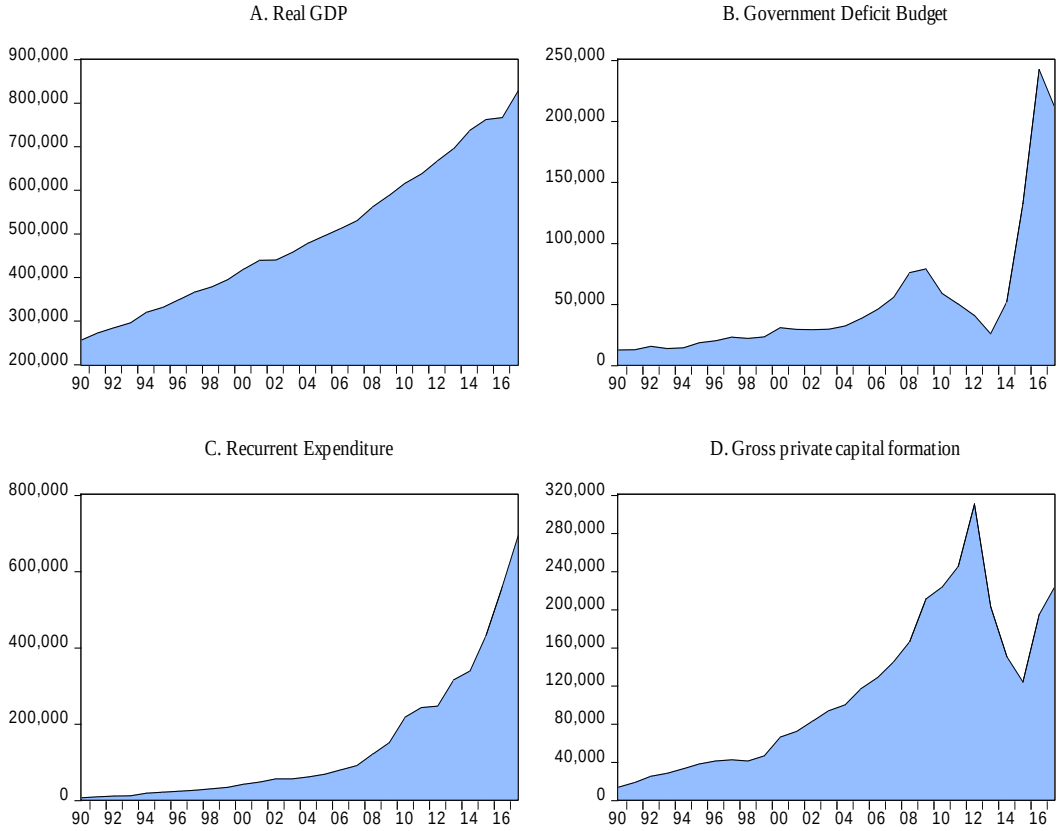
And kurtosis of GDB and GRE is 7.97 and 5.09 respectively. That means there more value of series has fall above its sample mean.

Skewness: measure the degree of asymmetric of the series. In the table, the skewness value of all the RGDP, GPCF, GDB, GRE are positive, it means distribution has a long right tail, means more value of series has fall above its sample mean.

4.3. Inferential Analysis:

In this section, the research tries to analyze the empirical relationship between the given variable. Here, the researcher tries to find the answer to the second research question. For the inferential analysis, the researcher has taken all level data into a log form. And data has been analyzed by using Eviews 10 Software.

Figure: 4.17. Nature of Series



Sources: World Bank, Economic survey and Budget speech of Ministry of Finance, GoN

First figure and last shows the RGDP and GPCF in both series have a trend respectively. Second and third is GDB and GRE in both series also has a trend respectively. In this way, from the figure, the researcher may conclude the series may not be stationary in level form.

Table.4.2: Unit Root Test Using ADF and PP Test

ADF test

Variable	**Intercept**			
	Level		First difference	
	t-stat	p-value	t-stat	p-value
Ln(GRE)	-0.193#	0.967	-5.376*	0.000
Ln(GDB)	-1.040#	0.718	- 4.133*	0.004
Ln(GPCF)	-2.103#	0.244	-3.869*	0.006
Ln(RGDP)	-1.115 #	0.693	-5.212*	0.000
Variable	**Trend and Intercept**			
	Level		first difference	
	t-stat	p-value	t-stat	p-value
Ln(GRE)	- 1.752#	0.699	-5.353*	0.001
Ln(GDB)	-4.970*	0.002	-4.224**	0.016
Ln(GPCF)	-1.806#	0.673	-3.912**	0.026
Ln(RGDP)	-3.268#	0.092	-3.912*	0.026

Note: * denote Significant level at 1% critical value, ** denote significant level at 5% critical value and *** denote Significant level at 10% critical value. And # denote not significant at all level (1%, 5%, and 10%) of critical value.

In the above table shows the unit root test for the given variable using Augmented Dickey-Fuller (ADF). The figure shows all variable are in the level are unit root. Meaning that mean and variance are change over time. Whoever the series of the variable are stationary at first difference [i.e. I(1)] and all are significant At 1 per cent and 5 per cent level of critical value.

Estimation of OLS Model

Here, the researcher tries to explain what happened if the researcher treats non-stationary data as a stationary. Lets' take the OLS model for this analysis.

Table.4.3: Estimation of OLS Model

RGDP is a dependent variable.

Observation: 1990- 2017

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GPCF	0.052891	0.017703	2.987630	0.0064
GDB	0.001567	0.015537	0.100841	0.9205
GCE	0.230760	0.015576	14.81491	0.0000
C	4.289150	0.053638	79.96470	0.0000

R-squared	0.993752	Mean dependent var	5.673127
Adjusted R-squared	0.992972	S.D. dependent var	0.148796
S.E. of regression	0.012474	Akaike info criterion	-5.798708
Sum squared resid	0.003735	Schwarz criterion	-5.608393
Log likelihood	85.18191	Hannan-Quinn criter.	-5.740527
F-statistic	1272.511	Durbin-Watson stat	0.974810
Prob(F-statistic)	0.000000		

In the above figure, the high value of R square indicates the model is quite good. But D-W test is less than R square. This indicates spurious regression (Granger and Newbold, 1974). This is because of non-stationary random walk behaviour of the variables (Das, 2019). In this situation, we cannot draw inference from the model. Therefore before the selecting appropriate model, we have to identify the nature of data. So, the researcher needs to adept the unit root test.

Table. 4.4.: Lag Selection Criterion Using VAR

Lag	LogL	LR	FPE	AIC	SC	HQ
0	85.96419	NA	2.15e-08	-6.304938	-6.111384	-6.249201
1	216.9861	211.6508	3.15e-12	-15.15278	-14.18501*	-14.87410
2	239.5178	29.46455*	2.10e-12*	-15.65522*	-13.91324	-15.15359*

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

The above table shows the optimum lag selection criterion. There is no hard-and-fast rule for selection of lag length. However, statistician/econometrician propose three criteria (AIC, SIC and HQ) for the selection of optimum lag. Some econometrician suggests that the researcher most choose that model which gives the lowest value. Here, AIC gives the lowest value than others. Therefore, the researcher chooses AIC for our model.

Table. 4.5.: Bound Test Under ARDL (1, 2, 2, 2) Model

Dependent variable: RGDP and Observation: 1990 to 2017

Variable	F-statistic	Cointegration	Optimum Lag length
RGDP, GDB, GRE, GPCF.	7.843	yes	(1, 2, 2, 2) using AIC
	Critical value	lower bound I(0)	upper bound I(1)
	1%	4.428	5.816
	5%	3.146	4.194
	10%	2.618	3.352

Above table shows the result of the cointegration test. Value of F-statistic is 7.843 it is greater than the value of upper bound at 1%, 5%, and 10% critical value of F-stat and it indicate the rejection of the null hypothesis of the no cointegration. It means there is cointegration among the variable and it reflects that there exist long-run relationship among the underlying variable.

Finally, from the conclusion of both ADF test and bound/cointegration test, all the variable are first-order integrated and there is the long-run relationship among the variable. Hence, this gives the permit to us to apply the ARDL model to cointegration.

Table: 4.6. Estimation of ARDL (1, 2, 2, 2) Model Using AIC Lag Selection Criterion And Diagnostic Test

Dependent Variable: RGDP and observation: 1990-2017.

Variable	Coefficient	Std.Erro	t-statistic	P-value	
RGDP(-1)	0.428**	0.160	2.6748	0.017	$R^2 = 0.999$
GDB	0.082*	0.020	4.034	0.001	
GDB(-1)	-0.097*	0.026	-3.609	0.002	
GDB(-2)	0.052**	0.020	2.557	0.021	$Adjusted\ R^2 = 0.998$
GRE	0.060**	0.027	2.193	0.044	
GRE(-1)	-0.048***	0.036	-1.335	0.201	
GRE(-2)	0.104*	0.032	3.232	0.005	D-W statistic = 2.248
GPCF	-0.021^{ns}	0.021	-1.001	0.332	
GPCF(-1)	0.115*	0.033	3.413	0.003	
GPCF(-2)	-0.065**	0.0285	-2.315	0.035	F-statistics = 1675.30 (0.000)
Constant	2.380*	0.674	3.545	0.002	

Diagnostic test:

Test	Test Statistic (LM test)	Test stat(p-value)	Status of presence
Serial Autocorrelation	Breush-Goldfrey LM test	χ^2 =1.776(0.41)	No
Heteroscedasticity	Breusch-Pagent test	χ^2=9.019(0.530)	No
Normality of Residual	Jarque-Bera test	JB= 1.923(0.382)	yes
Test for Stability	CUSUM and CUSUMSQ	Figure: 16 and 17	Yes
Regression Specification Error	Ramsey's RESET	F= 0.475(0.501)	NO

Note: *indicate significant at 1% level of critical value, ** significant at 5% level of critical value, *** Significant at 10% level of critical value and ns indicate no significant.

The upper part of the table depicts the overall goodness of fit of the model. The high value of R square($R^2 = 0.999$) indicate that the variation in the dependent variable is about 99 % is due to variation in the independent variable. And the value of $Adjusted\ R^2$ slightly lower than R square.

The bottom part of the table exhibits the Diagnostic test for the model. This test verifies whether the model analyzable and predictable or the given assumption of the model are violate or not and robustness of the regression. The diagnostic test proves model highly goodness of fit with no autocorrelation and heteroscedasticity as well as model is highly stable and not misspecification. In the table, an overall test of the model indicates the model is highly significant and the researcher can generalize the result of research.

4.3.1. Estimation of Long run Relationship

Table. 4.7. Estimating Long-Run Coefficient Under ARDL (1, 2, 2, 2) Model Using AIC Lag Length:

Dependent variable: RGDP and observation: 1990-2017:

Regressors	Coefficient	Standard error	t-statistic	p-value
GDB	0.065***	0.033	1.946	0.070
GRE	0.205*	0.019	10.475	0.000
GPCF	0.049***	0.025	1.974	0.067
constant	4.168*	0.062	67.020	0.000

Note.* indicate significant at 1% critical value ** denote significant at 5% critical value *** indicate significant at 10% critical value.

The above table indicates the long-run relationship between the given variables. All the coefficient are significant at a different level of critical value.

Long-run model corresponding to the ARDL (1, 2, 2, 2) model for an effective relationship between Real GDP and Government Deficit Budget and other variable is:

$$Ln(RGDP)_t = 4.168 + 0.065\ln(GDB)_t + 0.205\ln(GRE)_t + 0.049\ln(GPCF)_t \dots\dots\dots 2.2$$

The equation indicates that the positive and significant long-run relationship between real GDP and government budget deficit, government recurrent expenditure, gross private capital formation. From equation 2.2, on an average, a 1 percentage increase in budget deficit leads to an increase in Real GDP by 0.065 percentage in the long run. Similarly, a 1 percentage increase in government recurrent expenditure leads to an increase in real GDP by 0.205 percentage and 1 percentage increase in gross private capital formation leads to an increase in real GDP by 0.049 percentage.

4.3.2. Estimation of Short-run Relationship and Error Correction Model

Table. 4.8: Error Correction Representation Of Selected ARDL(1, 2, 2, 2) Model Using AIC Lag Selection Criterion

Dependent variable: Real GDP. Observation: 1990-2017.

Regressors	Coefficient	Stander error	t-statistic	p-value
ΔGDB	0.082*	0.013	6.220	0.000
ΔGRE	0.060*	0.019	3.078	0.007
ΔGPCF	-0.021^{ns}	0.013	1.528	0.147
ECM_{t-1}	-0.571*	0.081	7.047	0.000
R-square = 0.702	Ad. R-square = 0.609	D-W stat = 2.248		

Note: * indicate significant at 1% level critical value. ns Indicate no significant at any level of critical value.

Above table presents the results of the estimated ECM corresponding to the long-run estimates. First, consist the estimation of coefficients of short-run dynamics and the second part consists error correlation term (ECT) that measure the speed of adjustment whereby short-run dynamics converge to the long-run equilibrium path in the model.

Estimated Error correction model of corresponding ARDL(1, 2, 2, 2) model is:

$$\Delta \ln(RGDP)_t = 0.082\Delta \ln(GDB)_t - 0.571(ECM)_{t-1} \dots\dots\dots\dots\dots\dots 2.3$$

The equation 2.3 represent short-run coefficient estimates obtains from the ECM version of ARDL model.

In equation 2.3, the coefficient of GDB is 0.082 it indicates that on an average 1 per cent increase in government deficit budget leads to an increase in real GDP by 0.082 per cent in the short run. Similarly, 1 per cent increase in government recurrent expenditure leads to increase in real GDP by 0.060 per cent, it means there is a significant and positive relationship between real GDP and government deficit budget, government current expenditure in the short run increase. But there is no role of gross private capital formation in real GDP in the short run. The coefficient of the error term is negative and highly significant at the

1 per cent level of critical value. It indicates, the short-run disequilibrium leads to the long-run equilibrium path. It exhibits the existence of a stable long-run relationship. It also indicates the short-run change in GDB and GRE are positively associated with the real GDP. The coefficient of ECM -0.571 shows that the short-run disequilibrium converges to equilibrium at a speed of 57 per cent of per annum.

Figure: 4.18. Test for Stability (CUSUM):

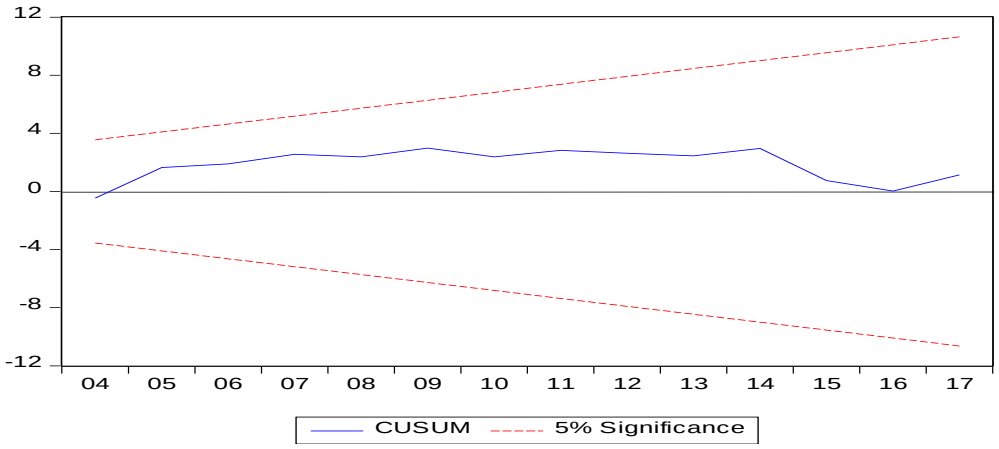
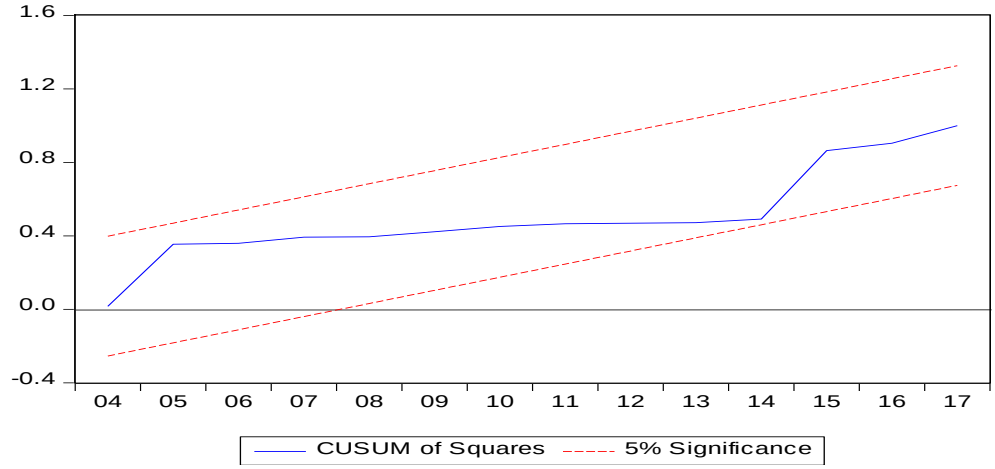


Figure: 4.19. Test of stability (CUSUM of Square):



The figure shows the stability of the coefficient of the model. There are three lines in both figures. For the stability of parameter the middle line of the figure should fall within the bound, means the Null hypothesis cannot be rejected and the parameter of the model are stable and desirable.

CHAPTER-FIVE
MAJOR FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1. Major Finding

The main objective of this study was to find the impact of deficit budget on economic growth. Along with this objective, the researcher been found the trend and patterns of deficit budget, economic growth, and another relevant variable. the empirical relationship has been found by using the ARDL approach to bound test. The major finding of this study are:

i. Nominal gross domestic product and the real gross domestic product has an upward trend during the 28 years.
ii. The government's recurrent expenditure, capital expenditure, budget deficit, and gross private capital formation also has an upward trend during the study period.
iii. The average growth rate of nominal GDP, real GDP, recurrent expenditure, budget deficit and gross private capital formation during the study period was 12.09, 4.43, 18.85, 13.92, 19.11, and 12.49 per cent respectively.
iv. The average ratio of budget deficit to capital expenditure was 87.84 per cent. Similarly, recurrent expenditure to nominal GDP has 13.26 per cent. Likewise, an average ratio of budget deficit to nominal GDP was 7.5 per cent. The average ratio of gross private capital formation to nominal GDP has 15.91 per cent. The average ratio of capital expenditure to nominal GDP was 8.24 per cent during the study period.
v. The empirical study shows the significant positive association between budget deficit and economic growth in both the short-run and long-run. It means an increase in the budget deficit will lead to an increase in economic growth. on the other hand, the study also found a direct relationship between government recurrent expenditure and economic growth in both the short-run and long-run.

vi. The empirical study has also found that there was no relationship between gross private investment and economic growth in the short-run. However, in the long-run, there is a significant positive relationship between economic growth and gross private capital formation.

5.2. Conclusions

Economic growth reflects the positive change in the GDP. Sustain economic growth induced to increase the welfare of the people. In the context of Nepal, the average growth rate of GDP over the 27 years remain 4.43 percentage. Similarly, the growth rate of nominal GDP remains 12.907 percentage. In 1990, the real GDP has recorded Rs.258864 million and nominal GDP has Rs. 103416 million. In 2017, the nominal and real GDP has remained Rs. 2674492.75 million and Rs.832060.33 million respectively. The long term trend of economic growth is upward trending means that economic growth increase over the time period.

The government realized the deficit budget when the total revenue of the government has insufficient to supply its expenditure. If the least developed and developing counties induced to achieve higher economic growth with given resources leads to an increase in the deficit budget. Deficit budget has been financing through internal (internal loan and printing new currency) and external (grant and loan) sources. The effect of the deficit budget in economic growth has primarily depend on the various economic indicator and economic situations (normal, abnormal and institutional efficiency). In the context of Nepal, the fiscal deficit has been existing each consecutive year. In 1990, it was 12.30 per cent of nominal GDP and 4.91 per cent of real GDP, similarly, in the same year, it was 79.66 per cent of capital expenditure. The average ratio of the deficit budget to nominal and real GDP has remained 7.09 percentage and 8.93 percentage respectively. Meanwhile, the growth rate of deficit budget in 1991, has 1.38, in 2015, deficit budget grow by 153.02 percentage its highest growth rate in history. However, the growth rate of deficit budget does not remain positive in each consecutive year, for example in 1993, 1998, 2001, 2013 and 2017, it was

decreased by 11.00, 3.68, 4.25, 36.8 and 13.50 per cent respectively. The average growth rate of deficit budget has remained 16.11 percentage. However, the long term trend of deficit budget has been upward trending means that it growing over the time period. Average the deficit budget remains Rs. 209898.7 million.

In order to scrutiny empirical relationships between economic growth and deficit budget, the research has been applied the Autoregressive Distributions Lag (ARDL) approach to bound test model. The model portrait-out the long run and short-run relationship among the given variable. Using this model, the researcher has found a significant positive relationship between budget deficit and economic growth in both short-run and long-run. On average, in the long run, one per cent increase in the deficit budget leads to 0.065 per cent increase in economic growth. Similarly, in the short run, one per cent increase in deficit budget result 0.060 per cent increase in economic growth. It reflects there is a significant positive relationship between economic growth and the deficit budget. This means the conclusion support to the Keynesian argument of deficit financing. In another word, in the context of Nepal, the Keynesian theory has been applied.

5.3. Recommendations

Economic growth is the foundation of development and prosperity. To achieve higher sustain economic growth and thereby prosperity and welfare the government must adopt the appropriate fiscal and monetary policy. Fiscal policies concern with government expenditure and revenue. Higher expenditure in education and health, basic infrastructure development ensures the productivity of the nations and also induce the private sector to invest more. On the other hand, expenditure on agriculture, services and industrial development lead to employment opportunity within the country. To ensure these expenditure government need a huge amount of money. Therefore, the government need to finance theses expenditure through deficit budge, if resources are inadequate. Our conclusion also supports that the increase in deficit expenditure leads to an increase in growth.

However, the effect of deficit finance depends on the efficiency of the government to utilize these resources. If it utilized accordingly that it will be fruitful and if not it will harmful to the economy. Miss-utilizations of deficit finance leads to the economy into the debt crisis. In order to efficient utilization of these resources, we need efficient institutions arrangement, sound political, administration system and legal provision. Therefore, the government must be the focus on not only increase in deficit budget but also efficient used and management to the available resources. Before deciding to increase deficit expenditure the government must be aware about the fiscal space, domestic saving, etc.

APPENDIX

Table.1.1: Data Of Real and Nominal GDP, Current and Capital Expenditure, Budget Deficit, Gross Private Capital Formation.

Amount Rs. in million

Year	Nominal GDP	Real GDP	Recurrent Expenditure	Capital Expenditure	Budget Deficit	Gross private capital formation
1990	103416	258864	7570.3	15979.5	12730.1	14097
1991	123801	275350.82	9905.4	16512.8	12905.5	18945
1992	152744	286657.84	11484.1	19413.6	15749.3	25509
1993	175682	297693.74	12409.2	21188.2	14016.6	28652
1994	199272	322152.26	19265.1	19794.9	14484.8	33300
1995	219175	333325.96	21561.9	24980.5	18649.3	38457
1996	248913	351086.51	24181.1	26542.6	20350.2	41402
1997	280513	368811.51	27174.4	28943.9	23180.4	42802
1998	300845	379936.3	31047.7	28531.3	22328	41381
1999	342036	396701.27	34523.3	31749.2	23378.7	46888
2000	379488	421296.75	42769.2	42769.2	30941.5	66687
2001	441518	441518.54	48590.1	31482.2	29626.8	72450
2002	459443	442049	56556.4	28015.8	29322.2	83354
2003	492231	459488	56720.4	24469.3	29880.2	94226
2004	536749	481004	61686.4	27340.7	32437.7	100326
2005	589412	497739	69066.9	28802.1	38574.7	117471
2006	654084	514486	80331	39729.9	45892.5	128692
2007	727827	532038	91409.7	55516.3	55766.4	145453
2008	815658	564517	122079.5	73309.5	76187.4	166761
2009	988272	590107	151244.7	89469	79205.7	211223
2010	1192774	618529	219160.2	50482.4	59119	223817
2011	1366954	639694	243460	51390.7	50476.6	245629
2012	1527344	670279	247455.4	54598.4	41110	311099
2013	1695011	697954	316640	63870.2	25980.9	203382
2014	1964539	739754.35	339278	88754.7	52458	150906
2015	2130149	764335.69	434065.8	159089.1	132729.5	124448
2016	2553163	768835.17	561619.3	262039.9	242665.6	194925
2017	2674492	832060.33	699586.3	270713.6	209898.7	225859

Source: World Bank, Economic survey and Budget speech of the Ministry of Finance, GoN.

Table.1.2: Growth Rate of Nominal and Real GDP, Capital Expenditure, Budget Deficit, Private Investment**.** **(**In Percentage)

Year (In AD)	Growth rate of nominal GDP.	Growth rate of real GDP	Growth rate of recurrent Expenditure	Growth rate of capital Expenditure	Growth rate of budget Deficit	Growth rate of Gross private investment
1991	19.71	6.37	30.85	3.34	1.38	34.39
1992	23.38	4.11	15.94	17.57	22.04	34.65
1993	15.02	3.85	8.06	9.14	-11.00	12.32
1994	13.43	8.22	55.25	-6.58	3.34	16.22
1995	9.99	3.47	11.92	26.20	28.75	15.49
1996	13.57	5.33	12.15	6.25	9.12	7.66
1997	12.70	5.05	12.38	9.05	13.91	3.38
1998	7.25	3.02	14.25	-1.43	-3.68	-3.32
1999	13.69	4.41	11.19	11.28	4.71	13.31
2000	10.95	6.20	23.89	34.71	32.35	42.23
2001	16.35	4.80	13.61	-26.39	-4.25	8.64
2002	4.06	0.12	16.39	-11.01	-1.03	15.05
2003	7.14	3.95	0.29	-12.66	1.90	13.04
2004	9.04	4.68	8.76	11.73	8.56	6.47
2005	9.81	3.48	11.96	5.35	18.92	17.09
2006	10.97	3.36	16.31	37.94	18.97	9.55
2007	11.27	3.41	13.79	39.73	21.52	13.02
2008	12.07	6.10	33.55	32.05	36.62	14.65
2009	21.16	4.53	23.89	22.04	3.96	26.66
2010	20.69	4.82	44.90	-43.58	-25.36	5.96
2011	14.60	3.42	11.09	1.80	-14.62	9.75
2012	11.73	4.78	1.64	6.24	-18.56	26.65
2013	10.98	4.13	27.96	16.98	-36.80	-34.62
2014	15.90	5.99	7.15	38.96	101.91	-25.80
2015	8.43	3.32	27.94	79.25	153.02	-17.53
2016	19.86	0.59	29.39	64.71	82.83	56.6
2017	4.75	8.22	24.57	3.31	-13.50	15.87
Average	12.90	4.43	18.85	13.92	16.11	12.49

Source: World Bank, Economic survey and Budget peech of Ministry of Finance, GoN.

Table.1.3: Calculation of Ratio of Relevant Variable: (In percentage).

Year (In AD)	Ratio of Deficit budget to GDP (In %)		Ratio of Deficit budget to capital expenditure (In %)	Ratio of Private capital formation to nominal GDP (In %)	Ratio of recurrent expenditure to Nominal GDP (in %)	Ratio of Capital expenditure to Nominal GDP (In %)
	Nominal GDP	Real GDP				
1990	12.30	4.91	79.66	13.63	7.32	15.45
1991	10.4	4.68	78.15	15.35	8.06	13.33
1992	10.31	5.49	81.12	16.70	7.51	12.70
1993	7.97	4.70	66.15	16.30	7.06	12.06
1994	7.26	4.49	73.17	16.71	9.66	9.93
1995	8.50	5.59	74.65	17.54	9.83	11.39
1996	8.17	5.79	76.66	16.63	9.71	10.66
1997	8.26	6.28	80.08	15.25	9.68	10.31
1998	7.42	5.87	78.25	13.75	10.32	9.48
1999	6.85	5.89	73.63	13.70	10.09	9.28
2000	8.15	7.34	72.34	17.57	11.27	11.25
2001	6.71	6.71	94.10	16.40	11.00	7.13
2002	6.38	6.63	104.65	18.14	12.30	6.09
2003	6.07	6.50	122.11	19.14	11.52	4.97
2004	6.04	6.74	118.64	18.69	11.49	5.09
2005	6.54	7.74	133.93	19.93	11.71	4.88
2006	7.010	8.92	115.51	19.67	12.28	6.07
2007	7.64	10.46	100.45	19.98	12.55	7.62
2008	9.34	13.49	103.92	20.44	14.96	8.98
2009	8.01	13.42	88.528	21.37	15.30	9.05
2010	4.95	9.55	117.10	18.76	18.37	4.23
2011	3.69	7.89	98.22	17.96	17.81	3.75
2012	2.69	6.13	75.29	20.36	16.20	3.55
2013	1.53	3.72	40.65	11.99	18.68	3.76
2014	2.67	7.09	59.10	7.68	17.27	4.51
2015	6.23	17.36	83.43	5.84	20.37	7.46
2016	9.50	31.56	92.60	7.67	21.99	10.26
2017	7.80	25.22	77.53	8.44	26.15	10.12
Avenge	7.09	8.93	87.84	15.91	13.26	8.34

Source: Economic Survey of Ministry of Finance, World Bank, Budget Speech of MoF, GoN.

Table: 1.4. Descriptive Statistic:

	RGDP	GPCF	GDB	GCE
Mean	498080.9	114219.3	51430.23	144315.8
Median	470246.0	97276.00	30410.85	59203.40
Maximum	832060.3	311099.0	242665.6	699586.3
Minimum	258864.0	14097.00	12730.10	7570.300
Std. Dev.	167660.3	82137.42	55912.77	179559.8
Skewness	0.382805	0.623767	2.391489	1.687276
Kurtosis	2.021021	2.355374	7.970397	5.094664
Jarque-Bera	1.801985	2.300532	55.51202	18.40442
Probability	0.406166	0.316552	0.000000	0.000101
Sum	13946265	3198141.	1440046.	4040842.
Sum Sq. Dev.	7.59E+11	1.82E+11	8.44E+10	8.71E+11
Observations	28	28	28	28

Note: GCE is government current/recurrent expenditure.

Table-1.5 Estimation of ARDL(1,2,2,2) Model Using AIC Lag Selection Criterion.

Dependent Variable: RGDP
Method: ARDL
Date: 05/02/20 Time: 14:13
Sample (adjusted): 1992 2017
Included observations: 26 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): GDB GCE GPCF
Fixed regressors: C
Number of models evalulated: 54
Selected Model: ARDL(1, 2, 2, 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
RGDP(-1)	0.428859	0.160327	2.674897	0.0173
GDB	0.082701	0.020478	4.038486	0.0011
GDB(-1)	-0.097175	0.026922	-3.609503	0.0026
GDB(-2)	0.052043	0.020345	2.557996	0.0218
GCE	0.060991	0.027807	2.193364	0.0445
GCE(-1)	-0.048203	0.036080	-1.335994	0.2015
GCE(-2)	0.104563	0.032349	3.232319	0.0056
GPCF	-0.021210	0.021180	-1.001434	0.3325
GPCF(-1)	0.115519	0.033837	3.413996	0.0038
GPCF(-2)	-0.065981	0.028501	-2.315034	0.0352
C	2.380612	0.671473	3.545358	0.0029

R-squared	0.999105	Mean dependent var	5.692100
Adjusted R-squared	0.998509	S.D. dependent var	0.136587
S.E. of regression	0.005274	Akaike info criterion	-7.355962
Sum squared resid	0.000417	Schwarz criterion	-6.823690
Log likelihood	106.6275	Hannan-Quinn criter.	-7.202687
F-statistic	1675.303	Durbin-Watson stat	2.248574
Prob(F-statistic)	0.000000		

The above table indicate the overall goodness of fit of ARDL model.

Note: GCE is government current/recurrent expenditure.

Table.1.6: Result of Cointegration Test
Dependent variable Real GDP, observation 1990-2017

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GPCF	0.049598	0.025118	1.974596	0.0670
GDB	0.065778	0.033801	1.946055	0.0706
GCE	0.205470	0.019614	10.47591	0.0000
C	4.168170	0.062192	67.02095	0.0000

EC = RGDP - (0.0496*GPCF + 0.0658*GDB + 0.2055*GCE + 4.1682)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	7.843002	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66
Actual Sample Size	26		Finite Sample: n=35	
		10%	2.618	3.532
		5%	3.164	4.194
		1%	4.428	5.816
			Finite Sample: n=30	
		10%	2.676	3.586
		5%	3.272	4.306
		1%	4.614	5.966

Note: GCE is government current/recurrent expenditure.

Table-1.7: Estimation of Error Correction Model of Corresponding ARDL Model. Dependent variable Real GDP, observation 1990-2017

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GPCF)	-0.021210	0.013880	-1.528133	0.1473
D(GPCF(-1))	0.065981	0.020126	3.278399	0.0051
D(GDB)	0.082701	0.013295	6.220311	0.0000
D(GDB(-1))	-0.052043	0.009552	-5.448175	0.0001
D(GCE)	0.060991	0.019814	3.078211	0.0077
D(GCE(-1))	-0.104563	0.028397	-3.682248	0.0022
CointEq(-1)*	-0.571141	0.081037	-7.047861	0.0000

R-squared	0.702968	Mean dependent var	0.018472
Adjusted R-squared	0.609168	S.D. dependent var	0.007496
S.E. of regression	0.004686	Akaike info criterion	-7.663654
Sum squared resid	0.000417	Schwarz criterion	-7.324936
Log likelihood	106.6275	Hannan-Quinn criter.	-7.566115
Durbin-Watson stat	2.248574		

Note: GCE is government current/recurrent expenditure.

Table- 1.8: Serial Correlation

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

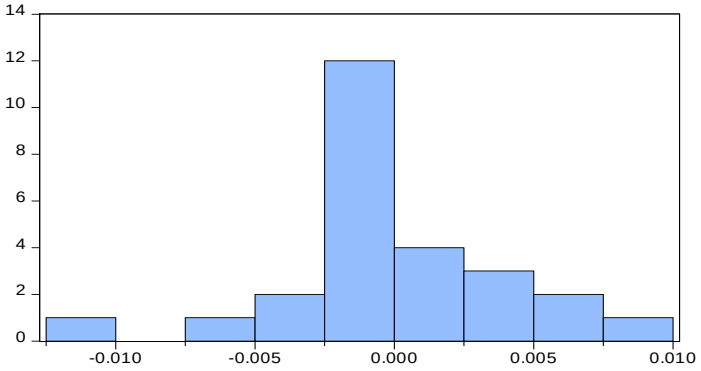
F-statistic	0.476678	Prob. F(2,13)	0.6313
Obs*R-squared	1.776438	Prob. Chi-Square(2)	0.4114

Table-1.10: Heteroscedasticity test.

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	0.796773	Prob. F(10,15)	0.6344
Obs*R-squared	9.019652	Prob. Chi-Square(10)	0.5302
Scaled explained SS	4.817725	Prob. Chi-Square(10)	0.9030

Table-1.11: Normality Test



Series: Residuals	
Sample 1992 2017	
Observations 26	
Mean	1.86e-15
Median	-0.001188
Maximum	0.008261
Minimum	-0.011595
Std. Dev.	0.004085
Skewness	-0.279696
Kurtosis	4.209567
Jarque-Bera	1.923970
Probability	0.382134

Table-1.12: Specification Error Test

Ramsey RESET Test

Equation: UNTITLED

Omitted Variables: Squares of fitted values

Specification: RGDP RGDP(-1) GDB GDB(-1) GDB(-2) GCE GCE(-1) GCE(-2) GPCF GPCF(-1) GPCF(-2) C

	Value	df	Probability
t-statistic	0.689603	14	0.5017
F-statistic	0.475552	(1, 14)	0.5017
Likelihood ratio	0.868500	1	0.3514

Note: GCE is government current/recurrent expenditure.