

Government Debt Approach on Growth

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Abstract

This study aims to analyze the short-run and long-run relationship of nominal GDP (a dependent variable) with the four independent variables, such as domestic loans (*dl*), foreign loans (*fl*), export (*exp*), and gross fixed capital formation (*gfcf*). Both descriptive and inferential tools were used in this study: the five years of time series data from FY 2015 to FY 2020 under the descriptive design to examine the trends of these five study variables, and the 46 years of data from FY 1975 to FY 2020 and a multiple regression model under the inferential design to measure their relationship. Based on the objective and method, the study found the Nepali economy to be buckling under the weight of a growing and chronic public debt burden since the start of its budgetary process. Therefore, it behooves the government of Nepal to steer its economy towards positive growth in the future by mitigating the adverse effects of the debt burden.

Keywords: domestic loan, foreign loan, debt burden, nominal GDP, gross fixed capital formation

Introduction

Public debt is a part of the fiscal instrument of government budgeting after the Keynesian era that is highly regarded as a means of deficit financing for development purposes, particularly in developing economies (Bhatta, 2003). The governments of such economies are suffering from shortages of government resources because of higher expenses that aim to fulfill the needs of people residing in the country. With the growing multi-party system and democratic exercise in the nations, public expenses exceed the revenue quickly. In this situation, the governments of Nepal borrow ample financial and technical assistance from abroad and within the nation. Thus, every type of borrowing taken by the government, and government-owned enterprises is known as public borrowing or public debt. Economically, public debt is taken to increase GDP and to export well for increasing foreign currencies in the country (Siddiqui & Malik, 2002). If the public debt move along the vector of GDP, foreign exchange reserve, and export, the impact of public debt become positive for development, otherwise- public debt becomes a burden and problematic for national development. The situation of debt burden is termed when the gap between government expenditure exceeds the revenue in the widened range (Dahal, 2016).

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The government accrues what is known as public debt (liability)—as it raises loans from individuals, banks and financial institutions, international monetary organisations, and even foreign countries (Checherita-Westphal & Rother, 2011). A modern government's primary source of funding is the public debt. Stated differently, public debt is any loan that a government, either domestically or internationally, raises. Due to difficult economic conditions, government spending has been rising more quickly than its capacity to collect money in recent years (Bhatta & Mishra, 2020). Therefore, there is a deficit in the government's budget when spending surpasses income. Public debt, in a much broader sense, refers to those obligations of the state as the borrower and private investors of capital as lenders where the state promises to pay the lender the amount borrowed with interest after a given period of time. Through this kind of deferred tax, the public benefits from public expenditures much before they are met out of current revenue (Qasr et al., 1969).

The government of Nepal has been supported by loans from internal and external sources. The external sources contained both grants and loans from the bi-lateral and multi-lateral corporations (Ministry of Finance [MOF/N], 2021). Similarly, the government borrowed through securities, and overdrafts from Nepal Rastra Banks, commercial banks, and other financial institutions — used instruments treasury bills, development bonds, national savings, citizen's savings, and special bonds (Nepal Rastra Bank [NRB], 2020).

Statement of Problems

Historically, Nepal began budgeting in 1951 and took on debt eleven years after the practice started. While the government began accepting loans from outside in 1963, it began accepting loans from within its borders in 1962. Since then, the government of Nepal has frequently encountered deficit budgeting. One significant weapon of Nepalese fiscal policy has been the public debt. The former USSR and the UK were Nepal's first foreign creditors. It is now commonly acknowledged as a way to finance policies aimed at closing the resource gap, trade imbalance, and BOP deficit. The planned economic development greatly increases the role of public debt (National Planning Commission[NPC], 2015). Public debt's primary goal is to encourage economic expansion in developing nations so that people might escape poverty (Acharya, 2003). Because of development initiatives, government spending in Nepal has been rising daily (Thapa, 2002).

Over the course of the last few years, Nepal's public debt has risen following the earthquake and the country's shift to federalism. It began to decline gradually in fiscal 2016–17, hitting 37% of GDP in fiscal 2019–20 (Ministry of Finance [MOF], 2019/20). The debt-to-GDP ratio for Nepal stood at 39 % in fiscal 2020.

As far as external and total debt are concerned, the World Bank assesses Nepal's debt distress risk as low. Although Nepal has the ability to apply for a foreign commercial loan through the International Development Cooperation Policy (2019), it has not yet done so. While taking out big, high-interest commercial loans from overseas, the nation must exercise caution.

The substantial increase in fiscal 2019–20 is due to the effects of COVID-19 and the responses to it [MOF, 2019/20]. Nepal's debt-to-GDP ratio was approximately 37% in FY 2020.

Thus, the study of debt approach on economic growth of Nepal raised the these questions: What is the current situation of debt and GDP of Nepal? and how have they been acting in long run in Nepalese economy?

Objective of the Study

This study aims to analyze the short-run and long relationship between one dependent variable (nominal GDP of Nepal) and four independent variables (domestic loan, foreign loan, export, and gross fixed capital formation in Nepal).

Literatures Review

Verghese and Varghese (1988) analyzed India's mounting public debt and severing burden. They suggested that the government of India manage the internal debt so that the burden should be sizable.

Siddiqui and Malik (2002) examined the relationship between debt and growth in South Asia as the developing economies kept the dependent variables as per capita GDP on other independent variables population growth rate, with the debt. The model showed that the population growth rate retarded the growth in such economies.

Bhatta (2003) analyzed the direction of public debt toward the burden and focused on the burden increased in size and magnitude after the restoration of democracy in the country. The study focused on external debt's positive impact on growth and pointed out that foreign debt was a major source of foreign exchange at that time even though the debt stock and debt serving charge had been increasing each year.

Ali and Mustafa (2012) decided to establish the relationship between external debt and accumulation and its effect on economic growth in Pakistan. He used the linear regression model of the dependent variable Gross National Product (GNP) on independent investment in education as an index of human capital, capital formation, and labor forces that data were measured in the percent of GDP. The study found that investment in education was the main force of economic growth while labor forces negatively impacted Pakistan's economic growth.

In an assessment of public debt in Nepal, Bhattarai (2015) showed public debt in Nepal has been a serious problem since its budgeting started in FY 1956 and showed the size of public debt has been growing there after the budgetary operation.

Casares (2015) analyzed the relationship between external public debt and economic growth. The result showed the non-linear relation between external debt and economic growth in both developing and developed countries.

Van Bon (2015) analyzed the relationship between public debt and inflation in developing countries. The empirical evidence is based on panned GMM of 60 developing countries of Asia, and Latin America over the period 1990 to 2014. The findings showed that a higher public debt negatively impacts growth, meaning that inflation retard the economic growth.

Dahal (2016) examined public debt-stock education-centric human capital and economic growth in Nepal by applying the ARDL model of the data from FY 1974 to FY 2014. The study empirically showed negative relationships between public debt and economic growth while human capital and economic growth were positively significant.

Singh (2018) showed the relationship between domestic debt and economic growth in India. He applied integration tools to show the long-run relationship between loans and economic growth. The study found that domestic debt has negative impacts on the Indian economy. The domestic debt was taken for investment purposes in the infrastructure sector.

Abdelaziz et al. (2019) examined the relationship between external debt, investment, and economic growth in developing countries over the period 2000-2017 in 23 countries. The study found that public debt negatively impacted highly indebted countries while positively impacted low-indebted countries.

Bhatta and Mishra (2020) analyzed optimum growth maximizing public debt threshold for Nepal in the common agenda of sustainable economic growth. The study

applied the ARDL model to show a long-run non-linear optimizing debt model and suggested policy reform in the debt management committee in Nepal. This study has made a different model by examining the different models of the previous studies of the developing economies.

Method

The study applied both the descriptive and inferential tools for data analysing. In descriptive techniques, the data from FY 2015 to FY 2020 were used to examine the current fiscal situation of debt and debt growing factors in Nepalese economy. In inferential techniques, similarly, the 46 years of time series data from FY 1975 to FY 2020 and this multiple regression model were used to measure the relationship between one dependent variable (nominal GDP of Nepal) and four independent variables, such as domestic loans (DL), foreign loans (FL), export (EXP), and gross fixed capital formation (GFCF):

$$\ln gdp_t = \beta_0 + \beta_1 \ln dl_t + \beta_2 \ln fl_t + \beta_3 \ln exp_t + \beta_4 \ln gfcf_t + \mu_t \dots (1)$$

where $\ln gdp_t$ = Natural logarithms of NGDP; $\ln dl_t$ = Natural Logarithms of domestic loan; $\ln fl_t$ = Natural logarithms of foreign loan; $\ln exp_t$ = Natural Logarithms of total export; $\ln gfcf_t$ = Natural logarithms of gross fixed capital formation; and μ_t = Error terms, the β_0 is the constant parameter; and $\beta_1, \beta_2, \beta_3, \beta_4$ are the coefficients of domestic debt, foreign debt and total export, respectively.

Before selecting an appropriate model of regression, the unit roots of residual and all other variables for GDP model were checked. Then, the error correction model (ECM) was used as a correct model of regression. The ECM of Equation 1 was again transformed at their first differences, as displayed in Equation 2:

$$\Delta \ln gdp_t = \beta_5 + \beta_6 \Delta \ln dl_t + \beta_7 \Delta \ln fl_t + \beta_8 \Delta \ln exp_t + \beta_9 \Delta \ln gfcf_t + \gamma ect_{t-1} \dots (2)$$

The coefficient of error term γ in Equation 2 would be the determinant of the long-run adjustment of the model, while $\beta_6, \beta_7, \beta_8,$ and β_9 represents the short-run coefficient of the variables, such as $\Delta \ln dl_t, \Delta \ln fl_t, \Delta \ln exp_t,$ and $\Delta \ln gfcf_t,$ respectively. The condition for using ECM is that γ must be negative and statistically significant.

Results

Current Fiscal Situation of Nepal

Nepal, a least developed country in the world, started a formal budgeting process in FY 1952 in Rana's Regimes. However, the public borrowing practice has been started since FY 1963. The government of Nepal regularly depended on public debt combined with domestic borrowing and foreign debt. The volume of public debt in Nepal has been growing in the past; however, it has been growing after the economy's transformation toward the federal government. Thereafter, the grant transformation from the federal government to provincial government and local level government has been a means of political content of the multi-party system of Nepal. The overall macroeconomic situation with different fiscal has been shown in Table 1.

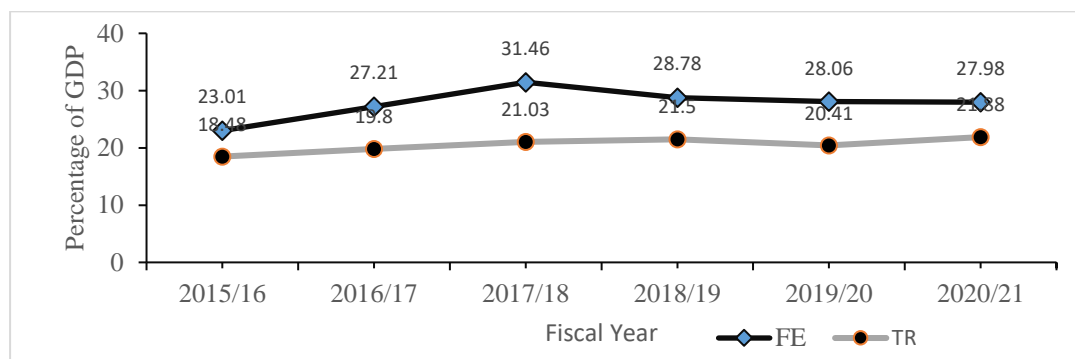
Table 1

Fiscal Indicators of Federal Government (As percent of GDP)

FY	FE	TR	FBD	FRS	PDL	DSE
2014/15	21.93	16.75	3.35	2.74	22.48	3.04
2015/16	23.01	18.48	2.64	4.24	24.07	2.94
2016/17	27.21	19.8	6.17	2.94	22.67	2.32
2017/18	31.46	21.03	9.18	0.86	26.54	2.08
2018/19	28.78	21.5	8.72	0.39	27.16	1.95
2019/20	27.87	20.28	8.12	-2.03	36.27	2.14

Note. FE = Federal Expenditure, TR = Total Revenue, FBD = Federal Budget Deficit, FRS = Federal Revenue Surplus, PDL = Public Debt Liabilities DSE =Debt service expenses, Economic Survey of Nepal FY 2020.

The federal expenditure (FE) and total revenue (TR) in first and second columns in Table 1 shows a widening gap between public expenditure and federal income from those days onwards. Similarly, in the second last column, the share of outstanding public debt has reached 40.62% of its GDP in FY 2020/21, which was 26.54% in FY 2017/18. It has concluded that the volume and share of public debt have been increasing since COVID-19 and after the global downturn the Russian-Ukraine war was gone long run cause between the two countries.

Figure 1*Total Revenue and Federal Expenditure at the GDP Percentage*

Note. FE =Federal Expenditure; TR = Total Revenue

Figure 1 shows an unreachable gap between federal expenditure and total revenue in Nepal's budgetary process. The share of outstanding public debt in both foreign debt and domestic debt has been visualized in Figure 2.

Public Debt Trend and Current Situation in Short Term

The Outstanding Public Debt (OPD) in Nepal has reached Rs1433.4 billion in FY 2020 which is 36.86% of GDP. Out of which Domestic Outstanding Debt (DOD) consisted Rs. 613.7 billion and External Outstanding Debt (EOD) consisted Rs. 819.7 billion which shared by 15.78% and 21.08% of DGP. The outstanding debt was 27.16% of GDP in FY 2019 which is COVID- 19 affected in oval macroeconomic situation, out of which the share of DOD and EOD were consisted by 11.74% and 15.42% respectively. Table 2 shows the trends and structure of public debt.

Table 2*Structure of Public Debt Liability in Nepal*

FY	NGDP	OPD	DOD	EOD
2012/13	1949.3	553.8	220.3	333.4
2013/14	2232.5	553.5	206.7	346.8
2014/15	2423.6	544.9	201.7	343.3
2015/16	2608.2	627.8	239	388.8
2016/17	3077.1	697.7	283.7	414
2017/18	3455.9	917.3	391.2	526.2
2018/19	3858.9	1048.2	453.2	594.9
2019/20	3888.7	1433.4	613.7	819.7

Note. NGDP = Nominal GDP at producers price; OPD = Outstanding Public Debt, DOD = Domestic Outstanding Debt; EOD = External Outstanding Debt, data measured in 10 million Rs.; Data adapted from Economic Survey 2019/20.

Table 2 reveals that trend of public debt has been increasing from FY 2014/15 to FY 2019/20 near double. Trend of OPD was 28.41% of its GDP in FY 2012/13. It

was decreasing trend up to FY 2017. The situation of OPD was suddenly geared after FY 2018 which was the case of the government Nepal transited form central financial situation to fiscal federalism and has been geared in FY2019 and FY2020.

Out of OPD, the share of EOD exceed the DOD since study period. Out of OPD (28.41%) in 2012/13 the share of DOD and EOD consisted of 11.30% and 17.10% respectively. Likewise the share of DOD and EOD were stood by 15.78% and 21.08% of DGP in FY 2020. Further, trend of OPD was 28.41% of its GDP in FY 2012/13. It was decreasing trend up to FY 2017. The situation of OPD was suddenly geared after FY 2018 which was the case of the government Nepal transited form central financial situation to fiscal federalism and has been geared in FY2019 and FY2020. In other words the evidenced proved that the public debt situation of Nepal has been growing position after the federal budget operation process started after FY 2018 more detailed in Figure 1.

Figure 2

The Outstanding Public Debt Situation of Nepal

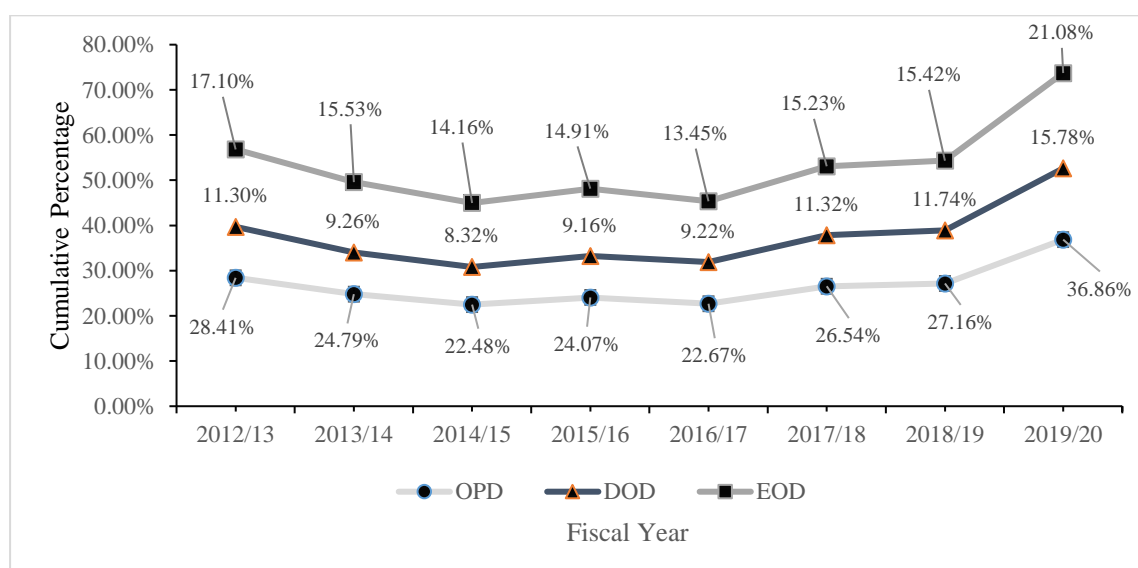


Figure 2 reveals, OPD has been declining trend up to FY 2016 while increasing from FY 2017 to date. Likewise, EOD has been exceeding in each period of the study period and will be continue near future due to the instability of impact government exceeding recurrent expenditure in budget.

Public debt of Nepal was found to be in an increasing trend for these reasons: The trends of domestic mobilization have increased over the time that has stood 5.6% of GDP in FY 2020 and was stood 2.5% of GDP in FY 2019. Similarly, trends of debt servicing expense has been growing over the period that has stood 2.14% of GDP in

FY 2020 and was divided for 1.43% and .67% of GDP for principal payment and interest payment in the same period. The debt servicing expense was stood 1.95% of GDP in 2019 and was also the share of principal payment 1.41% and interest payment .54% of its GDP. Thus, figure revealed that debt servicing amount has been growing with it principal payment in each upcoming year (MOF, 2019/20).

In the same way, share of grant has been decreasing in the fund of international development cooperation mobilisation. The total mobilization stood 4.6% in FY 2020 in which share of loan and grants were consisted 4.2% and .5% of GDP respectively. Total international mobilization was consisted 3.2% of its GDP in FY 2019 dividing loan and grants 2.4% and) 0.8% of GDP respectively more detail has shown in Table 3.

Table 3

Trends of International Economic Cooperation Mobilization and Utilization in Percentage of GDP

FY	Loan	Grant	Total FA	Utilization FA
2015/16	1.7	1.2	2.9	2.79
2016/17	1.9	1	2.9	3.24
2017/18	2.9	1	3.9	3.81
2018/19	2.4	0.8	3.2	3.82
2019/20	4.2	0.5	4.6	3.57

Note. FY = Fiscal Year; Loan = Foreign Loan from bilateral and multi-lateral sources; Grant = Foreign grants; Total FA = Total Foreign Assistance; Utilization FA = Utilization of international development cooperation.

Continuing, the growing share of foreign loan in the utilization of international development cooperation consisted of higher percentage from the foreign loan than grants. In this way, the current situation and trend of public debt in Nepal have been growing due to revenue mobilization down. The overall macroeconomic variables are favourable despite the COVID-19 while public debt after federal budget stated to its implementation (MOF, 2019/20).

Relationship of GDP with Domestic Loans (DL), Foreign Loans (FL), Export (EXP), and Gross Fixed Capital Formation (GFCF)

The regression model has been used to describe time series data of public debt of the 46 years regarding the current price, that is, borrowing of current years from FY 1975 to 2020. The dependent variable was taken as nominal GDP at producers' prices. The other independent variables used to interpret the model were domestic loan (DL) and foreign loan (FL)—the borrowing of particular years, that is, different than outstanding public debt including foreign outstanding public debt (FOD) and domestic

outstanding public debt (DOD). Likewise, the total export (EXP), and gross fixed capital formations (GFCF) figures of corresponding years were kept as further control variable on the debt approach on growth model. The macroeconomic variables used in the regression model were nominal GDP at producers' prices (NGDP), domestic loan (DL), foreign loan (FL), total exports (EXP), gross fixed capital formation (GFCF), the data measured in millions Rs, carried from nrb.org.np at database on Nepalese economy in 2020 (NRB, 2020).

The study found the attributes of variables in different forms. The GDP of the model refers to the nominal gross domestic product which has got non-stationary at the level. The regression model of GDP on DL, FL, EXP, and GFCF has been transformed into in the logarithms form, as shown in Equation 1.

$$\ln gdp_t = \beta_0 + \beta_1 \ln dl_t + \beta_2 \ln fl_t + \beta_3 \ln exp_t + \beta_4 \ln gfcf_t + \mu_t \dots (1)$$

$$\ln gdp_t = 2.37 + 0.03 \ln dl_t - 0.10 \ln fl_t + 0.88 \ln gfcf_t + 0.09 \ln exp_t + \mu_t$$

$$t\text{-Statistic} = (20.40) \quad (1.10) \quad (-4.37) \quad (17.88) \quad (3.02)$$

$$R^2 = 0.998 \quad DW \text{ statistic} = 1.213 \quad F\text{-statistic} = 4326.553 \quad \text{Prob} (F\text{-statistic}) = 0.000$$

The regression Model 1 shows mixed results. The domestic loan had positive but statistically insignificant effect on *gdp*. However, foreign loan (*lnfl*) had negative but statistically significant effect on *gdp*, which may be a problem in the Nepali economy. The coefficient of foreign loan should be positive in the real sense. Similarly, the gross fixed capital formation (*gfcf*) and total export (*exp*) had positive but statistically significant effect on *gdp*. As shown by the *p*-value of *F*-statistic, the entire regression model was found to be statistically significant. However, the regression result did not seem to be spurious because $R^2 < D\text{-}W$ statistic. Here, the value of *DW* statistic not lying between 1.5 and 2.5 suggested a unit-root problem in these five variables. Before examining the co-integrating relationship between these variables, therefore, their unit roots were tested below.

Unit-Root Tests of All Variables

Table 5 shows all unit-root results of Augmented Dickey-Fuller (ADF) for a dependent variable ($\ln gdp_t$) and four independent variables ($\ln dl_t$, $\ln fl_t$, $\ln exp_t$, and $\ln gfcf_t$).

Table 5*Augmented Dickey-Fuller Test of Unit Root*

Variables	At Level with constant		At first difference with constant		Stationary
	<i>t</i> -test	<i>p</i> -value	<i>t</i> -test	<i>p</i> -value	
$\ln gdp_t$	-0.4267	0.8954	-6.5310	0.0000	$I(1)$
$\ln dl_t$	-0.6197	0.8559	-5.7692	0.0000	$I(1)$
$\ln fl_t$	-1.7062	0.4214	-5.8527	0.0000	$I(1)$
$\ln exp_t$	-0.0636	0.9471	-8.0415	0.0000	$I(1)$
$\ln gfcf_t$	-1.5136	0.5177	-5.5918	0.0000	$I(1)$

Note. Lag Length based on SIC give similar result. H_0 : These variables have unit roots.

Because the null hypothesis was rejected, based on their *p*-values as given in Table 5, Augmented Dickey-Fuller (ADF) test showed these dependent and independent variables having unit roots only at their level forms but having no unit roots at the first differences. In other words, these variables became stationary at their first differences, $I(1, 1)$.

Unit-Root Test of Residual and Co-integration between the Study Variables

Table 6 gives the ADF-test, unit-root result of the residual.

Table 6*Unit-Root Test Result of the Residual*

	<i>t</i> -Statistic	<i>p</i> -value *
Augmented Dickey-Fuller test statistic	-4.30533	.0013
Test critical values:		
1% level	-3.58474	
5% level	-2.92814	
10% level	-2.60223	

Note. Critical value of *t* by ADF special table, $|t_{critical}| = 3.17$. lag = 2. H_0 : The residual has a unit root. *MacKinnon (1996) one-sided *p*-values.

Because $(|t_{cal}| = 4.30533) > (|t_{critical}| = 3.17)$, as shown in Table 6, the null hypothesis of the residual's unit root (or the null hypothesis of no co-integration) was rejected, meaning that the five study variables ($\ln gdp_t$, $\ln dl_t$, $\ln fl_t$, $\ln gfcf_t$, and $\ln exp_t$) became co-integrated by Engle-Granger criterion. Therefore, the ECM for Model 1 became a correct model of the regression.

Error Correction Mechanism (ECM)

The ECM model links the long-run relationship back to the short-run relationship. All the five variables became stationary at the first differences and the residual stationary at the level form, ECM seemed to be a correct model of regression.

$$\Delta \ln gdp_t = \beta_5 + \beta_6 \Delta \ln dl_t + \beta_7 \Delta \ln fl_t + \beta_8 \Delta \ln exp_t + \beta_9 \Delta \ln fcf_t + \gamma ect_{t-1} \dots (2)$$

$$\Delta \ln gdp_t = 0.0771 - 0.0101 \Delta \ln dl_t - 0.0111 \Delta \ln fl_t + 0.1402 \Delta \ln exp_t + 0.2390 \Delta \ln fcf_t - 0.2845 ect_{t-1}$$

$$t = (4.1840) \quad (-0.4157) \quad (-0.3055) \quad (2.2869) \quad (2.8207) \quad (-2.4320)$$

$$p = (0.0002) \quad (0.6799) \quad (0.7616) \quad (0.0277) \quad (0.0075) \quad (0.0197)$$

$$R^2 = 0.3286 \quad F - \text{statistic} = 3.8183 \quad \text{Prob.}(F - \text{statistic}) = 0.0065 \quad DW \text{ statistic} = 1.5971$$

The coefficient (γ) is a long-run adjustment coefficient, used to adjust the long-run back to the short-run; β_6 , β_7 , β_8 , and β_9 are the short-run coefficients of these variables, $\Delta \ln dl_t$, $\Delta \ln fl_t$, $\Delta \ln exp_t$, $\Delta \ln fcf_t$, respectively. In Model 2, the coefficient of ect_{t-1} was found to be negative ($\gamma = -0.2845$) and significant, satisfying the condition for using the ECM model and indicating that the disequilibrium in the dependent variable ($\ln gdp_t$) get corrected by around 28.45% annually. Therefore, correcting this disequilibrium needs about 3.51 years.

Diagnostic Tests for Time-Series Data

The residual stationery of the error correction Model 2 has been checked by the under following forms:

Breusch-Godfrey Serial Correlation LM Test

Table 7 shows that the p -values of $F(2, 37)$ and $\chi^2(2)$ became greater than $\alpha = .05$; hence, no problem of the serial correlation was found in Model 2.

Table 7

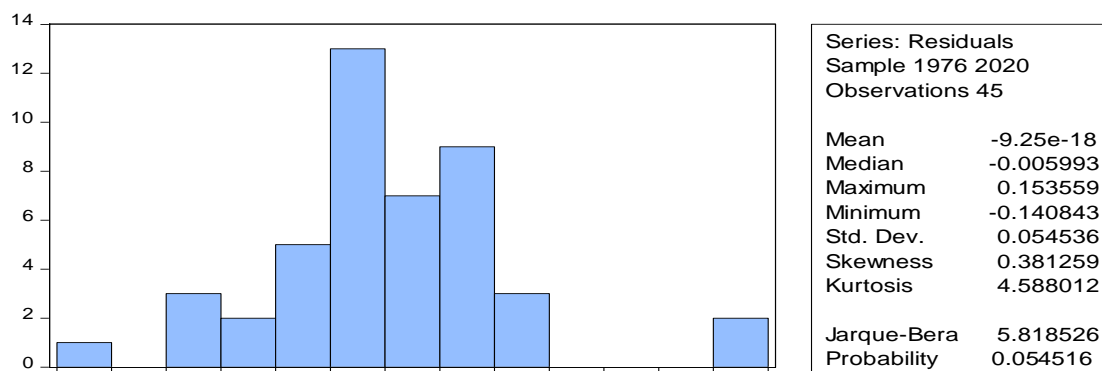
Breusch-Godfrey Serial Correlation LM Test

Test statistic	p -value
$F(2, 37)$	0.3921
$\chi^2(2)$	0.3294

The residual seemed to be normally distributed because (p -value of JB statistic in Figure 1) $\geq .05$.

Figure 1

The Jarque-Bera Test



Note. H_0 : Residual has normal distribution. Rule: Reject H_0 if p -value \geq ($\alpha = .05$).

Heteroskedasticity Test

Breusch-Pagan-Godfrey showed Obs*R-squared = 5.838339 at Prob. Chi-Square (5) = 0.3223 indicating that model has free from Heteroskedasticity problem Table 9).

Table 9

Breusch-Pagan-Godfrey Heteroskedasticity Test

	Observed test statistic	Test statistic	p -value
F -statistic	1.162848	$F(5,39)$	0.3447
R^2	5.838339	$\chi^2(5)$	0.3223
Scaled explained SS	7.867149	$\chi^2(5)$	0.1637

The Stability Test

Figure 2 and Figure 3 show that stability test of residuals of Model 2 through CUSUM test and CUSUM-squared.

Figure 2

The CUSUM Test

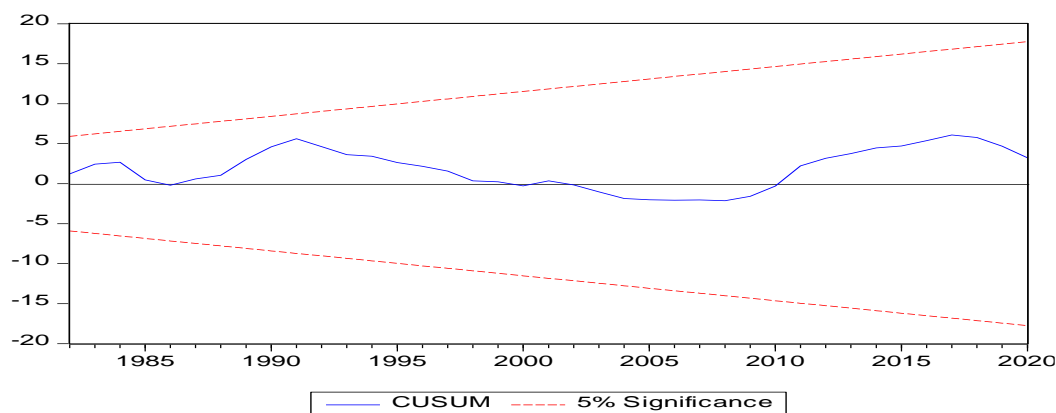
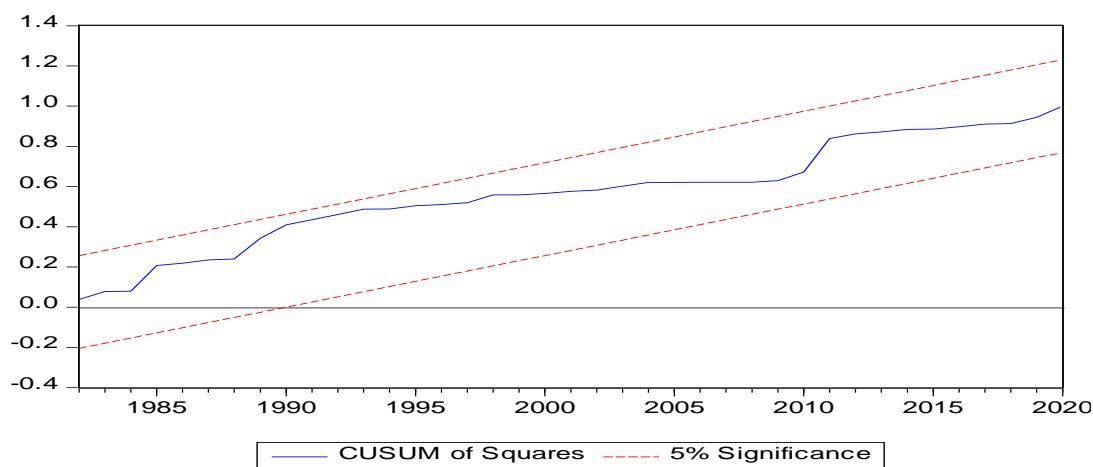


Figure 3*The CUSUM-Squared Test*

All Five Test Are Satisfied That Model Has Best Fit In Long Run And It Required To Adjust 3.5149 Years.

Discussion and Conclusion

From the regression result of Model 1, it can be concluded that the domestic loan appears to have positive but statistically insignificant effect on *gdp*, foreign loan (*lnfl*) to have negative but statistically significant effect on *gdp*—which could pose a problem in the Nepali economy; the coefficient of foreign loan should have been positive in the real sense—and the gross fixed capital formation (*gfcf*), as well as total export (*exp*), to have positive but statistically significant effect on *gdp*. Currently, the share of foreign loan is consisted to be higher than domestic loan. The share foreign assistance and utilization of foreign assistance in development of Nepal has been growing faster than that of foreign grant. The amount of foreign grants is likely to adversely impact national economic growth; however, it seems to be declining in recent years, largely when the country is now transforming itself towards federal financing, the share foreign loan seems to be growing appreciably without the rise in the productive efficiency. The negative and significant coefficient of foreign loan may be attributed to a rapid rise in this loan on the one hand but a sluggish growth of Nepal's GDP on the other hand. As Model 2 suggests, the long-run adjustment coefficient ($\gamma = -0.2845$) of the ECM model took negative sign and became statistically significant, indicating the correction of the disequilibrium in the dependent variable ($\ln gdp_t$) by around 28.45% per annum and requiring about 3.51 years for its correction.

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