Effect of Debt and Export on GDP of Nepal: an Empirical Analysis

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ABSTRACT

This study aims to investigate the intricate relationship between Nepal's Gross Domestic Product (GDP), total debt, and export. Nepal, as a developing nation, faces numerous economic challenges, making it imperative to understand the dynamics of these key economic indicators and their interrelation. This study applies quantitative research methods, including statistical analysis, to examine the long-term trends, patterns, and causal relationships among these variables. The research begins by providing an overview of Nepal's economic landscape, highlighting its reliance on export-oriented industries and the significant impact of external debt on the national economy. A thorough literature review is conducted to identify existing theories and empirical studies related to GDP, total debt, and export, providing a foundation for the subsequent analysis. The study employs time-series data provided by NRB database, covering a significant period of 1975 to 2020 AD, to construct a robust empirical framework. Various econometric techniques, such as correlation analysis, regression models, normality test, are applied to explore the relationship between Nepal's GDP, total debt, and export using EViews 10. The findings of the study contribute to a deeper understanding of the economic dynamics in Nepal. The results reveal important insights into the impact of total debt on GDP growth and the role of export in driving economic development. Furthermore, the study uncovers potential feedback effects and spillover mechanisms among these variables, providing policymakers with valuable information for formulating effective economic strategies and debt management policies. Overall, this study sheds light on the complex

relationship between Nepal's GDP, total debt, and export, offering valuable insights into the country's economic performance.

Keywords: Gross domestic product, Total debt, Export, Economic growth

Introduction

A significant issue facing all LDCs is the severe lack of resources needed to pay public spending. In this circumstance, they need to borrow money. However, in the modern world, together with other sources of revenue, such as tax and non-tax revenue, public borrowing is becoming a crucial tool of government financing, not only for the LDCs but for rich countries as well.

In Nepal, the budgeting procedure is a relatively recent development. Budgeting first appeared in the year 1951 A.D. Following that, deficit budgeting is a practice we commonly engage in. External loans, domestic loans, and adjustments to the government's financial reserves are the three ways the Nepalese government can pay for its budget deficits. Therefore, public debt has been a key weapon in Nepal's fiscal strategy. However, Nepal's public debt was acquired 11 years after the start of fiscal practice. So, our public debt history is not very old. (Bhattarai, 2013)

Till 1961–1962, Nepal maintained a close to debt-free status. In 1963, the debt starts to mount. Then, Nepal has been collecting payments for its public debt from both domestic and foreign sources. The internal source comprises borrowing from the financial industry and from private individuals. Bilateral and multilateral sources are contributing to the global external debt crisis. (Joshi, 1982).

Nepal is primarily an import-driven country, and its exports are relatively modest compared to its imports. The major export items from Nepal include textiles, carpets, garments, handicrafts, agricultural products (such as tea, coffee, spices, and pulses), and metal crafts. The export sector has faced various challenges over the years, including political instability, geographic constraints, lack of infrastructure, and limited industrialization.

In Nepal, the fluctuating and dwindling exports have had adverse effect on economic growth. The Nepalese exports, in the past mainly dominated by primary agricultural products and raw materials and now by iron and steel, knotted carpets, textiles, plastics, hollow tubes, 4 beverages and vegetables are characterized by low prices and market volatility, are not diversified hence not competitive in the international markets. Nepal has been adopting open and market oriented trade policy for the last two decades with expectations that such policy generates positive impacts on growth and export but did not happen as expected.

This study is designed with the objective to analyze the impact of outstanding debt and exports on the economic growth i.e. GDP of Nepal by analyzing the data empirically. The specific objectives of the study are to examine the impact of total debt and exports on GDP of Nepal.

Literature Review

The classical economists were generally against the public borrowing and favored the minimum role of government. They assumed that individual, consumer and business firm employ resources more efficiently. According to them, economic activities are best in private sector because they have the greed of profit, through which allocation of resources would be more efficient. The classical economist Adam Smith opposed any use of Public Debt. He saw public debt as encouraging extravagance, encouraging the use of force, and creating generally unfavorable economic conditions for the country that used it.

Mohd and Yusuf (2021) investigated the effect of government debt on Nigeria's economic growth using annual data from 1980 to 2018. The application of Autoregressive Distributed Lag technique showed that the external debt constituted an impediment to long-term growth while its short-term effect was growth enhancing. Domestic debt had a significant positive impact on long-term growth while its short-term effect was negative. In the long term and short term, debt service payments led to growth retardation confirming debt overhang effect. According to the findings, the government should use the borrowed money to diversify the economy's productive base. This will boost long-term economic growth, widen the base of taxation, and increase the country's ability to pay off its obligations when they're due. The key contribution of the study is fiscal reforms that promote domestic resource mobilization, effective debt management techniques, and dependence on domestic debt rather than external debt for increasing deficit financing to promote stronger growth.

Didia and Ayokunle (2020) studied the impact of public and publicly guaranteed debt on the economic growth of Nigeria. The paper was published in 'Advances in Economics and Business' with the title "External Debt, Domestic Debt and Economic Growth: The Case of Nigeria." The study disaggregates total public and publicly guaranteed debt into external debt and domestic debt, and examines whether the two kinds of debt have differential impact on economic growth in Nigeria. Utilizing data from the Central Bank of Nigeria, and the World Bank, the empirical analysis using the Vector Error Correction Model (VECM) and covering 1980 – 2016, revealed that domestic debt has a statistically significant positive relationship with economic growth in the long run while external debt exhibiting a negative relationship with economic growth was not statistically significant.

Ashfaq and Padda (2019) investigated the optimal level of public debt for the economic growth of Pakistan using the time series data from1973 to 2018. Using the ARDL, bound test technique, they investigated the non-linear relationship between public debt and economic growth and discovered that 60percent of GDP as the ideal level of national debt. Additionally, it suggests that longer-term economic growth in Pakistan will be increased by higher government borrowing levels. However, in the short run, rising public debt will stimulate economic development until it reaches a

certain point and then begin to fall. According to this study, public debt should be discouraged if it exceeds the ideal level because doing so has a negative impact on economic growth.

Neupane (2018) has expressed the effect of increasing trend of government barrowing on economic development. After the republican system was founded, the government required a sizable sum of money to carry out the election, the transition to the new age, and the peace process. On the other side, Nepal chose a federal style of governance with seven provinces and held the three levels of elections by promulgating a new constitution. Government spending has grown faster than government earnings, and this borrowing pattern is becoming a big challenge for the nation and a major difficulty for managing the nation's debt. The nation is burdened by the debt because it is unlikely to be financed by unproductive and non-monetized economic sectors.

Silwal (2017) conducted a research using regression equation to analyze the relationship between GDP (dependent variable) and total debt, external debt, and internal debt (independent variables). The linear equation used to determine the contribution of public debt in GDP over the period of 15 years from FY 2000/01 to 2014/15 in her doctoral dissertation entitled "An analysis of public debt in Nepal"reached to the conclusion that the degree of indebtedness of the external debt of Nepal increased due to the poor mobilization of internal resources, widening investment-saving gap, export-import gapand revenue- expenditure gap and large amount of fiscal deficit. So, there was excessive flow of foreign loans to fill up those gaps. Consequently burden of debt and debt servicing obligation were increasing rapidly in each year but the debt servicing capacity of economy was not increasing in the same pace.

Acharya (2015) has concluded that the average annual growth rate of GDP, revenue and export earnings are considerably low as compared with that of debt and its 20 servicing obligation and the most of the borrowed funds are using in unproductive sectors. Because of the misuse of borrowed funds, other things remaining the same there are symptoms of steadily falling into the debt trap. The government's weak ability to service its debt and the government's variable debt load make it difficult to ignore the economy's deteriorating state. It raises various issues regarding the nation's existence and ability to receive debt. It is extremely difficult to escape from a scenario where there is an excessive reliance on foreign aid and the balance of payments is in the creditors' favor. In any case, it may contribute to the economic progress of every country and is a widely accepted method of funding public expenditures.

Bhattarai (2013) analyzed the assessment of public debt in Nepal using the data set from 1975 to 2011. This study is based on the descriptive analysis. Averaged out, the share of foreign loans is 58.85 percent, while the average share of internal loans is 41.15 percent The share of internal loans, however, has increased dramatically relative to the share of foreign loans in the most recent period. For instance, the average percentage of internal loans was 68.01 percent from 2005/06 to 2010/11, whereas the average share of

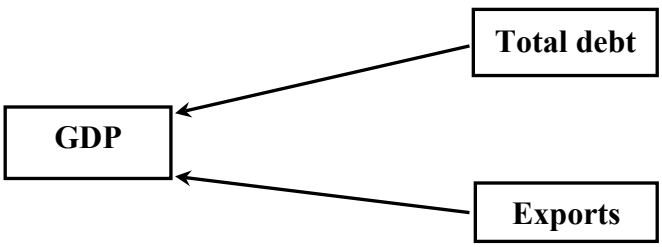
foreign loans was 31.99 percent. Even with a larger budget and greater public debt, the economy is only growing at a modest pace. It is, on average, 4.28 percent. However, the average inflation rate is 8.31 percent. As a result, the Nepalese economy is struggling with both high inflation and a slow rate of economic growth.

Bista (2011) has analyzed that public external debt has a negative and significant relationship with per capita GDP an investment both in the short run and in the long run in Pakistan for period 1972-2009. It creates a hybrid model that specifically takes into account the function played by public debt in growth equations. To estimate the model, the Auto Regression Distributed Lag (ADRL) technique has been used.

Methodology and Results

The study has used a descriptive as well as analytical research design. The descriptive part has examined the trends and patterns of public debt through a presentation in trend line, bar diagrams and tabular form. The analytical part has used simple regression technique to examine the relationship between public debt and economic growth in Nepal.

Conceptual Framework



Research Methodology

This study is based on secondary sources of data and information. The required data is collected from database of Nepal Rastra Bank (NRB). The study has covered 46 years of data from 1975 to 2020 AD. It covers long series of data that focuses on the scenario of relationship between total debt, export and economic growth of Nepal which is quite sufficient for the reliability and validity of the result of trend analysis and results obtained from the econometric model.

Model Specifications

To examine the relationship between GDP, total debt and export, a regression model is formed. Impacts of total debt and exports on GDP have been discovered by various academics. Therefore, the study's proposed link between GDP, total debt and exports is as follows:

GDP = f (TD, EX).....(i)

where,

GDP = Gross Domestic Product

TD = Total Debt

EX = Exports

Converting equation (i) into natural log econometric model it becomes,

$LNGDP = \beta 0 + \beta 1LNTD + \beta 2LNEX + \varepsilon$.....(ii)

where,

LNGDP = Loge of GDP

$\beta 0$ = intercept

LNTD = Logeof Total Debt

LNEX = Loge of Exports

ε = error term

Lag Length Criterion

It is also important to select appropriate lag length. Few lags would adversely affect the size of the test while too many lags may reduce the power of the test. The study expects to use Vector Auto Regressive (VAR) Lag Order Selection Criteria to select the optimal lag length.

Table 1: Lag length selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	64.23882	NA	1.09e-05	-2.916134	-2.792015	-2.870640
1	264.3543	362.1138	1.21e-09	-12.01687	-11.52040*	-11.83490*
2	273.9580	16.00604	1.19e-09	-12.04562	-11.17678	-11.72716
3	285.9649	18.29626*	1.05e-09*	-12.18880*	-10.94761	-11.73386
4	291.8069	8.067471	1.26e-09	-12.03842	-10.42487	-11.44699

As shown in above table three criteria has asterisk mark in lag 3 so lag length of three is selected.

Cointegration Analysis

Onecointegration formulae are proposed by trace statistics of the Johansen test of cointegration into the VAR model at the 5 percent level of significance..The null hypotheses are denied because probabilities of cointegration equations 'none' are significant at 5 percent. The P-value for non is 0.03 and is therefore significant. This shows that the model contains a single cointegration equation.

Table 2: Johansen Cointegration test

Unrestricted Cointegration Rank Test (Trace)			
	Trace	0.05	
Eigenvalue	Statistic	Critical Value	Prob.**
0.459682	31.57463	29.79707	0.0309
0.127314	5.719572	15.49471	0.7284
7.31E-07	3.07E-05	3.841466	0.9978
Trace test indicates 1 cointegratingeqn(s) at the 0.05 level			

VECM (Vector Error Correction Model)

As the next step of Johansen test of cointegration error terms of each cointegration vector should be corrected and to perform this estimation study adopts Vector Error Correction Model.

Thus, vector error correction equation for the model deployed of the study will be;

$$\ln GDP_t = \beta_0 + \sum_{i=1}^{n} \beta_1 \ln GDP_{t-1} + \sum_{i=1}^{n} \beta_2 TD + \sum_{i=0}^{n} \beta_3 EX + \varepsilon_t$$

$$\ln GDP_t = \beta_0 + \sum_{i=1}^{n} \beta_1 \Delta \ln GDP_{t-1} + \sum_{i=1}^{n} \beta_2 TD_{t-1} + \sum_{i=0}^{n} \beta_3 EXt\text{-}1 + \Phi EC_{t-1} + \varepsilon_t$$

Where,

lnGDP :GDP in natural logarithmic form;

lnTD: Total Debt in natural logarithmic form;

EX: Exportin natural logarithmic form;

ε : Random error term;

EC: Error correction term.

Table 3: VECM regression analysis

	Coefficient	Std. Error	t-Statistic	Prob.
Error correction term	3.556725	2.425849	1.466178	0.1527
C(2)	-3.071680	3.102558	-0.990047	0.3298
GDP(-1)	-0.670288	3.177888	-0.210923	0.8343
GDP(-2)	0.085746	3.124542	0.027443	0.9783
GDP(-3)	2.869511	3.274193	0.876403	0.3876
TD(-1)	0.504269	3.330682	0.151401	0.8806

TD(-2)	-0.035811	3.289378	-0.010887	0.9914
TD(-3)	-0.100546	0.204480	-0.491714	0.6264
EX(-1)	0.027536	0.194895	0.141288	0.8886
EX(-2)	0.057118	0.202000	0.282764	0.7792
EX(-3)	0.169772	0.049887	3.403130	0.0019
R-squared	0.173794	Mean dependent var		0.125049
Adjusted R-squared	-0.092725	S.D. dependent var		0.058961
S.E. of regression	0.061634	Akaike info criterion		-2.515081
Sum squared resid	0.117761	Schwarz criterion		-2.059977
Log likelihood	63.81671	Hannan-Quinn criter.		-2.348268
F-statistic	0.652089	Durbin-Watson stat		1.694854
Prob(F-statistic)	0.758222			

Since the positive coefficient value of C(1) is positive 3.556 and p-value is also more than 5 percent, it can be safely concluded that there is no long run causality running from export and debt to gross domestic product. It means export and debt do not affect the GDP.The impact of lag periods in the short run is represented by other coefficients. Export three periods lag is significant at 5 percent in the short run, and this has an immediate effect on economic growth. This suggests that a change in export of 1 percent can boost economic development by 0.16 percent. For short periods of time, the total debt and export are not statistically important. Therefore, it can be said that even though changes in debt and export have a long-term, permanent influence on economic growth, their effects are not transitory.

Diagnostic Tests

a) Heteroskedasticity test

Table 6: Results of Heteroskedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.933178	Prob. F(12,29)	0.0722
Obs*R-squared	18.66583	Prob. Chi-Square(12)	0.0969
Scaled explained SS	17.97258	Prob. Chi-Square(12)	0.1165

As shown in the table 6, probability of observed R-squared is 0.09 and the result is insignificant. This says that variance of residual is constant and the model is not having heteroskedasticity problem. Therefore, model is appropriate.

b) Serial correlation test:

Table 7: Results of Serial correlation test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	2.524291	Prob. F(2,29)	0.0976
Obs*R-squared	6.227586	Prob. Chi-Square(2)	0.0444

As shown in the Table 7, probability of observed R-squared is 0.04 and the result is insignificant. This says that there is serial correlation among independent variables which is not good sign for the best mode. So this result makes model weak. Therefore, model is not appropriate.

Normality test results:

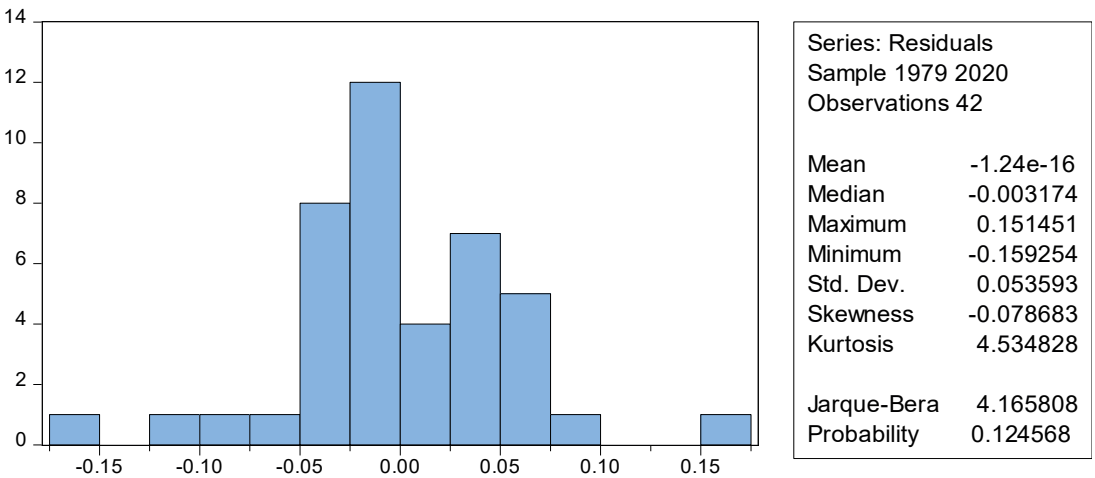


Figure 1: Normal distribution of data

Figure 1 shows that probability of Jarque-Bera test statistics is 0.12 and result is insignificant. This indicates that residuals are normally distributed and the regression model is highly valid.

Conclusion

According to the study's findings, total debt of domestic debt, external debt, and export have a lasting impact on economic development. The study's findings have an impact on policy because they give the government strategic knowledge for decisions about borrowing debt. The Nepali government must pay attention to financing the budget deficit by appropriately keeping the GDP-to-debt ratio ceiling. Long-term economic growth will be impacted by both domestic and international borrowing, but the level of debt should be considered when making financial choices. When making budgetary decisions, consideration must be given to the public debt and economic development. This is crucial for maintaining a healthy "Debt-to-GDP" ratio; otherwise,

debt will adversely affect economic growth. From a policy perspective, it is advised to avoid the negative impacts of public debt and external debt on economic development. The impact on economic development is more detrimental. Exports are crucial for paying off foreign debt, so the revenue made from them can aid Nepal in resolving its problems.

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