
Indirect Tax and Economic Growth

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Abstract: The study investigates the empirical relationship between indirect taxes and economic growth in Nepal. For estimation, the annual time series data (1975 to 2022) was used. The main purpose of the research is to find the long-run and short-run relationship between indirect taxes and economic growth. Augmented Dickey fuller unit root tests were used to check the stationarity of every variable in the study. Auto Regressive Distributed Lag (ARDL) bounds testing approach for co-integrations (developed in 2001) was applied to estimate the long-run and short-run relationship among the variables. Indirect taxes have negative and significant effect on economic growth in long-run while its coefficients in short-run were insignificant.

Keywords: Indirect Taxes, Custom Duty, Vat, Excise, Ardl, Economic Growth.

1. INTRODUCTION

Taxation is one means to generate money for the ongoing operations of the government. Governmental actions include raising money and using it to give the people of the nation with security, social amenities, infrastructure, etc. Based on this, it is important to stress that the goal of taxes is compatible with governmental functions (Akhor, 2020) Economic growth is a transitory process that leads to socioeconomic change that is well ordered and steady, as well as increases in life quality Macek(2014) To finance specific investments and expenditures, governments might use tax laws as a tool for fiscal policy. Depending on the desired outcomes, different tax policies may be used. Governments may use tax policies to increase revenue in order to pay for public spending, close trade or balance of payments imbalances, or promote growth and development by providing incentive Bâzgan (2018) The government frequently collects taxes, either directly from the taxpayers or indirectly through producers or retailers, on behalf of the ultimate consumers of products and services. Direct taxes are those that the taxpayers (individuals or organizations) pay directly to the taxing authority; they cannot be assigned to another party. This covers corporate income tax, property tax, and several other taxes. The end consumers ultimately pay indirect tax when they purchase goods and services.

Consumers' taxes are collected by an intermediary entities such a retailer, supplier and producer are paid to the government on their behalf. Through the VAT, customs, and excise Duty levies, the government collects indirect taxes. The most recent development in taxation is the VAT. A value-added tax is imposed as consumption on the value produced at each stage of the creation of a good or service. Every company in the value chain receives a tax credit for the VAT it previously paid. It is an enhanced kind of sales tax. It is assessed at many points in the production and distribution processes. This tax has several stages. The many phases of the production and distribution of goods and services are related to this. Any tax on manufactured items that is commonly imposed at the time of manufacture for internal use rather than at the time of sale is known as an excise tax. The cost of goods, insurance, and freight (CIF) value is usually the basis for the assessment of customs charges. Imported goods are also subject to a value-added tax of 13% based on the CIF + customs duty value.

In Context of Nepal

The government of Nepal established the Tax is the major source of revenue in 1995 with the goal of proposing and recommending the implementation of VAT. On November 16, 1997, it is implemented by the Nepal government in place of sales tax, hotel tax and entertainment tax. However, VAT began to be applied in earnest in February 1998. Khadka (2001). Even though Nepal has joined the World Trade Organization (WTO), customs duties remain dominate the country's tax system. As a WTO member, the government must dramatically lower customs tariffs within a set time frame. Therefore, it is anticipated that VAT would be a key tool in the fight against funding deficits. VAT is the best type of tax on sales in terms of sales pricing, current impact, wide base, and other components. Therefore, the only other choice is to improve its capacity to efficiently deploy internal resources. Therefore, VAT may be the best way to address the resources gap and significant reliance on foreign aid. At the border crossing locations, the Nepalese Customs Administration collects customs duty, VAT, excise, and other taxes. It contributes 50% of Nepal's total tax revenue and 44% of the country's overall revenue. Just customs duties make up 20% of Nepal's overall tax revenue.

Literature Review

The main purpose of a literature review is to learn more about research that has been initiated in the past, both nationally and internationally. Most of the research on the relationship between taxes and growth was available from the OECD, Europe, and the USA. There has been very little research on this topic in Nepal compared to all of these other countries, therefore there is plenty of room for productive research on this subject to fill the gap. Akhor (2016) the objective of this paper is to explore the relationship between circuitous charge income and the financial development of the Nigerian economy. The free factors were VAT, traditions assess, and work out obligation, and the subordinate variable was net residential item. The observational investigation within the investigate incorporates viable inspecting approaches and auxiliary information from the a long time 1993 to 2013 .Additional research showed that, at the 1% level of significance, the VAT had a considerable negative impact on the gross domestic product. An empirical analysis of the regression findings from the error correction model made this clear.

Dr.Velmurugan P S(2021) uses direct and indirect tax as an independent variable, Gross domestic product and per capita income as dependent variables to examine the relationship between direct and indirect tax revenue and economic growth in Pondicherry from 2007 to 2019. The analysis revealed a long-term rather than a short-term relationship between tax revenue, SGDP, and per capita income. While tax collections have insignificant effect on per-capita income, SGDP is significantly impacted by indirect taxes favorably nor negatively. Suna Korkmaz(2019) Using the autoregressive distributed lag (ARDL) method, it has been determined how direct and indirect taxes in Turkey affect economic growth. According to the test results, indirect taxes have a positive and significant impact on economic growth, while direct taxes have a negative and significant impact. Olaoye Festus Oladipupo(2022) the purpose of the study is to examine the role of public sector financial management as well as the relationship between tax and non-tax revenue and economic growth in Nigeria. The Federal Inland Revenue Service and the Central Bank of Nigeria provided secondary data covering the period 1989 to 2019 for our analysis. Tax revenue, non-tax revenue, external debt, and total government revenue are the independent variables, while real GDP is the dependent variable. . According to the study, integrating tax and non-tax dollars into a substantial public finance source will encourage economic growth. Obaretin(2020) The research examines how the value added tax has affected Nigeria's economic growth from 1994 to 2018. Data were analyzed using a longitudinal research methodology and the autoregressive distributed lag Model estimate approach, and the findings revealed that VAT has a positive and significant impact on Nigeria's economic development

Celestine Anayo Egbuhuzor,(2021) From 2003 to 2018, researchers studied the impact of indirect taxes on Nigeria's economic expansion. Ex factor analysis was used to collect secondary data for this study from the Central Bank of Nigeria Statistical Bulletin for the years 2003 to 2018.The proposed null hypotheses were evaluated statistically descriptive and multiple regression using statistical software E Views 10.Human development index, value added tax, customs duty and excise tax have each been used as indirect tax index and economic growth. According to research, value-added tax has a negative but small impact on gross domestic product .Furthermore, the human development index is shown to be positively and significantly affected by value added tax .Furthermore, it showed a positive and insignificant effect. Maqbool Sial ,(2018) This study investigates the empirical relationship between economic growth and indirect taxes in Pakistan .Annual time series data (1974–2010) were used for estimation. The main objective of this study is to reveal the long-term and short-term relationships between indirect taxes and economic growth. Each variable in the study was subjected to the Phillips Person test and the extended Dickey-Fuller unit root test to confirm stationarity. The autoregressive distributed lag Model limit testing approach to integration (created in 2001) was used to estimate long- and short-term relationships between variables. Indirect taxes have a negative and significant impact on economic growth in the long run, although the coefficient in the short run is small.

Objective of the Research

The main objective of this study is to investigate the relationship between indirect taxes and economic growth in the Nepalese context. This paper helps us to examine the factor that is

influencing the gross Domestic Product of Nepal. Specifically, it Analyze the relationship of VAT, Custom Duty and Exercise Duty with the Gross Domestic Product in Nepal This provides empirical evidence on the impact of tax revenue on economic growth in Nepal. The Specific goals include:

To examine the impact of indirect taxes on economic growth.

Research Question

Is indirect tax have any effect on economic growth in Nepal?

Hypothesis

An essential component of any empirical research project is the construction of the hypothesis. The formulation of the hypotheses is aided by a review of different taxation theories and previous research reviews. The following is the study's hypothesis, which is based on the relationship between direct taxes and economic growth:

H1: There is positive and significant relationship between VAT and economic growth.

H2: There is positive and significant relationship between Custom duty and economic growth.

H3: There is positive and significant relationship between excise duty and Gross Domestic Product.

The Significance of the Research

This study explains how national income growth is affected by reductions or increases in indirect taxes. It would be useful to empirically determine the extent to which indirect taxes should be increased or decreased to stimulate economic growth. It will also help improve Nepal's tax system and provide policymakers with guidance on Nepal's tax reforms.

2. RESEARCH METHOD

The annual time series data for 48 years (1994-2020) has been used for study. It is obtained from Ministry of finance of Nepal. Computer programs like Eviews is used for model estimation. VAT, Custom duty, Exercise Duty are used as independent variables .GDP as Dependent variables. The variables amounts including dependent variables are in million Nepalese currency rupees. In order to eliminate non-stationary effects, values into the same scale and translate the factors in rate frame within the demonstrate, the arrangement factors have been changed into log frame, the series variables have been transformed into log form. Three year data are missing from (1999-2000) three year moving average is used to maintain the data.

Model

The data are collected from secondary source and Number of observation is 48 years (1975 to 2022) taken from the website of Ministry of Finance (www.mof.gov.np) the data collected are viewed on GDP, VAT, Custom Duty and Exercise Duty

$$GDP_t = \beta_0 + \beta_1 VAT_t + \beta_2 C_t + \beta_3 ET + U_i \dots\dots$$

Where,

GDP = Gross Domestic Products

VAT= Value Added Tax

C= Custom Duty

E= Excise Duty

Where,

U= error term

i= 1991-2022

β_0 is an intercept, β_1 coefficient of relevant variables

ARDL Modeling Approach

This strategy, which was made popular by the following econometric benefits of Pesaran & Pesaran (1997) and other cointegration approaches are provided. a) It is possible to anticipate both the long run and short run parameters of the pertinent models at the same time. b) Relevant regressors, which are stationary at 1(0), 1(1), or both, can be ignored when testing the persistence of long-term connections using this method. c) In situations where sample sizes are small, the Pesaran, et al. (2001) limits testing technique is preferred. The F statistic with a nonstandard distribution is the basis for the ARDL check test. As a result, Pesaran et al. (2001) provided two key values for the cointegration test. All variables that are I(0) are understood via the lower critical bound curves.

Error Correction Model

Error correction techniques can be used to analyze the short-term dynamics of two variables when they are co integrated over the long term. The static long-term equilibrium situation of the co integrated time series and its dynamic short-term imbalance are adjusted by the ECM. Then, if the co integration is found and persists, the lag order of the variables is determined as a second step using the Akaike information criterion or the Schwarz Bayesian criterion. The long-term coefficients of the model are predicted after verifying the lag order, and then the ECM is also predicted.

3. RESULT AND CONCLUSION DESCRIPTIVE STASTICS

Descriptive statistics were employed in this study to characterize the properties of the investigation's variables. Descriptive statistics reveal the nature of the data and establish whether or not it is suitable to continue with further investigation. The table of descriptive statistics displays the data's mean, median, dispersion, and normality in Table.

Table 1 the result of descriptive stastics

Variables	LN GDP	LN Excise	LN Custom	LN VAT
Mean	10.2654	5.8356	6.6694	6.7176
Median	10.3759	5.6765	6.8019	6.7404
Maximum	13.0922	9.7218	10.0932	10.3554
Minimum	7.4146	2.4824	3.4919	2.9008
Std.Dev	1.7775	2.1748	1.9225	2.1990
Skewness	-0.0675	0.2424	0.0188	-0.0129
Kurtosis	1.7902	1.8742	1.9143	1.8779



<u>Jarque-Bera</u>	2.9634	3.0046	2.3599	2.5193
Probability	0.2272	0.2221	0.3072	0.2837

The range of the variables' means (10.2654 to 5.8356) indicates that their central tendencies are changeable. Based on this information, the data appears appropriate for regression analysis because it includes the variables and observations required for relationship modeling and prediction. The Jarque-Bera test, a goodness-of-fit test, analyzes if the data distribution is normal. The likelihood of passing the test of statistics if the null hypothesis is true is computed using a P-value. If the P-value is less than a significance level, which is commonly 0.05, indicating that the data are normally distributed, the null hypothesis is rejected.

Unit Root test

A unit root test could be a measurable test utilized to decide whether or not a time arrangement variable is stationary (Gujarati, 2009). A stationary time arrangement contains measurable characteristics that stay consistent all through time, such as cruel, fluctuation, and auto relationship.

Table 2 the result of ADF test

Variable	at level	at 1st difference
LN GDP	0.9291	0.000**
LN Exercise	0.9191	0.000**
LN Custom	0.9778	0.000**
LN VAT	0.9922	0.000**

Notification (*) Significance at 10%. (**) Significance at 5%, (***) at 1% and (no) Not Significant Above table number 2 shows the result of unit root test. These four variables LNGDP, LN Exercise, LN custom, LN VAT were not stationary at 5% level significance. P-Values are more than 0.05. This suggest that these variables have a unit root, indicating non-stationary. However, after taking the first differences, LNGDP, LN Exercise, LN custom, LN VAT became stationary. This indicates that these variables exhibit a trend and can be made stationary by taking first difference. In summary, the results show that some variables in the data set are unstable and requires differentiation to achieve stability. The information obtained from these tests is important to choose the right modeling technique and get reliable results.

ARDL Co-Integration Test

The variables in equation (1) will be evaluated using a co-integration test based on the autoregressive distributed lag (ARDL) method (Paudel, R.C & Kankesua, 2009; Nkoro, E & Uko, A.K.2001). The ARDL technique to co-integration is popular because it addresses the issue of stationary behavior and enables the estimation of a variety of variables, including I (0) and I (1) variables. Additionally, ARDL Co-integration test addresses the estimation issues brought on by the explanatory variables' serial correlation. Because of these characteristics of time series data co-integration is recognized as a powerful statistical method for time series data analysis. The ARDL version of Equation (1) is presented below:



$$\Delta \text{GDP}_t = \beta_0 + \beta_1 \text{GDP}_{t-1} + \beta_2 \text{VAT}_{t-1} + \beta_3 \text{Ct}_{t-1} + \beta_4 \text{Et}_{t-1} + \text{ut} \dots \dots \dots (2)$$

In Equation (2) autoregressive distributed lag model is used to capture the dynamic impact. The model's first order differential variable is denoted by the symbol. The first order variable's coefficients are 1, 2, and, which stands for intercept. In the same way, and are the parameters, and U_t is the vector of random error

Table 3 The Result of ARDL test

Variable	Coff	S.E	t-Statistics	Prob.*
LN GDP (-1)	0.8625	0.0896	9.6201	0.0000
LN EXCISE	-0.0548	0.0374	-1.4643	0.1511
LN CUSTOM	0.1437	0.0863	-1.7187	0.0936
LN CUSTOM(-1)	-0.1198	0.10133	-1.1824	0.2442
LN CUSTOM(-2)	-0.1038	0.0770	-1.3475	0.1856
LN VAT	0.2299	0.0811	2.8335	0.0073
Constant	0.7448	0.1688	1.9156	0.0628
R ²	0.9990		Mean dependent var	10.3883
Adj R ²	0.9988		S.D dependent Var	1.7115
S.E of Regression	0.0575		Akaike info	
Sum squared resid	0.1293		Criterion	-2.7313
Log likelihood	69.8221		Schwarz info	
			Criterion	-2.4531
F-statistic	6616.272		Hannan-Quinn	
			Crater	-2.6271
Prob (F-statistic)	0.0000		Durbin-Waston Stat	1.8548

Where,

S.E= Standard Error

R²= R-squared

Adj R²= Adjusted R-squared

Long Bound test

Table 4 Result of Long Bound Test

F- Bound Test		Null Hypothesis: No level relationship		
Statistic	Values	Sig if.	I(0)	I(1)
			Asymptotic:n	
			=1000	
F-statistic	2.124239	10%	2.37	3.2
K	5	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66
Actual sample size	46		Finite sample n=50	

		10%	2.538	3.398
		5%	3.048	4.002
		1%	4.188	5.328
			Finite sample n=50	
		10%	2.56	3.428
		5%	3.078	4.022
		1%	4.27	5.412

In the table above, the results of the limit test are given. The F statistic value is 2.1242, more than 5% of the critical value of the lower and upper limits at all levels of significance (1%, 5%, 10%). This suggests that we can reject the null hypothesis of no cointegration and conclude that the variables are cointegrated at all levels of significance. Therefore, based on the F-bound test results, We can conclude that there is proof of cointegration among the variables in the ARDL model.

Table 5 The Result of Error correction regression

Variables	Coefficient	Std.E	t-statistics	Prob*
D(LOG-CUSTOM)	0.1483	0.07316	2.0208	0.0494
D(LOG-CUSTOM(-1))	0.10383	0.06318	1.6434	0.1083
CointEq(-1)	-0.1374	0.0240	-5.7152	0.0000

R ²	0.3387	Mean dependent Var	0.1224
Adj R ²	0.3080	S.D dependent Var	0.0659
S.E of Regression	0.0548	Akaike info Criterion	-2.9053
Sum squared resid	0.1293	Schwarz info Criterion	-2.7860
Log likelihood	69.822	Hannan-Quinn Criter	-2.8606
Durbin-Waston Stat	1.8548		
Prob (F-statistic)	0.0000		

Moreover, the coefficient of CointEq is negative -13.74% and can be measured as 5%. It shows up that this system has an blunder redress component in which auxiliary factors are changed to reestablish a adjusted relationship between variables over the long term. In other words, on the off chance that there's a deviation within the long-term balance, the auxiliary variable will respond within the brief term to harmonize the long-term system. The short-term flow of the move to long-term balance is called chain mistake adjustment. It is anticipated to be -13.74%, which suggests each period will adjust a deviation of approximately -13.74% from the long-term consonant.

Table 6 the Result of OLS

Variables	Coff	S.E	t-Statistics	Prob
D(LOG Excise)	-0.01293	0.070224	-0.18416	0.8548
D(LOG CUSTOM)	0.17433	0.093254	1.8694	0.0068



D(LOG VAT)	0.133565	0.105527	1.26570	0.2124
C	0.07748	0.01804	4.29474	0.0001

R ²	0.1958	Mean dependent Var	0.1208
Adj R ²	0.1397	S.D.dependent Var	0.0661
S.E of regression	0.0613	Akaika info Criterion	-2.6630
Sum squared resid	0.1618	Schwarz Criterion	-2.5055
Log likelihood	66.5814	Hannan-Quinn Criter	-2.6037
F-statistics	3.4907	Durbin-Waston Stat	1.9348
Prob (F-statistics)	0.02356		

Above table shows the result where P-value of the custom is 0.0068 which is less than 5% .it is significant and positive relationship Custom Duty and GDP. R-square is 19.58%

Diagnostic Test

The results of a regression model are evaluated using an assumption test to determine if they are biased or not. The goal is to verify that the model meets the assumptions for being the unbiased estimator (BLUE). We can analyze the regression findings. Draw conclusions if these assumptions hold true. The Ordinarity test, Auto-correlation test, Heteroscedasticity test, Multicollinearity test, and Linearity test are only a few of the tests that make up the classical assumption test (Brooks, 2008). Because the ARDL model is used with several levels of data, a Multicollinearity test is not necessary (Farray & Glauber, 1967).The result the traditional method test that was employed study took into account the autocorrelation normality, heteroscedasticity, and linearity tests.

Breusch-Godfrey Serial Correlation LM Test

Null hypothesis: No serial correlation at up to 2 lags

Table 7 The result of LM test

F-Statistic	0.9304	Prob.F (2,41)	0.4025
Obs* R squared	2.0406	Prob. Chi-square	0.3605

Autocorrelation refers to the extent of the relationship, between the variable in two time periods. It measures the connection between a delayed version of a value and its original value over time. This is also known as correlation. The null hypothesis for this test suggests that there is no correlation within two delays. In terms it means that there is no relationship between them. The test indicates that the F statistic is accurate with a value of 0.9304. The corresponding P value is 0.4025, which's larger, than the significance level of 0.05. Therefore we cannot reject the hypothesis; there is no significant relationship present. Overall based on the results of the Breusch Godfrey correlation LM test we can conclude that our regression model does not exhibit any correlation (autocorrelation) within two delays.

Table 8 Heteroskedasticity test results

F-Statistic	1.3227	Prob.F(3,44)	0.2794
Obs*R squared	3.9710	Prob. Chi Squared(3)	0.2646
Scaled explained SS	8.1240	Prob. Chi Square(3)	0.0435

The F-statistic for this test is 1.3227, and the corresponding probability value (p-value) is 0.2794. We cannot rule out homoscedasticity as the null hypothesis because the p-value is higher than the significance level of 0.05. Breusch-Pagan-Godfrey test results show that the regression model does not contain any evidence of heteroscedasticity.

4. CONCLUSION

In this study we employed the ARDL method to examine the impact of taxes, on growth in Nepal during the period from 1975 to 2022. The results of the ARDL test suggest that there is a long term relationship between GDP and important indicators of taxes such, as VAT, CUSTOM and EXCISE Duty.

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