

Journal of Tikapur Multiple Campus

Vol.6; June 2023

ISSN: 2382-5227

Published by Research Management Cell (RMC)

Tikapur Multiple Campus

Impact of Value-Added Tax on Revenue Generation in Nepal: An ARDL Approach

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Abstract

This paper aims to identify the impact of VAT on revenue generation in Nepal using a quantitative method. Testing the unit root of the series is the first step in determining whether the data are stationary. An Augmented Dicky Fuller unit root test and a co-integration test are employed to check the relationship between the variables under study. This study reveals that LNVAT, LNRCE, LNRIT, LNROT, and LNRNT are significant, which is desirable. As a result, a 1 percent increase in value-added tax leads to a 21.60 percent increase in government tax revenue, while a 1percent increase in custom excise duty leads to a 39.31percent increase in tax revenue. Other macroeconomic variables such as LNRIT, LNROT, and LNRNT contribute 15.32percent, 8.51percent, and 15.06percent to government revenue generation. The P-value of the Breusch-Godfrey serial correlation LM test, the Breusch-Pagan-Godfrey heteroscedasticity test, and the normalcy test are greater than 5percent, which is ideal. As a result, there is no autocorrelation or heteroscedasticity in this model. The residual follows a normal distribution. The diagnostic tests show that the models have the expected econometric features and are structurally sound.

Keywords: unit root, cointegration, autoregressive distributed lag, error correction model

Introduction

In 1918, German businessman Wilhelm Von Siemens proposed the idea of Value Added Tax (VAT), which Thomas S. Adams, an American economist, rapidly adopted. Since its introduction in France in 1954, the value-added tax has spread like wildfire worldwide. Its extensive use has been evident in recent years. Before the 1960s, only a few nations had introduced this tax. During the 1980s, the tax became

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an essential component of the fiscal arsenal of all developed countries and many Latin American, Asian, and African countries. More than 30 countries have imposed VAT since 1980. This brings the overall number of VAT nations to above 60. In the last two years, Benin, Paraguay, Tanzania, Tobago, Thailand, and several other former Soviet Union nations have implemented VAT. Thus, the trend toward VAT adoption has been the most remarkable event in the history of goods taxes in the twenty-first century (Adam, 1982).

In 1954, France was the first European country to use VAT on a large scale. Since then, a considerable number of countries have adopted VAT. Many individuals feel that imposing a value-added tax will improve tax justice and consistency while also providing incentives for improved production and industrialisation. Without a doubt, the expansion of VAT to urbanised and developing countries is an essential topic for research. VAT has become the typical modern tax due to economic and technological changes in the second half of the twentieth century, according to a historical study published by the Financial Times (London). It would not be an exaggeration to say that VAT's evolution as a critical and flexible source of income during the preceding five decades has been unmatched in tax history. Despite widespread VAT reporting, nations such as Argentina, Brazil, Canada, and India have needed help properly adopting VAT. In the United States, there have been proposals to adopt a value-added tax, but the retail sales tax system has been kept. Despite these issues, it can be stated that a value-added tax system has advantages and is strongly recommended for most countries, particularly emerging ones. Internationally, VAT is seen as a tax that the central government most prominently levies, a situation that is difficult to satisfy in a powerful finance system.

VAT is a centrally controlled revenue allocation tax. In a centralised system, it is impossible to see the VAT as a revenue-neutral assessment or one in which the states do not take a loss compared to the current structure. The tax base includes imports, manufacturing, and various stages of sales. If the base is split between the centre and the states, the sequence is out of order, making tax evasion easier and damaging the state's tax base. In nations where VAT is controlled centrally, revenue collected on imports accounts for a higher proportion of overall VAT collections.

Shoup (1988) recommended a value-added tax (VAT) for Japan, developing a complete framework to solve the shortcomings in present turnover taxes. The Japanese government opted not to adopt the tax, despite the reality that it was taken very seriously. Recent studies immediately followed it. Although the state of Michigan in the United States enacted a limited form of the value-added tax (VAT), "the tax was not imposed in any country until 1953." The value-added tax (VAT) replaced the French production taxes in 1954. McMouriceLavre, a French Ministry of Finance employee, is acknowledged as the inventor of modern VAT.

In France, the VAT was initially applied primarily to the industrial sector and extended to wholesale. A separate tax on service and unique activities were added. In the 1960s and early 1970s, VAT advanced in two significant areas. As a first step, several African and Latin American developing nations replaced their turnover taxes with a value-added tax modelled after the French model of 1954. Some of these nations, including the Ivory Coast, were formerly French colonies (Due & Friedlander, 1976).

This research focuses on what policies may be produced, what regulatory acts are necessary, and the necessity for rule and regulation updates to enhance and perfect the operation of the market. Standard is an element in establishing revenue administration. Financial statements should be kept to fulfil the requirements of all interested parties.

The research will provide government authorities with vital information. According to the researcher, the study would aid in formulating appropriate policies for all stakeholders. Additionally, the study will serve as a resource for other researchers who wish to conduct further research on the issue.

The study has several drawbacks. The key constraints of the study include a need for more time, a restricted budget, and outdated information. For forty-four years, from 1974/75 to 2017/18, time series data were utilised to evaluate the impact of VAT on government income generation in Nepal. The primary reason for selecting this time for examination is its simplicity. This study used only secondary data from a variety of sources. Hence, the validity and reliability may depend on these data reliability.

The main objective of this study is to assess the impact of VAT on government revenue generation in Nepal. To fulfil this objective, the following research hypotheses were formed:

H_0 : VAT has no significant contribution to government revenue generation in Nepal.

H_1 : VAT has a significant contribution to government revenue generation in Nepal.

Literature Review

The concept of value-added tax (VAT) has been extensively studied in the field of public finance and taxation. VAT is a consumption tax that is levied on the value added at each stage of production and distribution, and it is considered one of the most important sources of government revenue in many countries. Numerous studies have investigated the relationship between VAT and government revenue, as well as the impact of other macroeconomic variables on revenue generation. For instance, studies have found that VAT has a positive effect on government revenue in countries such as Turkey, Saudi Arabia, and South Africa. Similarly, studies have shown that variables such as gross domestic product (GDP), inflation, and trade openness also contribute

significantly to government revenue generation (Farouq & Ahmad, 2020).

Dahal (2009) argues that developing countries' resource gaps are growing, resulting in economic and financial deficits. Both domestic and foreign borrowing is used to cover the rising resource deficit, carrying on the nation's debt to future generations. In Nepal, where most people live in poverty and those who work have little taxable income, income collection is difficult. Complex administration needs creative strategies for discovering new taxpayers and bringing them into the system. In 2008-2009, the expected tax burden ratio was 15.7 per cent of GDP. Nepal's flexible tax structure needs to be revised to fund development. Internal revenue is required to be increased. According to research and analysis, the government has streamlined and modernized the tax system. These reforms focused on providing tax policy instruments. Nepal has adopted tax laws, regulatory reforms, environmental improvements, and tax administration modifications.

Denis (2010) examines how VAT affects GDP in Nigeria. The analysis revealed a very significant Pearson correlation of 96 per cent. A 95 per cent confidence level comprehensive test rated that VAT revenue differs from GDP. The research recommends the status quo since it benefits the economy and facilitates the application of tax rules.

Zhou et al. (2013) examined how the Malaysian goods and service tax (GST) affected pricing levels, economic expansion, revenue generation, and other factors. Results showed that GST would lead to lower prices and increased GDP in most cases. They have also discussed the functioning of GST systems in different countries and the policies of other countries that may be considered. For instance, in Singapore, where the GST has been widely adopted, lowering direct taxes and establishing a relatively low GST rate have played significant roles. It was founded on the hypothesis that a country's working population, which might fall as life expectancy rises, is directly proportional to its income tax base. In addition, ex-pat workers in Singapore may take advantage of several tax breaks. On the other hand, the Goods and Services Tax would result in more outstanding taxes and more excellent revenues since it is a tax everyone must pay. Given the concept of ITC under GST, it was also likely that most businesses would be compliant and not cheat GST. The results for all of these in Singapore were positive.

Okoli and Matthew (2015), in their study titled "Correlation between Value Added Tax and National Income in Nigeria: An Error Correction Approach (ECM) Model," looked into the extent to which the VAT contributed to the total amount of revenue collected by the federal government in Nigeria from 1994 to 2012, as well as the method in which this contribution was split among the various other types of

taxation. According to the study's findings, which used the Error Correction Model (ECM), the value-added tax was the second-largest comprehensive source of all money received by the federal government.

Owino et al. (2017) used in their study, "Influence of Information and Communication Technology on Revenue Collection in County Governments in Kenya: A Comparative Study of Migori and Homa Bay County Governments," a correlation study research design to determine the influence of ICT systems for single business permits on revenue collection, evaluate the impact of ICT systems for land rates on revenue collection, and establish the power of ICT systems for other types of revenue. The target population of 864 consisted of 848 tax clerks and 16 revenue officials, and 86 respondents were selected using a stratified random selection methodology. Primary data were collected through a questionnaire and analysed using percentages, means, and regression techniques. The findings showed a strong and almost perfect link between revenue collection and the use of ICT systems by county governments. The usage of ICT systems may be responsible for up to 91.9 percent of the variation in the revenue collection efficiency in county governments. According to additional studies, implementing these strategies improves the county governments' efficiency in collecting taxes.

Takuma and Iyke (2017) examined the connection between tax revenue and Ghana's economic growth. They said that philosophically and empirically, there are complex links between taxes and economic development. The findings are consistent with the idea that tariffs could affect economic growth. The influence on policy is relatively straightforward; policymakers may implement measures that broaden the tax base to increase tax revenue.

Ali and Dalmar (2018) examined grants that hurt GDP, but domestic tax income considerably benefits economic growth. As previously said, gifts cannot substitute the production of domestic revenue, which is the more important of the two components. More emphasis should be on generating domestic tax revenue, which is essential which is r promoting economic growth.

Kharel (2021) examined the effect of tax income on Nepal's economic growth from 2000 to 2018. Secondary time-series data were collected from the Ministry of Finance's Economic Survey, the Nepal Rastra Bank's Quarterly Economic Bulletin, the Revenue Department, and previous scholarly works to accomplish the objectives. The collected data was examined using a model of linear regression. The data indicate that tax income and total revenue substantially positively affect GDP. Positive developments in tax collection have yet to be sufficient to meet Nepal's government expenses.

A few studies have been conducted in the past, but they need to be more comprehensive to properly represent the authentic picture of revenue collection, the scenario, and the difficulties related to VAT in Nepal. Using the ARDL econometric approach, this study empirically analysed the impact of VAT on revenue generation in the Nepalese economy.

Methods and Procedures

Research Design

This study combines analytical and descriptive research methods. It has been utilised as a mixed technique depending on the type and source of the data and information. The results of this investigation were analysed using econometric models, graphs, tables, and statistical tools.

Nature and Sources of Data

The study's primary goals are to examine the impact of VAT on government revenue generation in Nepal. The relevant materials were reviewed to obtain information for this study, and the essential information was gathered from various secondary sources.

Time series data spanning forty-four years, from 1974/75 to 2017/18, were utilised to examine the influence on revenue generation in Nepal. Secondary data was obtained when needed from the Ministry of Finance (MOF), Nepal Rastra Bank (NRB), National Planning Commission (NPC) and Central Bureau of Statistics (CBS).

Data Collection Tools and Procedures

The study has used specific data collection and analysis techniques appropriate to the topic. As a consequent tool has been employed, examine the existing data that enable the collection of information related to the research objectives. A document review strategy was used in the investigation.

Data Analysis Techniques

The researchers employed quantitative tools and econometric methods to analyse the data. This investigation made use of time series data. The first step in data analysis is to examine the unit root of the series to determine if the data are stationary. The co-integration test, an improved Dicky Fuller unit root test, investigates the relationship between the variables under consideration. ARDL modelling is employed as a result of the co-integration test. Post-estimation tests include serial correlation, normality, heteroscedasticity, Granger causality, the cumulative sum of recursive residuals (CUSUM), and the cumulative sum of squares of recursive residuals (CUSUMQ) were used to evaluate the model's stability.

The Model Specification

Some macroeconomic development indicators, including Real Tax Revenue (RTR), Real Value Added Tax (RVAT), Real Custom and Excise Duty (RCE), Real Income Tax (RIT), Real Other Tax (ROT), and Real Non Tax (RNT), have been subjected to this study's analysis. However, this analysis has been enhanced in contrast to other studies because it captures the relationship between VAT and key macroeconomic indicators, such as RTR, RCE, RIT, ROT, and RNT. It also uses data spanning forty-four years, from 1974/1975 to 2017/2018.

The general model is

$$RTR = f(RVAT, RCE, RIT, ROT, RNT) \dots\dots\dots (Model 1)$$

Where,

RTR = Real Tax Revenue, which incorporates total tax and total non-tax revenue

RVAT= Real Value Added Tax

RCE= Real Custom and Excise Duty

RIT= Real Income Tax

ROT= Real other Tax

RNT= Real Non-Tax

Model 1 can be rearranged in natural logarithm form.

$$\ln RTR_t = \beta_0 + \beta_1 \ln (RVAT_t) + \beta_2 \ln (RCE_t) + \beta_3 \ln (RIT_t) + \beta_4 \ln (ROT_t) + \beta_5 \ln (RNT_t) + \mu_t \dots\dots\dots (1.1)$$

Based on our model, ARDL bound testing will be as:

$$\Delta \ln RTR_t = \beta_0 + \sum_{i=0}^q \beta_1^i \Delta \ln RTR_{t-i} + \sum_{i=0}^q \beta_2^i \Delta \ln RVAT_{t-i} + \sum_{i=0}^q \beta_3^i \Delta \ln RCE_{t-i} + \sum_{i=0}^q \beta_4^i \Delta \ln RIT_{t-i} + \sum_{i=0}^q \beta_5^i \Delta \ln ROT_{t-i} + \sum_{i=0}^q \beta_6^i \Delta \ln RNT_{t-i} + \beta_7 \ln RTR_{t-1} + \beta_8 \ln RVAT_{t-1} + \beta_9 \ln RCE_{t-1} + \beta_{10} \ln RIT_{t-1} + \beta_{11} \ln ROT_{t-1} + \beta_{12} \ln RNT_{t-1} + \mu_t \dots\dots\dots (1.2)$$

Where Δ is the first difference operator, q is the optimum lag length, $\beta_1 \dots \beta_6$ are short run dynamics of the model, and $\beta_7 \dots \beta_{12}$ are long run elasticities. μ_t is the error term. A bound test can be performed using the information provided above. According to the results of the bound test, the null hypothesis should be rejected if the value of the compute F statistics is higher than the upper bound I (1). If the computed value of the F statistics is higher than the upper bound, co-integration exists, and the research is continued for the above equation's error-correcting form. We perform the ARDL short run, based on the OLS technique, if F statistics is smaller than the lower

bound or if an unclear value falls between the lower bound I (0) and upper bound I (1). If F statistics is less than the lower bound or an uncertain number occurs between the lower bound I (0) and upper bound I (1). we do the ARDL short run, which is based on the OLS approach (1).

$$\Delta \ln RTR = \beta_0 + \sum_{i=0}^q \beta_1 \Delta \ln RTR_{t-i} + \sum_{i=0}^q \beta_2 \Delta \ln RVAT_{t-i} + \sum_{i=0}^q \beta_3 \Delta \ln RCE_{t-i} + \sum_{i=0}^q \beta_4 \Delta \ln RIT_{t-i} + \sum_{i=0}^q \beta_5 \Delta \ln ROT_{t-i} + \sum_{i=0}^q \beta_6 \Delta \ln RNT_{t-i} + \lambda ECT_{t-i} + \mu_t$$

.....(1.3)

Where q_1 --- q_6 are optimal lag length and λ is the speed of adjustment parameter. ECT signifies the error correction term derived from long run relationship from the above equation.

Results and Discussion

Unit Root Test

In a research study, it is critical to use time series data. Non-stationary data is common in time series data, and non-stationary data is unexpected and cannot be predicted or projected. The conclusion drawn from non-stationary time series data may need more accurate and reliable (Gujarati & Gunasekar, 2012). As a consequence, the study's findings should be reliable and consistent. As a result, if the data is in a research study, time series data are crucial. Non-stationary data are common in time series data, and non-stationary data are unpredictable and cannot be projected. Non-stationary time series data may produce misleading and incorrect conclusions (Gujarati & Gunasekar, 2012). As a result, the study's findings should be consistent and reliable. So, non-stationary data needs to be altered into static data.

This study uses an Augmented Dickey-Fuller (ADF) unit root test to check the stationary. The result gained from the formal unit root test is summarised in Table 1.

Table1

Augmented Dickey Fuller Test

Variables	Level constant and trend	First difference constant and trend	Order of integration
Ln RTR	-0.322774(0.9873)	-6.663060(0.0000)	I(1)
LnRVAT	-2.528830 (0.3135)	-7.745170 (0.0000)	I(1)
LnRCE	-0.206982 (0.9908)	-5.585788 (0.0002)	I(1)
LnRIT	-4.814694 (0.0019)	-4.172676 (0.0124)	I(0), I(1)
LnROT	-1.055310 (0.9243)	-9.014642 (0.0000)	I(1)

LnRNT -3.198021 (0.0984) -6.825967 (0.0000) I(1)

Source: Researcher's calculation using EViews 10

Table 1 shows that the variable under examination, Ln RIT, is stationary at the level according to the ADF test. Others, on the other hand, are not stationary. All variables become stationary when we convert all the data in the first difference. It denotes that the data are of mixed types: I (0) and I (1). When the data have a mixed order of integration, the Johansen co-integration test cannot be used. As a result, information is sent to the auto-regressive distributive lag (ARDL) model for further analysis.

Bound Testing

The data used in this research are mixed-order and became stationary after becoming the first difference. The ARDL bound testing model is the only choice when working with data of types I (0) and I (1). Bound testing may be used to demonstrate the presence of co-integration among the variables employed in this investigation. Pesaran et al. (2001) presented the following choice criteria: (See Appendix II)

- If the computed value of F statistics is more than the upper limit of the critical values, co-integration may be established.
- If the computed value of F statistics is less than the lower limit of the critical importance, the research found that the variables do not co-integrate.
- If the estimated value of the F statistics falls between the upper and lower bounds of the critical importance, it may be argued that there is inconclusive co-integration or that co-integration is not proven.

Table 2

Bound Test

F-Bounds Test		Null Hypothesis: No levels of relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.400019	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Researcher's calculation using EViews 10

Since the F-statistic of 4.400019 in the preceding table is higher than the upper limit of I(1), the null hypothesis may be rejected, and we can accept that a long-run

relationship does exist. Therefore, at this point, we may run ECM, long run, and short run through ARDL.

ARDL Estimation

ARDL estimate was used to assess the short-run and long-run relationship between variables. First, the ARDL bound test is administered, and the test result is provided as follows:

Table 3

Long-Run Coefficients of ARDL (3, 2, 2, 3, 3, 2) Model Dependent Variable D(LNRTR)

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNRVAT	0.216014	0.013793	15.66055	0.0000
LNRCE	0.393101	0.027763	14.15935	0.0000
LNRIT	0.153213	0.011362	13.48473	0.0000
LNROT	0.085134	0.014961	5.690426	0.0000
LNRNT	0.150669	0.009098	16.55987	0.0000
C	1.530102	0.074522	20.53229	0.0000

$$EC = LNRTR - (0.2160 * LNRVAT + 0.3931 * LNRCE + 0.1532 * LNRIT + 0.0851 * LNROT + 0.1507 * LNRNT + 1.5301)$$

Source: Researcher's calculation using EViews 10

Table 3 shows that LNVAT, LNRCE, LNRIT, LNROT, and LNRNT are all significant, which is a good sign. As a result, a 1% rise in value-added tax results in a 21.60% gain in tax revenue for the government, whereas a 1% increase in custom excise duty results in a 39.31% increase in tax revenue. Similarly, other macroeconomic variables such as LNRIT, LNROT, and LNRNT contribute 15.32 %, 8.51 %, and 15.06 % of the government's income creation. In the long term, these factors positively and significantly influence RTR in Nepal.

Table 4

Error Correction Representation of the Selected Model: ARDL (3, 2, 2, 3, 3, 2) Model Dependent Variable D(LNRTR)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNRTR(-1))	0.502928	0.123741	4.064350	0.0006
D(LNRTR(-2))	0.068088	0.022437	3.034600	0.0065

D(LNRVAT)	0.292222	0.017206	16.98339	0.0000
D(LNRVAT(-1))	-0.107347	0.034271	-3.132325	0.0052
D(LNRCE)	0.379348	0.016517	22.96771	0.0000
D(LNRCE(-1))	-0.197090	0.050696	-3.887637	0.0009
D(LNRIT)	0.121739	0.010281	11.84107	0.0000
D(LNRIT(-1))	-0.072011	0.016690	-4.314638	0.0003
D(LNRIT(-2))	-0.034688	0.011772	-2.946547	0.0080
D(LNROT)	0.056727	0.007990	7.099814	0.0000
D(LNROT(-1))	-0.027445	0.011686	-2.348521	0.0292
D(LNROT(-2))	-0.018927	0.010125	-1.869303	0.0763
D(LNRNT)	0.181901	0.007807	23.29842	0.0000
D(LNRNT(-1))	-0.075672	0.021693	-3.488339	0.0023
CointEq(-1)*	-0.998689	0.157827	-6.327731	0.0000
R-squared	0.992564	Mean dependent var		0.073222
Adjusted R-squared	0.988560	S.D. dependent var		0.060220
S.E. of regression	0.006441	Akaike info criterion		-6.976002
Sum squared resid	0.001079	Schwarz criterion		-6.349086
Log-likelihood	158.0081	Hannan-Quinn criteria.		-6.747714
Durbin-Watson stat	2.021015			

Source: Researcher's calculation using EViews 10

Table 4 shows the error correction representation results for the chosen ARDL model. The coefficients of the variables with the first difference represent the short-run elasticities. The LNRVAT exhibits a positive and significant association with the dependent variable LNRTR at a 5% significance level. It indicates that a 1% rise in VAT results in a 29.22% increase in TR. At the one per cent level, the coefficient of the error correction term (-0.998689) is significant. The existence of long-run correlations among the variables is strengthened by the error correction term's highly significant negative sign. However, the speed of adjustment from the previous year's disequilibrium in TR added to the current year's equilibrium is only 99.86 %.

Diagnostic Tests

Conducting diagnostic tests is a vital step in time series modelling. Diagnostic testing on data series thus offers information regarding how these data might be modelled. When a model is assessed, diagnostic tests can be applied to appraise model residuals, which also help as tests of model competence.

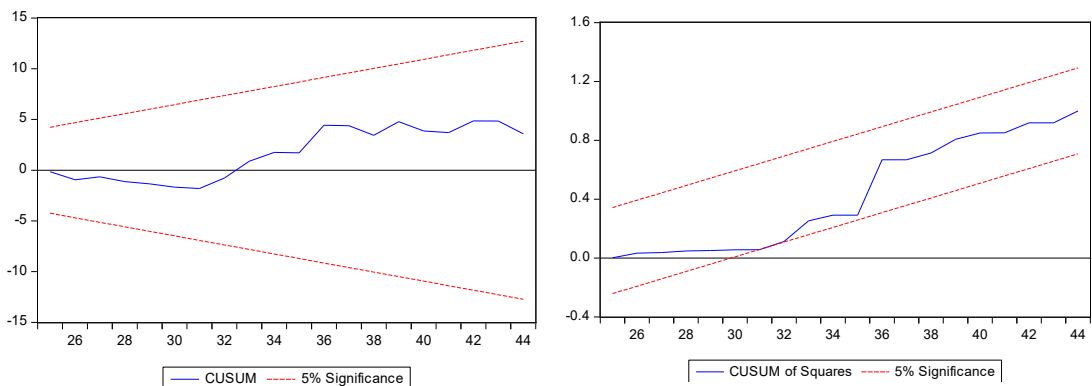
Table 5*Diagnostic Tests*

Test	F-Statistics / Jarque-bera	Obs*R-squared	P- Value
Breusch-Godfrey Serial Correlation LM Test:	0.905619	3.748416	0.1535
Heteroscedasticity Test: Breusch- Pagan-Godfrey	0.365034	10.96412	0.9471
Normality	0.692923	-----	0.707186

The P-values of the Breusch-Godfrey serial correlation LM test, the heteroscedasticity test (Breusch-Pagan-Godfrey and the normality test are all more than 5%, which is acceptable. As a result, this model is free from autocorrelation and heteroscedasticity. The residual has a normal distribution.

The Stability Test

Acusum test is a popular approach for detecting change points. It began with quality control and proceeded to time series analysis since time series data are subject to changes due to changes in public policies and serious social measures. It is simple to understand and use in real-world situations, and it may be used for both testing and predicting the positions of changes. To assess the model's stability, the study employs the cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMQ) tests. The CUSUM and CUSUMQ results are shown in the figures below, respectively.

Figure 1*CUSUM Test and CUSUM of Square Test*

The CUSUM and CUSUM OF SQUARE tests were used to assess the stability of the model. If the CUSUM plot falls within the critical limit of 5%, then we cannot reject the null hypothesis of the parameters' stability. As shown in Figure 1.1, the lines fall within a range of 5%, that is statistically significant. The long-run and short-run coefficients of the lines are acceptable across the study period of 1994/75 to 2017/18, indicating that this model is robust and stable. The diagnostic tests demonstrate that the models possess the necessary econometric characteristics. We conclude that the models are structurally sound.

Conclusion

This research shows significant results for LNVAT, LNRCE, LNRIT, LNROT, and LNRNT, which is desired. Therefore, a 1% increase in value-added tax results in an increase in tax income for the government of 21.60%, whereas a 1% increase in custom excise duty increases tax revenue by 39.31%. Similar to LNRIT, LNROT, and LNRNT, additional macroeconomic indicators like these also contribute to the government's income creation to varying degrees (15.32 %, 8.51%, and 15.06%, respectively). Over time, these factors have had a large and favourable influence on RTR in Nepal. It is desirable if the P-value for the Breusch-Godfrey serial correlation LM test, the heteroscedasticity test (Breusch-Pagan-Godfrey), and the normality test are less than 5%. Therefore, autocorrelation and heteroscedasticity are absent from this model. The residual is normally distributed. As both the lines' long-run and short-run coefficients are acceptable over the research period of 1994/75 to 2017/18, it suggests that this model is reliable and stable. The diagnostic tests confirm the models' desirable econometric features. The models are structurally sound.

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