

EFFECT OF TRADE OPENNESS AND GOVERNMENT EXPENDITURE ON ECONOMIC GROWTH OF NEPAL

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ABSTRACT

The connection between trade openness, government spending, and economic growth has consistently captured the attention of scholars and policymakers. In the case of Nepal, a landlocked nation situated in South Asia, comprehending the consequences of trade liberalization and government expenditures on economic growth holds significant implications for long-term development. This research article seeks to investigate the influence of trade openness and government spending on Nepal's economic growth through the application of empirical analysis methods.

Keywords: economic growth, ARDL, trade openness, government expenditure.

1.1 Background of the Study

Nepal, a landlocked country in South Asia that lies between two giant economies, India and China has been facing various challenges in terms of economic growth and development. Despite various efforts to liberalize trade and attract foreign direct investment, the country's economic performance has not been satisfactory (Ghimire, 2021).

In recent decades, Nepal has undertaken a range of economic measures with the objective of fostering trade openness and alluring foreign investments. These measures encompass the relaxation of trade policies, streamlining customs procedures, and establishing designated economic zones. Moreover, the government has acknowledged the pivotal role of public expenditure in propelling economic growth, leading to enhanced budget allocations in key sectors such as infrastructure, education, and healthcare.

Understanding the relationship between trade openness, government expenditure, and economic growth in Nepal is of significant value for policymakers and stakeholders. International trade is a crucial factor in promoting economic growth and development as it allows countries to specialize in producing goods and services in which they have a comparative advantage. This leads to increased efficiency, lowered production costs, and

subsequently, higher output and economic growth (Friedman, 2020). Trade openness has the potential to create more opportunities for exports, facilitate technology transfer, and enhance the competitive edge of local industries. Likewise, government expenditure plays a crucial role in fostering economic activities by investing in physical infrastructure, developing human capital, and implementing social welfare initiatives. Barro (1990) suggests that government spending plays a beneficial role in economic growth by supporting the provision of public goods and infrastructure. Furthermore, Acemoglu, Johnson, and Robinson (2005) highlight the importance of government investment in education and healthcare, which can improve human capital and contribute to sustained economic growth in the long run.

Nevertheless, despite the established theoretical linkages between trade openness, government expenditure, and economic growth, their real-world implications can differ from country to country. The effectiveness of trade policies and the influence of government spending on economic growth are contingent upon various factors, such as the country's developmental stage, institutional structure, and the ability to implement policies.

Despite the importance of understanding how trade openness, government spending, and economic growth relate to each other, there is a lack of specific research focused on Nepal. Therefore, this study aims to fill this gap by analyzing these factors in the Nepalese context. By studying key economic indicators, trade data, and government expenditure trends, this research aims to gain valuable insights into the unique dynamics and mechanisms of Nepal's economy. The findings from this study can guide policymakers in making informed decisions and developing strategies for sustainable economic development in Nepal.

1.2 Rational of the Study

The study would likely aim to investigate relationship between trade openness, government expenditure and economic growth in Nepal and their effect on economic growth in Nepal, in order to gain a better understanding of the factors that drive economic growth in the country. The study will examine macroeconomic indicators, international trade data and government expenditure patterns especially in terms of capital expenditure and recurrent expenditure. Similarly, the findings of the study could be used to inform and assist policy decision making regarding trade and economic growth in Nepal. Thus, by understanding the effect of trade openness and government expenditure on economic growth, policymakers could make

informed decisions about how to promote economic growth in the country through trade and government expenditure.

1.3 Research Gap

There is a lack of research specifically focused on Nepal that explores the relationship between trade openness, government expenditure, and economic growth. Although there is theoretical support for the positive impact of trade openness and government spending on economic growth, there is a limited number of empirical studies in the context of Nepal. This research gap highlights the need for empirical studies that specifically examine the dynamics between trade openness, government expenditure, and economic growth in the Nepalese context.

This study aims to gather important information about Nepal's economy by analyzing key economic indicators, trade data, and government expenditure patterns in terms of capital and recurrent expenditures. The objective is to gain valuable insights into how Nepal's economy functions and understand its specific dynamics and mechanisms. By addressing this research gap, the study aims to contribute to the existing knowledge and provide evidence-based insights. These insights can then be used by policymakers, economists, and stakeholders to make informed decisions regarding trade openness, government spending, and economic growth in Nepal.

1.4 Research Questions

The purpose of the study is to discover the trade openness factors in international trade and government expenditure and examine if these factors affect economic growth phenomena of Nepalese economy. More specifically, this study tends to answer these research questions:

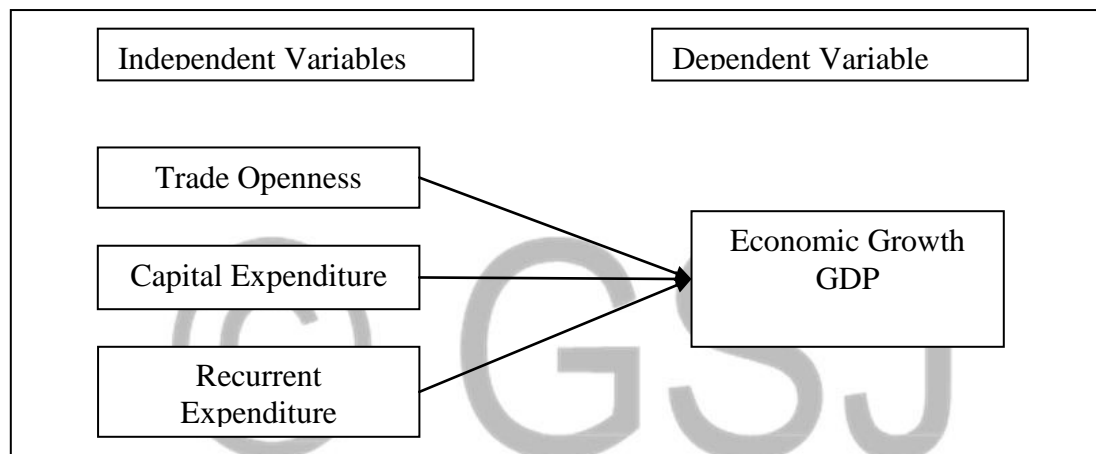
- Is there any relationship among trade openness, government expenditure and economic growth of Nepal?
- Does trade openness and government expenditure affect economic growth of Nepal?

1.5 Research Objectives

The general objective of this study is to examine the effect of trade openness and government expenditure on economic growth of Nepal. To accomplish the main objective, specific objectives of this study are:

- To examine the effect of trade openness on economic growth of Nepal.
- To access the effect of capital expenditure on economic growth of Nepal.
- To analyze the effect of recurrent expenditure on economic growth of Nepal.

1.6 Research Framework



1.7 Definition of Variables

Dependent Variable

Economic Growth

This study uses GDP (Gross Domestic Product) as a proxy for economic growth. This means that GDP is used as a measure to represent the overall economic growth of the country, as it indicates the total value of goods and services produced within the borders of a country in a given period of time. It is expressed in monetary units and only takes into account the final products, not those intended for further manufacturing. GDP provides an indication of the level of economic activity and is widely used as an indicator of the health of an economy. GDP has been used as dependent variables as a proxy of economic growth in various studies (e.g.: Dollar, 1992; Edwards, 1998; Frankel & Romer, 1999; Baldwin & Forslid, 2004; Butkiewicz & Yanikkaya, 2008; Sun & Heshmati, 2010; Nguyen, 2020).

Independent Variables

Trade Openness

Edwards (1993) states that trade openness has become synonymous with free trade, that is where the system of trade is free from all trade distortions like tariffs, taxes and transportation costs. In other words, the contemporary effort to make it easy to exchange goods and services, labor information, capital, and ideas across the borders is known as trade openness.

Different studies aiming to examine the correlation between economic growth and trade openness have employed various definitions, resulting in multiple measurement approaches (Yanikkaya, 2003). However, these measures commonly express trade openness as a proportion of a country's total income or GDP. Three commonly used and well-established measures include M/GDP , X/GDP , and $(X + M)/GDP$, where M and X represent imports and exports, respectively (Squalli & Wilson, 2006).

Capital Expenditure

Capital expenditure in relation to government spending pertains to the government's distribution of funds for acquiring, building, or enhancing physical assets or infrastructure that are anticipated to yield long-term economic advantages. Such expenditures commonly target the expansion of the economy's productive capacity, improvement of public services, and facilitation of economic development. According to Business Standard (n.d.), capital expenditure refers to the financial resources allocated by the government towards the enhancement of machinery, equipment, infrastructure, healthcare facilities, education, and other related areas. This expenditure also encompasses the funds invested by the government in acquiring fixed assets such as land and investments that yield future profits or dividends.

Recurrent Expenditure

Recurrent expenditure in government spending pertains to the government's allocation of funds for regular and routine expenses involved in operating, maintaining, and delivering ongoing services and programs. This category of expenditure encompasses recurring costs like salaries, wages, pensions, utilities, supplies, and various day-to-day operational expenses that are incurred by the government. IMF (2014) defines recurrent expenditure as "expenditure on goods and services used for the ongoing operation of government programs and services,

including compensation of government employees, purchases of goods and services, and interest payments on debt" (IMF, 2014).

1.8 Hypothesis

H1: There is significant effect of trade openness on economic growth in Nepal.

H2: There is significant effect of capital expenditure on economic growth in Nepal.

H3: There is significant effect of recurrent expenditure on economic growth in Nepal.

2 Empirical Review

Ozturk & Radouai (2020) investigated the relationship between trade openness and economic growth in Morocco. The researchers used data from the Federal Reserve of Saint Louis, including variables like trade openness index, GDP, and human capital index, and applied Granger causality and ARDL methods. The results showed a causal relationship from trade openness to economic growth, and that trade openness has a positive impact on economic growth in both the short and long term, although the magnitude of this impact was small.

Similarly, Karras (2003) studied the correlation between trade openness and economic growth in 56 countries from 1950 to 1992. He used the ratio of total trade to GDP to measure trade openness and found that a 10% rise in trade openness leads to a 0.5 increase in real GDP per capita growth, suggesting that trade openness has a positive effect on economic growth. Haasan (2005) delves into the connection between trade openness and economic growth in Bangladesh from 1974 to 2003. The findings reveal a positive and stable association between the two, suggesting that increased trade openness positively impacts economic growth in Bangladesh.

Lee (2005) examines the relationship between international trade and economic growth using data from 77 countries over the period 1970-2000. The study uses a panel data regression analysis with fixed effects and random effects to investigate the relationship between trade and economic growth. The author finds that there is a positive correlation between trade and economic growth, suggesting that international trade has a positive impact on economic growth.

Parajuli (2021) examines the relationship between economic growth and Nepal's export and import activities. The study utilized empirical analysis with data from 1994/95 to 2018/19 and assessed variable stationarity using the ADF method. The ARDL approach was employed to analyze the long-term relationship between economic growth and foreign trade. The results indicate a stable and positive connection between economic growth, exports, and imports. The study also conducted a diagnostic test to ensure the accuracy of the findings. Based on the evidence of the positive impact of foreign trade on economic growth, the study recommends that the government and policymakers implement policies to enhance production and promote exports in Nepal.

Numerous studies have indicated a positive connection between government expenditure and economic growth or development. Devarajan et al. (1996) discovered a positive link between public expenditure and economic growth based on their analysis of data from 43 developing countries. Smith et al. (2018) examined how government capital expenditure affects economic growth in developing countries. The results of their analysis revealed a substantial and positive association between government capital expenditure and GDP growth rates. The study emphasized the critical importance of investing in infrastructure as it serves as a catalyst for economic activity and contributes to long-term growth.

Jones and Brown (2020) conducted a study investigating the impact of government capital expenditure on economic growth in developed nations. Their analysis demonstrated that elevated levels of public investment in physical infrastructure were linked to higher rates of GDP growth. The study highlighted the significance of strategic allocation and effective implementation of government capital expenditure to optimize its positive influence on economic growth. Rasaily and Paudel (2019) conducted a study using fiscal year data from 1974/75 to 2017/18, and their findings revealed the existence of a long run connection between government expenditure and economic growth. The research paper proposed that both current and capital expenditures should be effectively utilized to achieve improved outcomes for economic growth.

3.1 Research Design

This study utilizes published secondary sources of data and information to conduct research. It employs a combination of descriptive and analytical research designs to gather and analyze

data. In this study, the descriptive research design describes and summarizes data using various statistical measures, while the analytical research design tests hypotheses and identifies cause-and-effect relationships between variables.

3.2 Nature and Sources of Data

The research study under consideration is a quantitative one, meaning it focuses on numerical data and statistical analysis. The evaluation of the research is based on 48 observations per year, taken from the period of 1974 to 2021. The data for this study was collected from various sources, but is all secondary data, meaning it was collected from existing sources rather than primary sources such as surveys or experiments. The data have been gathered from following existing sources: World Bank Data and World Development Indicators, Economic Survey Nepal, Ministry of Finance. The other sources include articles, past studies on related topics, published articles of different periodicals, economic journals and authors.

3.3 Data Analysis Tools and Technique

The collected data has been statistically analyzed using software such as the E-views and Microsoft Excel. Various statistical tools like descriptive statistics, correlation coefficient, unit root test, ARDL long run and bound test, normality test, stability test, etc. have been conducted.

3.4 The model

The econometric or the regression model for the study is given as:

$$GDP = \beta_0 + \beta_1 RE + \beta_2 CE + \beta_3 TO + \varepsilon$$

β_0 represents the intercept, indicating the expected value of GDP when all independent variables are zero. β_1 , β_2 , and β_3 represent the coefficients that measure the impact of each independent variable on GDP. CE represents Capital Expenditure, reflecting the government's investment in machinery, infrastructure, and other capital-related areas. TO represents Trade Openness, representing the degree of openness of the economy to international trade. RE represents Recurrent Expenditure, which refers to the government's regular or ongoing spending on areas such as healthcare, education, public administration, etc. ε represents the error term, accounting for unexplained variation in the dependent variable.

4. Analysis and Results

4.1 Descriptive Statistics

Table 4.1 Descriptive Summary of Variables

	GDP	CE	RE	TO
Mean	387.6724	7.9636	9.8449	30.57234
Median	206.6840	7.4805	9.1861	33.4402
Maximum	1208.219	14.7308	20.1685	43.7066
Minimum	89.38255	2.8009	3.2919	16.0039
Std. Dev.	346.5437	3.3194	4.6952	7.8853
Skewness	1.239055	0.2171	0.7775	-0.390297
Kurtosis	3.064998	1.9177	2.7394	1.7969
Jarque-Bera	12.29051	2.7199	4.9724	4.1136
Probability	0.002144	0.2567	0.0832	0.1278
Sum	18608.27	382.2513	472.5544	1467.473
Sum Sq. Dev.	5644350	517.8803	1036.100	2922.394
Observations	48	48	48	48

Table 4.1 shows the descriptive statistics of the variables. The mean GDP is per capita US\$ 387.6724, while the median GDP is 206.6840. This suggests that there is some variability in the GDP values, with a few very high values that may be pulling the mean higher. The standard deviation of GDP is 346.5437, indicating that the values are spread out over a wide range. The skewness of 1.239055 indicates that the GDP values are slightly positively skewed, which means that there are relatively more higher GDP values than lower GDP values. It ranges from maximum value of 1208.219 to minimum value of 89.38255.

CE (Capital Expenditure) has a mean of 7.9636, indicating the average amount of capital expenditure. The median, 7.4805, represents the middle value of the data, suggesting some variability. The standard deviation, 3.3194, indicates that the values are spread out over a moderate range. The skewness of 0.2171 suggests a slight positive skew, implying that there are relatively more higher capital expenditure values than lower ones. The minimum and maximum values are 2.8009 and 14.7308, respectively, indicating the range of the data. RE (Recurrent Expenditure) has a mean of 9.8449, representing the average amount of recurrent expenditure. The median, 9.1861, suggests a middle value for the data. The standard deviation, 4.6952, indicates a moderate spread of values. The skewness of 0.7775 suggests a slightly positive skew, indicating a relatively higher frequency of larger recurrent expenditure values. The range spans from a minimum of 3.2919 to a maximum of 20.1685.

TO (Trade Openness) has a mean of 30.57234, representing the average trade openness. The median, 33.4402, indicates the middle value of the data. The standard deviation, 7.8853, suggests a moderate spread of values. The skewness of -0.390297 suggests a slightly negative skew, indicating a relatively higher frequency of smaller trade openness values. The range spans from a minimum of 16.0039 to a maximum of 43.7066.

4.2 Correlation Coefficient

Table 4.2 Correlation Coefficient Matrix

Correlation Probability	GDP	CE	RE	TO
GDP	1			
CE	-0.678571 0.0000	1		
RE	0.985020 0.0000	-0.673035 0.0000	1	
TO	0.709835 0.0000	-0.404472 0.0044	0.694203 0.0000	1

The correlation between GDP and CE is -0.678571, indicating a strong negative relationship. The p-value of 0.0000 suggests that this correlation is statistically significant. The correlation between GDP and RE is 0.985020, indicating a strong positive relationship. The p-value of 0.0000 suggests that this correlation is statistically significant. The correlation between GDP and TO is 0.709835, indicating a moderately strong positive relationship. The p-value of 0.0000 suggests that this correlation is statistically significant.

4.3 Unit Root Test

Table 4.3 Unit Root Test

Variables	Level- intercept	Level-Trend & Intercept	1 st diff- intercept	1 st diff- Trend & intercept
GDP	0.9892	0.9092	0.0000	0.0000
CE	0.5842	0.1306	0.0000	0.0001
RE	0.6559	0.0033	0.0000	0.0000
TO	0.4176	0.4817	0.0000	0.0000

This table presents the results of an Augmented Dickey-Fuller (ADF) test conducted to examine the stationarity of four variables: GDP, CE, RE and TO. If the p-value is less than the significance level (usually 0.05), then the null hypothesis of the test is rejected, indicating that the variable is stationary. On the other hand, if the p-value is greater than the significance

level, the null hypothesis is not rejected, indicating that the variable is non-stationary. The table reveals that RE is stationary at level while GDP, CE and TO are stationary at first difference.

4.4 ARDL Model and Bound Test

Table 4.4 F-ARDL Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNGDP(-1)	0.873594	0.057667	15.14881	0.0000
LNCE	-0.059510	0.035032	-1.698748	0.0968
LNRE	0.276368	0.123334	2.240815	0.0304
LNT0	-0.187859	0.086715	-2.166390	0.0360
C	0.911140	0.318584	2.859970	0.0066
R-squared	0.990466	Mean dependent var	5.650684	
Adjusted R-squared	0.989558	S.D. dependent var	0.782425	
S.E. of regression	0.079951	Akaike info criterion	-2.114513	
Sum squared resid	0.268472	Schwarz criterion	-1.917689	
Log likelihood	54.69105	Hannan-Quinn criter.	-2.040446	
F-statistic	1090.871	Durbin-Watson stat	1.941024	
Prob(F-statistic)	0.000000			

The coefficient for LNCE is -0.059510. This negative coefficient suggests that an increase in government capital expenditure (CE) is associated with a slight decrease in GDP, although the relationship is not statistically significant based on the t-statistic (-1.698748) and the probability (0.0968). Therefore, there is weak evidence to support the impact of government capital expenditure on GDP.

The coefficient for LNRE is 0.276368. This positive coefficient indicates that an increase in government recurrent expenditure (RE) is associated with an increase in GDP. The coefficient is statistically significant with a t-statistic of 2.240815 and a probability of 0.0304. This suggests a moderate positive effect of government recurrent expenditure on GDP.

The coefficient for LNT0 is -0.187859. This negative coefficient suggests that an increase in trade openness (TO) is associated with a slight decrease in GDP. The coefficient is statistically significant with a t-statistic of -2.166390 and a probability of 0.0360. This implies a weak negative effect of trade openness on GDP.

The R-squared value of 0.990466 indicates that approximately 99.05% of the variation in GDP is explained by the independent variables in the model. The adjusted R-squared value of 0.989558 takes into account the degrees of freedom and penalizes for including more independent variables. The F-statistic of 1090.871 is highly significant with a probability of 0.0000, indicating that the overall model is a good fit.

Table 4.5 F-Bound Test

Level of Significance	F-statistics	Lower Bound	Upper Bound
10%	6.505195	2.37	3.2
5%		2.79	3.67
2.5%		3.15	4.08
1%		3.65	4.66

In the table 4.4 the calculated F-statistics is 6.505195 which is greater than both the lower and upper bound values in all level of significance. If the calculated F-statistic is greater than the upper bound of the F-distribution, then the null hypothesis of no long-run relationship between the variables is rejected in favor of the alternative hypothesis of a long-run relationship. Thus, the concerned variables are co-integrated and have long run relationship.

4.5 Long Run Estimate

After having confirmed the presence of long-run relationship, we estimate the long-run coefficient and error correction representation of the selected ARDL(1,0,0,0) model. The model includes an error correction term that captures the speed of adjustment of the dependent variable towards its long-run equilibrium level. ECMs are commonly used in time series econometric analysis to model relationships between variables that are expected to be cointegrated.

Table 4.5 Long-run Estimate for ARDL

Variable	Coefficient	Std. Error	t-Statistics	p-Value
LnCE	-0.470782	0.334746	-1.406389	0.1670
LnRE	2.186354	0.420407	5.200566	0.0000
LnTO	-1.486158	0.646433	-2.299015	0.0265
EC = LnGDP-(0.4708*LnCE+2.1864*LnRE-1.4862*LnTO)+7.2080				

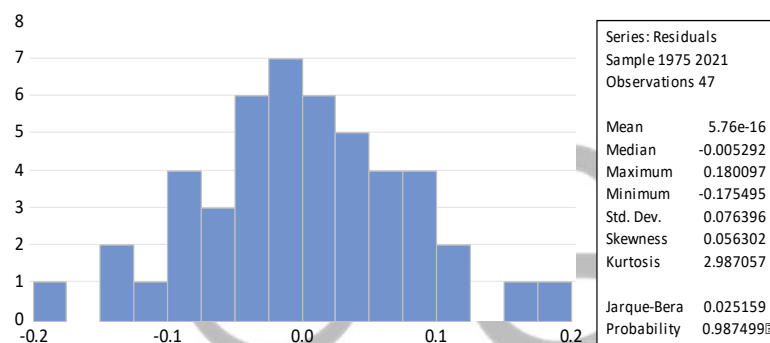
The coefficient for LnCE is -0.470782. This negative coefficient suggests that an increase in government capital expenditure (CE) is associated with a decrease in economic growth (GDP), although the relationship is not statistically significant based on the t-statistics ($t = -1.406389$, $p = 0.1670$). The coefficient for LnRE is 2.186354. This positive coefficient indicates that an increase in government recurrent expenditure (RE) is associated with an increase in economic growth (GDP). The coefficient is statistically significant with a t-statistic of 5.200566 and a p-

value of 0.0000. This suggests that government recurrent expenditure has a significant positive effect on economic growth in Nepal. The coefficient for LnTO is -1.486158. This negative coefficient suggests that an increase in trade openness (TO) is associated with a decrease in economic growth (GDP), and this relationship is statistically significant. The t-statistic is -2.299015, and the p-value is 0.0265, indicating a significant impact of trade openness on economic growth in Nepal.

4.6 Diagnostic Test

The study performs diagnostic tests to evaluate the quality of the statistical model and check whether it satisfies the assumptions of the underlying statistical method.

4.6.1 Normality Test



The figure shows the normality test of the regression equation. Since, the probability value of Jarque- Bera test is 0.987499 which is greater than 0.05, data are supposed to be normally distributed.

4.6.2 Serial Correlation LM Test

F-statistic	0.746594	Prob. F(2,40)	0.4805
Obs*R-squared	1.691357	Prob.Chi-Square(2)	0.4293

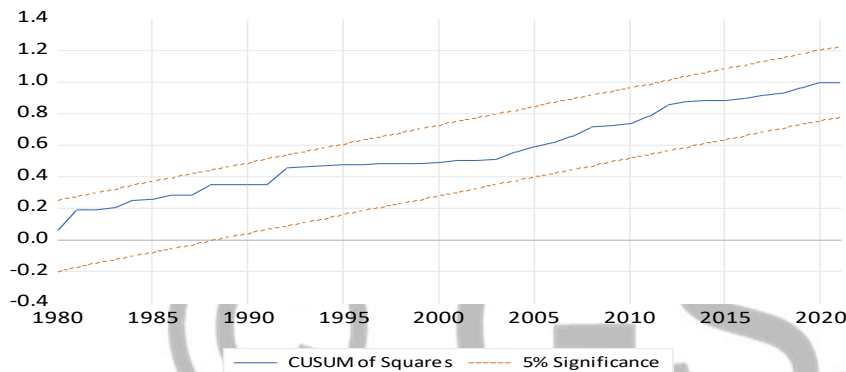
In this case, the F-statistic is 0.879459, and the associated probability is 0.4805. Since the probability is greater than the conventional threshold of 0.05, we do not have sufficient evidence to reject the null hypothesis of no serial correlation.

4.6.3 Heteroskedasticity Test

F-statistic	2.014178	Prob. F(4,42)	0.1099
Obs*R-squared	7.564730	Prob.Chi-Square(4)	0.1089
Scaled explained SS	6.001732	Prob.Chi-Square(4)	0.1990

Since, the probability value of Breusch-Pagan-Godfrey test is 0.1099, which is greater than 0.05, which means data are supposed to be homogeneous. This makes the results of regression analysis more reliable.

4.6.4 Stability Test



The result shows that the ARDL parameters are stable because graph of the CUSUMSQ is within the critical bounds at the 5 percent level of significance. Thus, the model is stable and it confirms the stability of the long-run coefficients of the regressors.

4.7 Summary of Hypothesis

Hypothesis	GDP		
	P value	t-statistics	Remarks
H1: There is significant effect of trade openness on economic growth in Nepal.	0.0360	-2.166390	Accept
H2: There is significant effect of capital expenditure on economic growth in Nepal.	0.0968	-1.698748	Reject
H3: There is significant effect of recurrent expenditure on economic growth in Nepal.	0.0304	2.240815	Accept

5. Conclusion

In conclusion, it was found that trade openness, which refers to the degree of international trade and integration, has a slight negative impact on economic growth in Nepal. This suggests that as trade openness increases, there is a slight decrease in the rate of economic growth. It is

important to note that this negative impact may be relatively small, indicating that other factors may have a stronger influence on economic growth in Nepal.

In contrast, the study revealed a positive relationship between recurrent expenditure and GDP in Nepal. This indicates that increased levels of government spending on regular activities, such as public services and administration, have a beneficial impact on economic growth. Investments in sectors like healthcare, education, infrastructure maintenance, and public administration play a crucial role in stimulating economic activity and fostering long-term development. In contrast, the study revealed a positive relationship between recurrent expenditure and GDP in Nepal. This indicates that increased levels of government spending on regular activities, such as public services and administration, have a beneficial impact on economic growth. Investments in sectors like healthcare, education, infrastructure maintenance, and public administration play a crucial role in stimulating economic activity and fostering long-term development.

These findings underscore the significance of taking into account a range of factors and policies when studying the determinants of economic growth in Nepal. While trade openness and recurrent expenditure have been recognized as influential factors, it is vital to analyze the complex interaction of multiple variables, including fiscal policies, monetary policies, investment climate, human capital development, and institutional factors. By adopting a comprehensive approach, a more thorough understanding of the factors that contribute to sustained and inclusive economic growth in Nepal can be achieved.

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