Public Expenditure and Economic Growth of Nepal

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Abstract

This paper examines the effect of public expenditure and economic growth of Nepal over the period of 1975-2021.The public expenditure of Nepal has been significantly increasing during the study period. The objective of this study is to examine the impact of public expenditure on economic growth of Nepal by ARDL and ECM model. Descriptive and analytical research design has been used by using secondary data. The finding of the study concluded that growth in education expenditure and agriculture expenditure has negative and positively significantly impact on the growth in GDP respectively at 5% level of significance. Health expenditure and communication and transport expenditure has positive and negative insignificant effect economic growth respectively. The findings of this study revealed that increase in agriculture expenditure increases the growth of the economy of Nepal. Public expenditure should be best allocated for the development of transpiration, communication and social service in order to reduce geographical fragmentation and increase the profitability of private investment as well as by extending the size of the market, skill and efficiency of labor.

Key words*:* Public Expenditure, Economic Growth, ARDL, ECM, bound test

I. Introduction

Public spending is the cost incurred by government entities including the federal, state, and municipal governments to meet the general socioeconomic needs of the populace. Public expenditures are costs that the government incurs for its own upkeep as well as for the economy and society at large. These days, some governments spend money to aid other nations, and that expense would be included in the overall budget. As state operations increase, it is getting harder to determine how much of the public budget should go into sustaining the government and how much should go toward advancing society and the economy. According to Goode, public spending is a way to perform necessary tasks like administering justice and providing for the country's defense as well as to provide some extra goods and services that are beneficial to a great society but that private businesses would not be able to provide because doing so would not be profitable (Goode, 2010).

Additionally, the majority of government funding goes to other economic sectors. It is basically split into two groups: current expenditures and development expenditures. The term "current expenditure" refers to routine government spending that is necessary to maintain the nation's day-to-day operations. The development expenditure is one that is beneficial for creating infrastructure and offering various services in agriculture, health, and other sectors. Additionally, public spending is a crucial tool for the state's strategy of maintaining control over the state's economy (Tomashuk, 2017).Government services offered for the community's benefit, such as housing, healthcare, and education. Any of the numerous publicly or privately offered services designed to assist underprivileged, distressed, or vulnerable individuals or groups are considered social services, sometimes known as welfare services or social work. The profession involved in providing such services is also referred to as social service. The 20th century has seen a boom in social services as social responsibility concepts have grown and spread (Mahesh, 2016).

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Due to the increase in budget, Nepal's public expenditures have been steadily rising for a few years. What are the causes of the rise in Nepal's public spending? The majority of economic policies contend that an increase in government spending will enhance output through a multiplier effect, with the exception of the classical and neo classical theories. But in the instance of Nepal, despite a significant rise in government spending, the country's growth rate is only around 5%; why is this? Despite this, government spending on health and education is remarkably large, and in accordance with Barro and Martin's growth theory, spending on human development Long-term capital formation will raise the growth rate. But for the past ten years, Nepal's economic growth rate has fluctuated about 3%. What is the connection between Nepal's economic growth and state spending? If there is a connection between them, whether it be positive, negative, or not at all? Should Nepal raise or cut public spending if it wants to achieve the required economic growth?

To estimate the relationship between public expenditure and economic growth of Nepal is one of the burning issue in the world. It is necessary to estimate the relationship between public expenditure and its impact on economic growth. Only few studies have been carried out which are based on descriptive analysis. But no remarkable attempt has been done so far in the particular field related to the relationship between public expenditure and economic growth. Hence the study justifies the present work.

Rational of the study

The research area basically focuses on the Nepalese economy. The government expenditure in public is divided in to several headings mainly; health expenditure, agriculture expenditure, communication and transport expenditure, and education expenditure whenever it is necessary. There are various research works done on the topic of the public expenditure and the GDP growth of the economy. But, there are very few that talks with the relationship between the GDP growth and the public expenditure. Moreover, not any research was conducted that has find out the determinants of the public expenditure and economic growth in case of Nepal. So, from this thesis government will get information whether to increase or decrease the public expenditure to achieve the higher economic growth. Thus, this paper helps the government to decide the exact amount of the public expenditure required to achieve the desired economic growth rate. For, the academicians it helps to develop the new hypothesis and check the existing hypothesizes and theories; thereby it helps to develop the new theories. Since this paper provides framework to the government to make the investment decisions in different sectors. It helps to policy makers form different sectors such as education, health, communication and transport expenditure and agriculture expenditure. Similarly, Private sector can use it to decide where and how much to invest to achieve the higher profit.

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Research questions:

Does public expenditure has effect on economic growth of Nepal?

Research objectives:

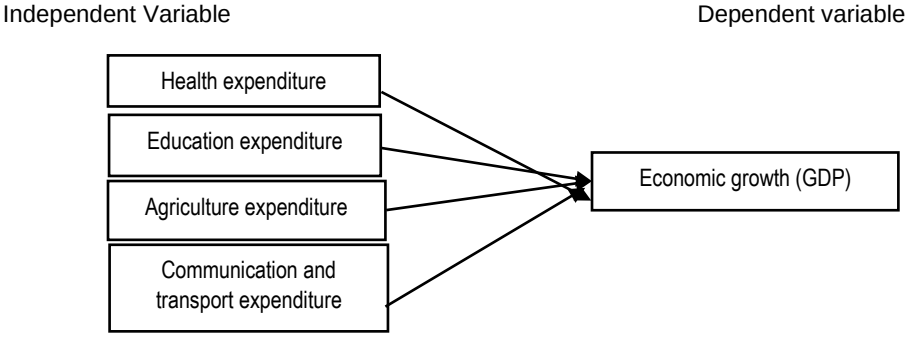
To examine the effect of public expenditure and economic growth of Nepal.

II.Theoretical Framework

Research framework

Figure 1

Research Framework



Note: author's research framework

Theoretical review

The Keynesian View and the Classical View are the two main and competing perspectives on the role of government intervention in the economy. According to Keynesians, using government spending as a tool for policy can help maintain a healthy level of economic activity and rectify short-term cyclical changes in aggregate spending (Singh & Sahni, 1984). It contributes to an increase in productive investment and offers a socially ideal course for growth and development (Ram, 1986). Contrarily, the Classical View contends that excessive government involvement in economic affairs has a negative impact on growth performance for two reasons: first, because government operations are frequently conducted less efficiently, they lower the economic system's overall Productivity; and second, because excessive government spending distorts economic incentives and leads to economically unfavorable decisions (Barro, 1990).

Empirical review

Author and Date	Variables	Methods	Findings
Dritsakis and adamopolous (2004)	Health care, education and culture	ADF, co-integration ECM	Health care and education has positive significant relationship on economic growth.
Shahril and hamzah (2011)	Transport, public utilities and health expenditure	ADF, Johansson co-integration	Transport and health expenditure has positive significant effect on economic growth.
Mercan and sezer (2014)	Health expenditure	ADF, co-integration, ARDL, ECM	Education expenditure has positive significant on economic growth.

Yahya et al. (2012)	Fixed capital creation, labour force participation, and spending on education	VAR	Spending on education has positive significant on economic growth.
Divine (2018)	Education expenditure	FMOLS, PVECM	Education expenditure has positive significant on economic growth.
Mohmand et al. (2017)	Transportation infrastructure	Unit root test, co-integration, granger casualty	Transportation infrastructure has positive significant on economic growth.
Srinivasu and srinivasa (2013)	Transportation and telecommunication, health, education	Unit root test, ordinary least square	Transportation health and education has significant on economic growth.
Raza et al. (2012)	Agriculture expenditure	Unit root test, ARDL	Agriculture expenditure has positive significant on economic growth.
Anwar et al.(2015)	Agriculture, industry, and trade	Ordinary least square	Agriculture has positive relationship on economic growth.
Olajide et al. (2010)	Agriculture resources	Ordinary least square	Agriculture resource has positive cause and effect relationships with economic growth.
Idoko and jatto (2018)	Government expenditure on agriculture	Multiple regression analysis and johanson co-integration test	Government expenditure on agriculture has positive and significant on economic growth.
Omotayo et al. ((2019)	Agriculture expenditure and health expenditure	ARDL and ECM	Agriculture expenditure and health expenditure has positive and negative significant on economic growth respectively.
Mapfumo et al. (2012)	Government expenditure on agriculture	Regression analysis model	Government expenditure on agriculture has positive significant on

			economic growth.
Adhikari (2015)	Government expenditure on agriculture, domestic saving and foreign direct investment in agriculture	Regression analysis method	Government expenditure has significant on economic growth. Domestic saving and foreign direct investment in agriculture has insignificant on economic growth.
Kharel and adhikari (2021)	Capital expenditure, recurrent expenditure, health expenditure, education expenditure and agriculture expenditure	Regression analysis model	Education expenditure and agriculture expenditure has positive significant on economic growth and health expenditure has positive insignificant on economic growth.
Dangal and gajurel (2021)	Recurrent, capital, health, education and communication and transport expenditure	Regression analysis model	Health and communication & transport expenditure has negative relationships on economic growth. Education expenditure has positive relationship with economic growth.

III. Research Methodology

The nature of the study is descriptive as well as analytical. This research study has based on the secondary data published by different governmental as well as non-governmental organizations. The secondary information and data have been collected from following sources: economic survey and government financial statistic 1975/76 to 2014/15 and economic survey of Nepal 2015/16 to 2020/21. For this article, it has used health expenditure, education expenditure, agriculture expenditure and communication and transport expenditure as an independent variables. So, the general model that shows the relationship between the public expenditure and economic growth can be written as

$$RGDP = \beta 0 + \beta 1HE + \beta 2\ EE + \beta 3ARG + \beta 4CTE + ei \quad \ldots\ldots\ldots\ldots\ldots (1)$$

Where, RGDP = Real GDP

HE = Health Expenditure

EE= Education Expenditure

ARG = Agriculture Expenditure

CTE= Communication and Transport Expenditure

ei = Stochastic Error term

IV. Results and Conclusion

Unit root test:

Running a regression using non stationary data gives spurious results because estimates obtained from such data will possess non constant mean and variance. The study therefore sought to establish the stationarity of the data or what order they were integrated to make sure that the results obtained were not spurious. Augmented Dickey Fuller (ADF) was used to test for unit roots.

Table 1

Unit root test

Variables	Adj. t-stat(at level)	Adj.t-stat(at first difference)	conclusion
HE	-6.766408(0.0000)	-	I(0)
EE	-3.931301(0.0041)	-	I(0)
ARG	-18.83620(0.0001)	-	I(0)
CTE	-0.541221(0.8722)	-7.412119(0.0000)	I(1)
GDP	-4.583664(0.0006)	-	I(0)

Note: Output from collected data analysis from E-views 8, LBC library

Table 1 clearly shows on CTE is stationary at first difference because their p-value is less than 5% at first difference. Other variables are stationary at level because their p-value is less than 5% at level. Thus, we have case of a mixed order of integration of variables I(1) and I(o) and so this support using ARDL co-integration approach.

Bound test for co-integration relationship

Pesaran (1997) suggests that the above equation's long-run relationship can be tested using the limits test. Regardless of the order of integration of the variables, if the F-test surpasses their respective critical values, it can be said that there is evidence of a long-term link between the variables.

Table 2

Bound test

level of significance	F-statistic	lower bound	upper bound
10%	10.17924	2.2	3.09
5%		2.56	3.49
2.50%		2.88	3.87
1%		3.29	4.37

Note: Output from collected data analysis from E-views 8, LBC library

In the Table 2 the calculated F-statistics is 10.17924 which is higher than both the lower bound and upper bound values in all level of significance. This shows that the rejection of null hypothesis that there is long run relationship among the variables. In other words, there is long run relationship among the variables. Thus, the concerned variables are co-integrated.

Table 3

Coefficient of Long Run Relationship in the ARDL Co-integration Form

variables	coefficient	t-statistic	prob.
HE	0.00292	0.347652	0.7302
EE	-0.064297	-2.434884	0.0203
CTE	-0.008054	-0.866472	0.3923
ARG	0.131208	2.139265	0.0397
C	3.972628	5.737868	0.0000

Note: Output from collected data analysis from E-views 8, LBC library

The results of ARDL, according to Table 4, revealed that there existsHE and ARG a positive relationship betweenGDP. Although, the results of regression of EE and CTE show the negative relationship between GDP. However, the results also indicated that EE and ARG has significantly related to GDP and in the other hand, HE and TCE have not significantly related to GDP. The regression results specifies the regression equation as follows:

GDP = 5.732895 + 0.0042 HE - 0.0477 EE - 0.0011 CTE + 0.2079 ARG

Autoregressive Distributed Lag (ARDL) Model

Table 4

Autoregressive Distributed Lag (ARDL) Model

Variables	Coefficients	T- Value	P- Value
HE	0.004214	0.350867	0.7279
EE	-0.047733	-2.095325	0.0437

CTE	-0.0011623	-0.892755	0.3783
ARG	0.207996	3.291685	0.0023
C	5.732895	4.096880	0.0002
R2 = 0.476029		Akaike Info Criterion = 4.640704	
Adjusted R2 = 0.337331		Schwarz Criterion = 5.046201	
F - Statistics = 3.432122 [0.004207]		Durbin- Watson Stat = 1.757457	

Note: Output from collected data analysis from E-views 8, LBC library

The regression equation revealed that 1% increases in Health expenditure 4.2% increases in GDP. Similarly, 1% increases in education expenditure 4.77% decreases in GDP, and 1% increases in communication and transport expenditure 0.11% decreases in GDP. Meanwhile, 1% increase in agriculture expenditure 20.79% decreases in GDP. As shown in Table 4, the P-value (F-statistic) is significant at 5% and it revealed that there is significant relationship between explanatory and dependent variables. The adjusted R^2 concluded that the public expenditures explains 33.73% of the change in economic growth.

Error Correction Model Representation for the Selected ARDL Model

Table 5

Error Correction Model Representation for the Selected ARDL Model

Dependent Variable: (GDP)

Variables	Coefficients	Standard of error	T- Value	P- Value
D(GDP(-1)	0.249255	0.111784	2.229799	0.0325
D(EE(-1)	0.047733	0.018722	2.549549	0.0155
D(ARG)	-0.018650	0.043309	-0.430638	0.6694
CointEq(-1)*	-0.743099	0.172413	-8.370015	0.0000
R^2	0.770358			
DW	1.757457			
Adj.R^2	0.746805			

Note: Output from collected data analysis from E-views 8, LBC library

Table 5 presents the result for short term error correction model for GDP. The coefficient of the error correction term is negative and statistically significant, indicating the evidence of co-integration among the GDP and other variables in the model. The comparatively lower value of the error correction term for GDP implies relatively lower rate of adjustment in GDP when shocks arise. The coefficient of error correction term (i.e.; -0.743099) implies that about 74.3099 % of total adjustment takes annually when shock arises. It can be seen from the table that the difference of EE and ARG has negative significant and insignificant relationship with GDP respectively at 5% level of significance.

The above results show that the coefficient of the error- correction term, coineqn (-1), for the estimated GDP equation is both statistically significant and negative, implying that, it will rightly act to correct past deviations from the long run equilibrium. The coefficient of 74.3099 denotes that 74.3099 percent of any past deviations will be corrected in the current period.

Diagnostic test:

Table 6

Diagnostic test

Diagnostic test	Obs. R^2	p-value	Decision rule
Breusch-Godfrey Serial Correlation LM test	2.345905	0.4162	No serial correlation
Heteroskedasticity Test:	8.342790	0.5490	No heteroskedasticity, autocorrelation
Jarque-Bera Test	1.202605	0.548097	Residuals are normally distributed

Note: Output from collected data analysis from E-views 8, LBC library

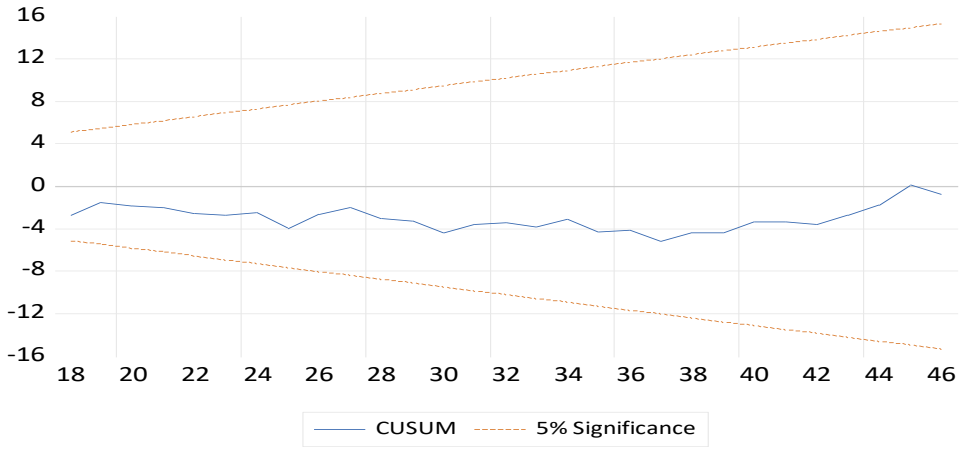
The diagnostic tests against serial correlation (Breusch-Godfrey test), heteroscedasticity (White), and normality of errors (Jarque-Bera test) showed the insignificant at 5% level which revealed that there is no serial correlation; free from heteroscedasticity and autocorrelation; and normally distributed residuals. These results confirmed that the regression model was fit to predict the relationship between government expenditure and economic growth.

Stability Test

The stability of the long -run parameters together with short run movements for the estimated equations should be examined. For this the thesis relied on cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) tests proposed by (Borensztein et al., 1998). The test applies to the residuals of the ECM. The graphical presentation of CUSUM test is given in Figure 2.

Figure 2

Cumulative Sum of Recursive Residuals (GDP)

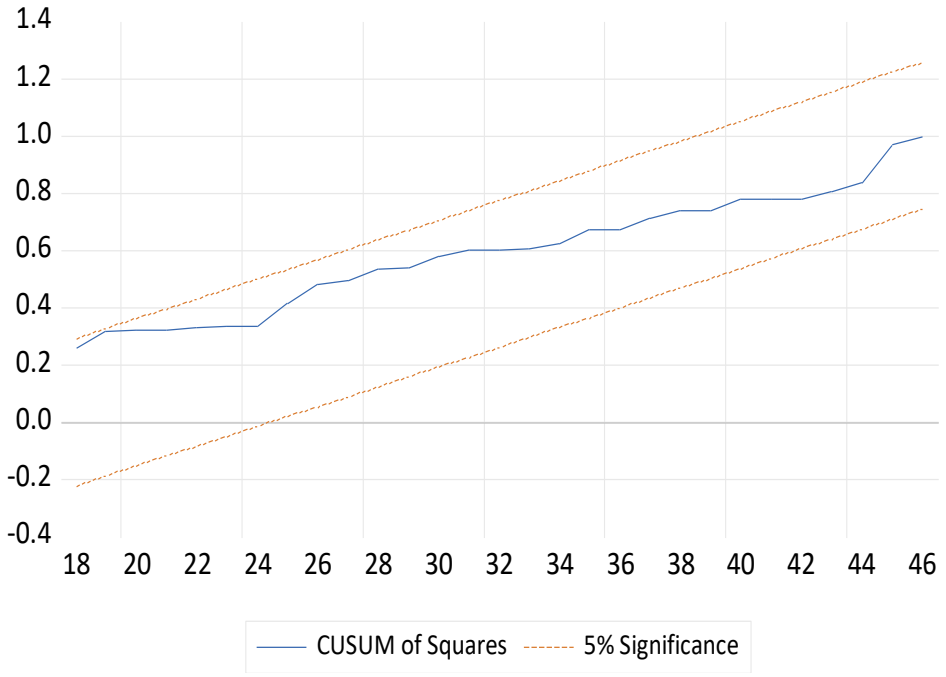


Note: Output from collected data analysis from E-views 8, LBC library

Since, the plots of CUSUM statistic for GDP are within the critical lines at the 5% significance level, long run coefficient of the GDP function is stable. Similarly, the graphical representation of the CUSUMSQ is given in Figure 3.

Figure 3

Cumulative Sum of Square of Recursive Residuals (GDP)



Note: Output from collected data analysis from E-views 8, LBC library

Since, the plots of CUSUM statistic for GDP are within the critical lines at the 5% significance level, long run coefficient of the GDP function is stable

Discussion

In the study, the relationship between public expenditure and economic growth in Nepal from 2074/75 to 2020/21 was evaluated. The empirical findings thus made are discussed**.** Health expenditure was found to have insignificant positive relationship with economic growth in Nepal. This empirical study supports the conclusions of Dangal and Gajurel (2021) that HE insignificantly and positively influenced economic growth. However, the results contradict those of Dritsakis and Adamopoulos (2004), Shahril and Hamzah (2011) who found that there is significant and positive correlation between HE and economic growth.The study found a significant negative association between Education expenditure and economic growth in Nepal. This suggests that education expenditure made a significant contribution to economic growth in Nepal. This result is consistent with Kharel and Adhikari (2021) findings that education expenditure has a positive correlation with economic growth. However, the findings do not support the claim made by Dangal and Gajurel (2021) that there is insignificant relationship between overall education expenditure and economic growth. CTE was found to have insignificant negative relationship with economic growth in Nepal. This empirical study supports the conclusions of Dangal and Gajurel (2021), Kharel and Adhikari (2021) that CTE insignificantly and negatively influenced economic growth. However, the results contradict those of Srinivasu and Srinivasa Rao (2013) who found that there is significant and positive correlation between CTE and economic growth.The research found a significant positive relationship between agriculture expenditure and economic growth in Nepal. This suggests that, over the analyzed time, agriculture expenditure positively impacted the economic growth. The finding, however, supports those of Adhikari (2015), Raza et al. (2012), Anwar et al. (2015), Olajide et al. (2010), Idoko and Jatto (2018), Omotayo et al. (2019), Mapfumo et al. (2012), which found that the ARG had a positive and significant impact on economic growth.

Conclusion and Implication

The study used time series data from 1975/76 to 2020/21 to examine the public expenditure and economic growth of Nepal. Based on the above results, the study came to the conclusion that public expenditure significantly influences economic growth of Nepal. Based on the analysis carried out it was concluded that growth in education expenditure and agriculture expenditure has negative and positively significantly impact on the growth in GDP respectively at 5% level of significance. Health expenditure and communication and transport expenditure has positive and negative insignificant effect economic growth respectively. The findings of this study revealed that increase in agriculture expenditure increases the growth of the economy of Nepal. Public expenditure should be best allocated for the development of transportation, communication and social service in order to reduce geographical fragmentation and increase the profitability of private investment as well as by extending the size of the market, skill and efficiency of labor.

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