

Government Expenditure and Economic Growth of Nepal

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Abstract

This paper investigates the effects of public spending on Nepalese GDP growth from the fiscal year 1990/91 to 2019/20. This study has applied Stationary Test along with ordinary least square method to investigate the role of explanatory variables on GDP growth of Nepal. Agriculture, education, health and transportation and communication are all included in government spending. All explanatory variables have made favorable effect on Nepal's GDP growth. The multivariate regression analysis confirms that community expenditure in health sector as well as education sector leads to uplift the human capital which have ultimately positive influence on the economic growth of the country.

Keywords: development public expenditure, gross domestic product, public expenditure, regular public expenditure

Background of the Study

One of the most important purposes of government spending policy in a developing country is to ensure stable and reasonable economic growth. So that most of the government programs have tried to fostering long-term, reasonable economic progress. Public spending accelerates both physical and human capital over time. In the short term, appropriate public spending on health, manufacturing, transportation, human capital, and communication all could boost up economic growth (Balaj & Lani2017). Therefore, the effect of public expenditure might be a helpful for evaluating government spending efficiency and the contribution of government to economic growth.

The attainment of quick and justifiable growth with maintaining price level constant is the primary macroeconomic goal of almost all developing countries. Therefore, ultimate goal of macroeconomic policy is to improve the material well-being of the community. Consequently, greater economic prosperity follows the achievement of economic growth. Economic growth of the country rises prosperity as well as living standards of the people because without any pressure people are able to fulfil their needs and desires (higher levels of human pleasure and betterment are objectively connected

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to increased prosperity). During the period of economies stagnate; states are incapable to deliver social welfare for peoples due to slow pace of economic growth. Therefore, government expenditure is the one of the major tools which rise the economic growth as well as social welfare by avoiding economic stagnate.

Over the last few decades, government expenditure patterns in emerging countries have shifted considerably. As a result, in countries around the world, there has been a lot of discussion over the role and scope of government intervention in the macroeconomic outlook. As a result, governments use a variety of mechanisms to try to encourage economic growth. Historically, public spending has been a part of fiscal policy, which is a tool of government to influence economic growth.

Because of its influence on enlightening living standards, state benefits, and employment levels, economic growth is considered as a goal that most governments strive to achieve. As a result, it is critical to comprehend the decisive elements that can lead to economic progress. In economic theory, government spending is one of the most essential elements. However, the current global economic crisis has resulted in government intervention. It is critical to do research in order to identify whether or not government spending is a deciding factor in economic growth.

Tax revenue, foreign aid, and rising public goods demand (roads, communication, power, education, and health) have expanded public expenditure in Nepal and it is also required for both internal and external security of the people. Therefore, government expenditures (both capital and recurring) have been increasing in recent years, i.e., government spending climbed from Rs 23549.8 million in 1990/91 to Rs 1191622 million in in aggregate of federal, provincial and local level expenditure in 2019/20 (Economic survey, 2020/21).

For example, total recurring expenditure in the government increased from Rs. 7570.3 million in 1990/91 to Rs. 667462 million in 2019/20. In addition, total government capital expenditures raised up from Rs. 15979.5 million in 1990/91 to Rs. 405556 million in 2019/20 (Economic survey, 2020/21). Furthermore, between the study periods of fiscal years 1990/91 and 2020/21, the various components of capital spending like that of economic service, social service, defense, agricultural, transportation and communication, education and health) were indicating a rising trend. Unfortunately, increased government spending has not translated into substantial growth and development, and Nepal remains one of the world's poorest countries. In 2019/20, the GDP growth rate was 1.4 percent, while the current year's growth rate is expected to be about 8 percent. In comparison to the previous decade, the current fiscal year's growth rate has remained modest. Over the last decade, Nepal's economic

growth was not seemed to be satisfactory. Although growth rates of above 4.0 percent were achieved in fiscal years 2007/08 and 2013/14, growth rates in other fiscal years were around 1 to 4 percent. At base prices, the country's economic growth rate over the last decade was only 4.5 percent (Economic survey, 2020/21).

Furthermore, many Nepalese people (more than 17 percent) were poor and their earning was less than \$2 a day. In addition, deteriorating infrastructure (particularly transportation and energy supply) has resulted in the collapse of several industries, as well as a significant degree of unemployment. Furthermore, macroeconomic indices such as the balance of payments, export, inflation rate, exchange rate, and national savings show that Nepal has struggled in recent years. The above-mentioned concerns shed light on Nepal's current economic position. As a result, the aim of this research is to explain the true impact of community outlay on the Nepalese economy.

Fiscal policy, at least in developing nations, plays a critical role in promoting socioeconomic activities (Jones, 1995; Mehrotra & Peltonen, 2005). Despite policy efforts to achieve elevated and justifiable GDP growth, the Nepalese economy has historically been stuck in a low growth trap. In terms of volume, public spending increased from 9.1 percent in fiscal year 1974/75 to 19.6 percent in fiscal year 1990/91 to 21.6 percent in fiscal year 2010/11 and 3.1 percent increase in fiscal year 2019/20, while average annual GDP growth at constant prices stayed at 4.5 percent (Economic survey, 2020/21). This condition has raised fundamental doubts about whether government spending can assist promote economic growth or not. It's also crucial to examine the degree of trade-off between fiscal stability and rapid economic growth, as the two are unlikely to be achieved simultaneously. In the context of Nepal, these concerns are largely unexplored, whereas theoretical literature suggests equivocal links between public spending and economic growth.

In this connection, it is necessary to explore the effects of public expenditure on economic growth of Nepal during the post-liberalization period.

Review of Literature

Various studies (Landau, 1983; Ram, 1986; United Nations, 1996 & Abdullah, 2000) have analysed the role of public expenditure on GDP growth by employing econometric time-series methodologies. These studies found the significant positive role of public expenditure on economic growth and development.

For Israel, Egypt, and Syria, Abu-Bader et al. (2003) explored the role of public expenditure by using a variance decomposition and multivariate co-integration method. The findings showed the existence of bidirectional and long-term positive relationship

between explained and explanatory variables and military spending was found to have a negative impact on three nations, but government expenditures aimed at promoting civil society was positively contribute to economic growth in Israel and Egypt.

Vamvoukas and Loizides (2005) used a time-series data set of macroeconomic variables and the method of causality test to analyze the impact of public spending on economic growth in four nations (Greece, the United Kingdom, and Ireland). Government expenditure Granger causes economic growth in the entire sample nations included in the research, at least in the short term, and this is true in both the long-run and short-run periods for Ireland and the United Kingdom. Furthermore, when inflation is added into the study's projected model, economic growth was found to be Granger-cause public expenditure in Greece and the United Kingdom.

Between 1997 and 2005, Owoye and Olugbenga (2007) used the regression approach to assess the contribution of government spending to economic development in 30 OECD countries. The findings highlighted the long-run link between public expenditure and GDP growth for each of the 30 OECD countries evaluated. Furthermore, this research indicated a unidirectional relationship between government expenditure and growth for 16 of the selected nations, although the results were inconsistent for 10 of the countries investigated.

Cooray (2009) used cross-sectional research of 71 nations to examine the relationship between the level of government expenditure and the quality of government services and economic growth. This study discovered a reasonable likelihood of improvement in government service quality and economic growth as a result of changes in government spending volume.

Through the use of the three-stage least squares (3SLS) technique, Somoye and Onakoya (2013) evaluated the impact of government capital expenditure on economic growth in Nigeria. The study found that public capital spending boosts Nigeria's economic growth. Furthermore, this research shows that government capital spending directly encourages oil and infrastructure growth. Furthermore, the report argues that the government should make privatization a priority in its economic policies.

Rai (2014) looked at how government spending affects economic growth. The data in this study was analysed using the ordinary least square approach. According to the findings, government spending has a major impact on the gross domestic product. National income is strongly affected by government expenditure.

Balaj and Lani (2017) used regression analysis to examine the impact of public expenditure on economic growth in Kosovo by covering 16 years of 2000-2016.

Researcher found the indirect effects of public expenditure on growth by employing various explanatory variables (protection, education, health, social protection, culture and religion, housing and communities, and environmental protection), but it stimulated the growth process.

Ahuja and Pandit (2020) examined the role of government expenditure on economic growth based on panel data covering 59 countries of 1990-2019 based on Granger causality test. This study has revealed that public expenditure fostering the economic growth but, the relationship was unidirectional.

The main takeaway from the current literature so far is that government spending does, in fact, contribute favourably to improving economic performance in a number of nations in varied ways. As a result, a basic point that any researcher considering the literature covered thus, far should consider is whether Nepal's economic growth is necessarily boosted by increasing government spending. This is an issue that needs to be looked at more.

Method

This section created the model and approach used to analyze the relationship between public expenditure components and economic development in Nepal. It is followed by a description of the study's variables, data sources, and diagnostic tests.

Research Design

The role of public expenditure on Nepal's economic growth was investigated using a causal comparative study approach in this work. The analysis employed Nepalese data from the fiscal years 1990/91 through 2019/20 with twenty-nine observations. The role of government expenditure on Nepal's GDP was investigated using regression models in this study. Agriculture, transportation and communication, education, and health are the components of government expenditure used in this study. The data was collected and subjected to robust time series property tests before being analysed using a regression model.

Nature and Source of Data

Secondary data was used in this study for the fiscal years 1990/91 to 2019/20. The information is derived from official government sources such as Economic Surveys, Budget Speeches, Statistical Abstracts, Economic Reports, and Public Expenditure Reports, which span twenty-five fiscal years. The role of public expenditure on Nepal's economic growth is examined using twenty-six observations of each variable.

Analysis Tools

To handle and analysis the data, this article used the Eviews (version 9.5) tool. The unit root test and regression analysis were utilized in this work, as well as statistical tests of significance such as the t-test, F-test, and Adjusted R2. The impact of government spending on Nepal's economic growth was studied using ordinary least square regression models.

Variables

In this article, government expenditure components such as agriculture, health, education, and transportation and communication are treated as independent variables, whereas GDP growth is treated as a dependent variable. The model used in this study considers economic growth as indicated by the annual GDP growth rate.

Model Specification

The set up to explore the relationship between public expenditure and economic development is represented in econometric terms as:

$$\text{GDP}_t = \alpha + \beta \text{PE}_t + \mu_t \quad (1)$$

The linearity of the data collection is assumed in the Ordinary Least Square (OLS) approach. As a result, the obtained data has been changed to log form, and the following final estimation equation can be constructed:

$$\text{LnGDP}_t = \alpha + \beta \text{LnPE}_t + \mu_t \quad (2)$$

Where, LnPE denotes logarithm of public expenditure, LnGDP denotes logarithm of gross domestic product.

Similarly,

$$\text{LnGDP}_t = \alpha + \beta \text{LnRP}_t + \mu_t \quad (3)$$

$$\text{LnGDP}_t = \alpha + \beta \text{LnCP}_t + \mu_t \quad (4)$$

$$\text{LnGDP}_t = \alpha + \beta \text{LnPE}_{ag} + \beta_1 \text{LnPE}_{he} + \beta_2 \text{LnPE}_{ed} + \beta_3 \text{LnPE}_{tc} + \mu_t \quad (5)$$

Where, GDP = dependent variable

RPe = Current public expenditure

CPe = capital public expenditure

PEag = public expenditure on agriculture

PEhe = public expenditure on health

PEed = public expenditure on education

PEtc = public expenditure on transportation and communication

α = numerical constant

$\beta, \beta_1, \beta_2, \beta_3$ = coefficients of the explanatory variables

t = time factor

Ln = natural logarithm and
 μ = noise term

Testing for Stationary

Non-stationary time series data is a persistent difficulty in empirical analysis. The project proposes to run tests for Stationary to prevent estimating and getting erroneous results. The augmented Dick Fuller test is used in this study to seek for stationary and determine the sequence of integration. The (ADF) test for stationary in a series of variables, such as GDP, entails estimating equations.

$$\Delta GDP = \alpha_0 + \beta t + \theta y_{t-1} + m_i = 1\rho \Delta GDP_{t-1} + e_t \text{ (This is for levels)}$$

$$\Delta \Delta GDP = \alpha_0 + \beta t + \theta \Delta y_{t-1} + m_i = 1\rho \Delta \Delta GDP_{t-1} + e_t \text{ (This is for first differences)}$$

There are circumstances where ADF does not have a drift or a trend, but the example has both. Where α_0 denotes a drift, m is the number of delays, e denotes the error term, and t denotes the trend.

The null hypothesis H_0 : states that the given series of data have unit root whereas $(\alpha_0) = (\alpha_0, 0, 1)$ and alternative hypothesis $H_1: (\alpha_0) \neq (\alpha_0, 0, 1)$ (no unit root)

The aim of the test is to reject null hypothesis of series have unit root.

Data Analysis

GDP is the dependent variable in this analysis, while Pet, RPet, CPet, PEag, PEhe, PEed, and PEtc are the independent variables. Furthermore, variables have been logged using Eviews version 9 computer programs to solve the data distribution problem for regression analysis so far because data has been transported in billions of Nepalese Rupees.

This section aims to estimate the effect of government spending on the country's GDP using a regression equation estimating system based on time series data from an economic survey.

Descriptive Statistics

Because this study used a descriptive research methodology, descriptive statistics were used to describe the characteristics of variables over the course of the investigation. Table I contains the descriptive statistics:

Table 1

Descriptive Statistics of Variables for Period of 1990/91 to 2019/20

	N	Min	Max	Median	Mean	Std. Dev.	Jarque-Bera
LnGDP	29	9.359	12.264	10.736	10.827	0.853	1.204
LnPEag	29	5.301	8.081	6.536	6.554	0.636	1.463
PEhe	29	4.979	9.057	6.901	7.028	1.358	1.955
LnPEed	29	3.604	8.104	6.204	5.888	1.337	1.558
LnPE _{tc}	29	5.008	7.694	6.327	6.352	0.521	1.694
LnPE _T	29	7.764	12.976	9.036	9.626	1.680	2.134
LnRPe	29	6.629	12.734	8.558	8.941	1.799	1.956
LnCPe	29	7.376	11.394	7.913	8.536	1.287	2.102

Source: Calculation based on data on Economic Survey 2010/11 & 2020/21

The estimated summary statistics of the variables are presented in Table 1. It displays the number of observations, central tendency measures, standard deviation measures, minimum and maximum values, and Jarque-Bera statistics.

All of the variables LnGDP, LnPEag, LnPEed, LnPEhe, LnPEtc, LnPET, LnRPe, and LnCPe have positive mean and median values, as shown in Table 1. The average government expenditure on agriculture is 6.544%, with a minimum of 5.301% and a maximum of 8.081%, according to the results. The standard deviation of government expenditure on agricultural is 0.636, indicating that public expenditure in Nepal's agriculture sector is very variable. Jarque – Bera statistics have a rating of 1.204, indicating that the data on public expenditure on agriculture has no non-normality issues. LnGDP, LnPEed, LnPEhe, and LnPEtc had mean values of 10.827%, 7.028%, 5.888%, and 6.352, respectively, with standard deviations of 0.853%, 1.358%, 1.337%, and 0.521%. Finally, Table I shows the Jarque-Bera value indicating that all of the variables in the GDP and public expenditure data are normally distributed.

Unit Root Test

This test is used to observe the time series data are stationary or not. For the unit root test of time series data of variables (Table 2)

Table 2

Stationary test

Variables	ADF Test			DF-GLS Test			PP-Test		
	S i c lag	T- Stat	Critical value at 5%	Sic Lag	T-Stat	Critical value at 5%	T-Stat	Critical value at 5%	
Ln(GDP)	0	3.95	3.62	0	3.47	3.19	3.95	3.62	
Ln(ED)	0	4.44	3.62	0	4.69	3.19	5.12	3.62	
Ln(AG)	0	5.63	3.62	0	5.69	3.19	5.62	3.62	
Ln(HEL)	0	6.59	3.62	0	6.88	3.19	11.11	3.62	
LnTC	0	7.03	3.62	0	7.01	3.19	6.91	3.62	
LnPE _T	0	4.93	3.62	0	5.16	3.19	4.94	3.62	
LnRPe	0	5.44	3.62	0	5.65	3.19	5.6	3.62	
LnCPe	0	4.69	3.62	0	4.85	3.19	4.62	3.62	

Sources: Calculation based on data on Economic Survey 2010/11&2020/21

Table 2 uses the conventional ADF test, the PP test, and DF-GLS test to check the stationary of the variables. These three test shows that all variables included in the model have no unit root at 5% level of significant.

Results and Discussion

Regression analysis models are utilized in this study to explain the relationship between components of public expenditure and their impact on Nepal's GDP growth. Table 3 shows the regression results for the relationship between total public spending, recurrent public spending, and development public spending, as well as their impact on GDP growth. Table 4, on the other hand, shows the regression results of univariate and multivariate regression models under the previously defined equation to explain the relationship between various components of public expenditure and their impact on GDP growth in the Nepalese economy.

Table 3

Regression Relationship of GDP with Total Component of Public Expenditure

Models	Constant	LnPE _T	LnRPe	LnCPe	Adj.R ²	F	DW
1	6.29*** (16.26)	0.47*** (11.88)	-	-	0.85	141.31	1.43
2	6.88*** (20.88)	-	0.44*** (12.19)	-	0.76	14.88	1.55
3	5.83*** (10.42)	-	-	0.58*** (9.02)	0.78	81.47	2.14

Sources: Calculation based on data on Economic Survey 2010/11&2020/21

The first regression model in Table 3 reveals that total public expenditure and GDP growth in Nepal are positively related. Models two and three, on the other

hand, reveal a positive link between regular and capital public spending in Nepal and nominal GDP. The regression coefficient of total public expenditure to GDP is 0.47% in Table 3, indicating that a 1% increase in public expenditure correlates to a 0.47% increase in GDP in Nepal. Similarly, the coefficients of recurring and development public expenditures in relation to GDP are 0.44% and 0.58%, respectively, implying that a 1% rise in recurrent and development public expenditures leads to 0.4% and 0.58% increases in GDP. According to the regression coefficient and t-statistics, the association between public expenditure and GDP growth in Nepal appears to be positive and statistically significant at the 1% level. According to the findings of this study, public spending has the ability to forecast GDP growth in Nepal.

The adjusted coefficients of determination ($Adj.R^2$) are 0.85%, 0.76%, and 0.78%, respectively, indicating that total public expenditure, recurrent public expenditure, and capital expenditure have explanatory power in Nepal's GDP development. The F and t-statistics of all models are significant, indicating that the models are well-fitting, and the DW test also reveals that the models are free of auto-correlation.

Table 4

Regression Relationship of GDP Growth with Components of Public Expenditure

Models	Constant	PEag	PEhe	Peed	PEtc	Adj.R ²	F	DW
4(a)	6.26*** (3.98)	0.69*** (3.92)	-	-	-	0.23	8.49	2.11
4(b)	6.58*** (25.05)	-	-	0.60*** (16.39)	-	0.61	26.87	1.71
4(c)	7.16*** (40.53)	-	0.62*** (21.25)	-	-	0.72	45.1	1.92
4(d)	2.62* (1.96)	-	-	-	0.29*** (6.16)	0.60	38.02	1.70
4(e)	6.05*** (18.9)	0.20*** (3.85)	0.58*** (23.11)	-	-	0.84	36.9	1.82
4(f)	5.82*** (11.77)	0.15* (1.78)	-	0.57*** (14.54)	-	0.72	14.8	1.79
4(g)	2.09 (1.46)	0.21 (1.03)	-	-	0.16*** (4.76)	0.60	19.6	1.74
4(h)	6.81*** (40.4)	-	0.39*** (6.06)	0.24*** (3.75)	-	0.76	36.1	1.72
4(i)	6.23*** (11.75)	-	0.56*** (13.24)	-	0.20* (1.83)	0.75	25.09	1.27
4(j)	4.64*** (9.78)	-	-	0.49*** (13.42)	0.42*** (4.5)	0.65	25.7	1.40

Models	Constant	PEag	PEhe	Peed	PEtc	Adj.R ²	F	DW
4(k)	5.96*** (23.66)	0.16*** (3.93)	0.40*** (8.1)	0.19*** (3.83)	-	0.88	40.5	1.47
4(l)	5.61*** (14.36)	-	0.29*** (4.81)	0.26*** (4.92)	0.25*** (3.28)	0.76	35.2	1.69
4(m)	4.45*** 8.62	0.16 0.90	-	0.48*** (13.04)	0.40*** (3.95)	0.81	17.3	1.46
4(n)	5.74*** (12.29)	0.18*** (3.27)	0.56*** (15.83)	-	0.08 (0.91)	0.76	24.4	1.9
4(o)	5.37*** (15.78)	0.22*** (3.04)	0.33*** (4.66)	0.24*** (4.66)	0.16** (2.25)	0.92	37.1	1.94

Sources: Calculation based on data on Economic Survey 2010/11&2020/21

Table 4 shows univariate, bivariate and multivariate regression results of different components of public expenditure and their effect on GDP growth of Nepal. The univariate regression models 4(a), 4(b), 4(c) and 4(d) in Table 4 shows that regression coefficient of public expenditure in agriculture, health, education and transportation and communication on GDP growth are positive and each of them are statistically significant. The regression coefficient 0.69 implies that 1% increase in government expenditure in agriculture sector leads to 0.69% increase in GDP growth in Nepal. The coefficient of government expenditure is 0.62 indicating that 1% increase in government expenditure in health sector leads to 0.62% increase in GDP in Nepal. The coefficient of government expenditure in education sector is found to be 0.60 implies that 1% increase in government expenditure in education sectors causes 0.60% increase in GDP in Nepal. The regression coefficient of government expenditure in transportation and communication is 0.29% implies that 1% increase in government expenditure in transportation and communication leads to 0.29% increase in GDP growth in Nepal. The value of adjusted coefficient of determination (Adj.R²) are 0.23, 0.61, 0.72 and 0.60 which indicate that 23%, 61%, 72% and 60% of GDP growth are explained by government expenditure in agriculture sector, health sectors, education sectors and transportation and communication sectors respectively. F and t-statistics of all univariate models are significant which indicates the best fit of models and DW test also indicates the models have no auto-correlation.

Similarly, the bivariate regression models 4(e), 4(f), 4(g), 4(h), 4(i), and 4(j) in Table IV show that regression coefficient of government expenditure on agriculture, health, education and transportation and communication sectors on GDP growth are positive. The regression coefficients of all bivariate regression models indicate that all sectors of government expenditure have positive impact on GDP growth in Nepal. The value of adjusted coefficient of determination (Adj.R²) are 0.84, 0.72, 0.60, 0.76,

0.75 and 0.65 which show explanatory power of government expenditure in different sectors on GDP growth when only two sectors are considered. F and t-statistics of all bivariate models are significant which indicates the best fit of models and DW test also indicates the models have no autocorrelation.

Finally, Table 4 presents the result of multiple regressions related to government expenditure and their effects on GDP. The multiple regression model 4(O) shows that regression coefficient of government expenditure on agriculture, health, education and transportation and communication sectors is positive and statistically significant at 1% level of significant. The regression coefficient of government expenditure on agriculture sector (0.22) indicating the 1% increase in government expenditure in agriculture sector rising the GDP by 22% in Nepal. The regression coefficient of public expenditure on health sector (0.33) implying that 1% increase in government expenditure on health rising GDP by 33%. Similarly, coefficient of public expenditure in education and transportation & communication sector is found to be 0.24 and 0.16 respectively which implies that one percent increase in public expenditure in education and transportation and communication sector causes 24% and 16% increase in GDP growth in Nepal. The value of adjusted coefficient of determination ($Adj.R^2$) is 0.92 which indicates that 92% of GDP growth is explained by components of public expenditure. F and t-statistics of multiple regression models are statistically significant which indicates the best fit of model. The value of DW is 1.94 which indicates the model has no auto-correlation. Thus, regression result concludes that there is a positive and significance relationship between government expenditure in agriculture, health, education and transportation and communication sectors of Nepal.

Conclusion

This paper shows that there are favorable correlations between government spending and economic growth. The impact of government spending on economic growth as a whole is statistically significant. The Keynesian theory stated that active government of notion engage in the economy through numerous policy tools is supported by this study. This article also adds to the growing body of data showing government spending affects GDP growth and has a major impact on it. The result of this study is consistent with GDP growth is positive function community expenditure (Rai, 2014; Balaj & Lani, 2017; Ahuja & Pandit, 2020).

This study is not covered the alternative costs appear in the society to measure loss of social benefits to apply the policy by the government and planners. This is the potential area of further research for potential researcher.

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