Nexus between Public Revenue, Public Expenditure and Economic Growth: Evidence from Nepal

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Abstract

The relationship between public revenue, public expenditure, and economic growth has been a subject of extensive debate in economic literature. This study investigates the dynamics between public revenue, public expenditure, and economic growth in Nepal over the period from 1975 to 2022, utilizing co-integration and Granger causality tests. The results of the analysis reveal a unidirectional causal relationship from nominal GDP to government revenue, suggesting that nominal GDP is a significant determinant of government revenue in the short run. The study underscores the importance of economic growth in forecasting public revenue, providing valuable insights into fiscal policy formulation and economic planning in Nepal.

Keywords: Economic Growth, Public Revenue, Cointegration, Government Spending

1. Introduction

A key component of macroeconomic management, fiscal policy entails the deliberate manipulation of taxation and expenditure by the government to accomplish goals like price stability, growth, and full employment (Blanchard & Johnson, 2013). Its effectiveness in correcting market imperfections and advancing fair income distribution is well known (Stiglitz & Rosengard, 2015). The complex relationship between public revenue, spending, and economic growth has been a central theme in economic discourse, with differing interpretations of the effects of fiscal policy coming from the Neoclassical and Neo-Keynesian schools of thoughts (Romer, 2018; Mankiw, 2019). Governments can use fiscal policy to address issues like income inequality, unemployment, and environmental protection (Auerbach & Gale, 2016). Productive and allocative efficiency can be improved by addressing market failure and promoting equity in income distribution through government interventions like taxation, spending, regulation, and initiatives (Atkinson & Stiglitz, 2015).

Karagianni et al. (2012) stated that in neoclassical economic growth models, the impact of taxes on economic growth is temporary. In contrast, endogenous models suggest that fiscal policies, including taxes as policy tools, have a long-term effect on growth. Gurdal et al. (2020) stated that public expenditure drives economic growth, while tax revenue is crucial for funding this expenditure, highlighting a complex relationship among public spending, revenue, and growth. However, Arvin et al. (2021) argued that public expenditure and revenue are interconnected drivers of economic growth, with effective fiscal policies enhancing governance and facilitating sustainable development in Lower Income Countries (LICs) and Lower Middle-Income Countries (LMICs).

Ramey and Shapiro (1998), Burnside et al. (2003), and Yamin and Umaima (2009) stated that changes in the structure and pattern of fiscal instruments affect output positively and negatively and affect consumption, which supports Neoclassical Theory. However, some empirical studies by Gnip (2013), Bonzo (2022), and Tiony (2023) revealed positive responses to output and consumption due to changes in the structure and pattern of fiscal instruments and supported the Neo-Keynesian Theory.

This study provides three main contributions to improve knowledge of the relationship between public revenue, government spending, and economic growth in the Nepalese environment. It starts by thoroughly analyzing how income, expenses, and growth are related to one another. Second, it establishes both short- and long-term relationships between the variables under study using Granger cointegration analysis. Third, it examines the causal linkages between taxation, spending, and growth while taking interest rates into account by using the Granger causality test.

The rest of the study is organized as follows: The theoretical underpinnings and empirical literature are methodically reviewed in the review part. The study strategy, model specifications, and analysis techniques are

all presented in the methodology section. The empirical results are presented in Section 4. The results are summarized, and policy implications are discussed in the final section.

Literature Review

The theoretical underpinnings of this study are rooted in both neoclassical and Keynesian economic thought, which offer contrasting perspectives on the impact of fiscal policy on economic outcomes. The joint contributions of Hall (1980), Barro (1987), Mankiw (1987), and Baxter and King (1993) established the neoclassical approach, which examined how fiscal policy shocks affected the economy. According to the neoclassical paradigm, the method of funding public spending is the primary factor in determining how well an expansionary fiscal policy works. When analyzing the impact of discretionary fiscal policy on the economy, Baxter and King (1993) assumed that government spending would be financed by lump-sum taxes. Their findings showed that an expansionary fiscal policy reduced household wealth, made them poorer, and thus increased the labor supply. An increase in labor supply resulted in a drop in real wages and labor's marginal efficiency due to the ongoing demand for work. Production rose as a result, while consumption fell. If the shock persisted, however, private investment would rise due to a rise in capital's marginal efficiency, private expenditure would fall, and real wages would revert to their previous level.

The New Keynesian models asserted that a rise in government spending has a favorable effect on private consumption and production during the multiplier effect. They were developed with some theoretical underpinnings, such as market failure, nominal price rigidities, non-Ricardian behavior, increasing returns, and monopolistic competition. According to Devereux et al. (2007), higher government expenditure increases the demand for commodities, which raises real wages and labor demand. Gali et al. (2007) expanded the New Keynesian model by introducing consumers to the non-Ricardian "rule of thumb," which caused their consumption to positively respond to an increase in government spending.

Blanchard and Perotti (2002) used a mixed structural VAR/event study methodology to investigate the dynamic effects of shocks in government spending and taxation on U.S. economic activity throughout the postwar era. By using institutional data on tax and transfer systems to identify the automatic responses of spending and taxes to economic activity, fiscal shocks were identified. The results showed that whereas positive shocks to taxes have a negative impact on output, positive shocks to government spending increase output. The study also showed that increases in government spending and taxation both considerably reduce investment spending.

Over the years 1973 to 2002, Zulketly et al. (2006) looked into the relationship between government spending, revenue, and economic growth in the ASEAN-5 countries (Malaysia, Indonesia, Thailand, Singapore, and the Philippines). The study examined a number of hypotheses, including the spending-revenue, revenue-spending, and bidirectional causation hypotheses, using Johansen co-integration and Variance Decomposition analysis. The findings showed that government revenue, expenditure, and economic growth are all correlated over the long run in all five ASEAN nations. The spending-revenue hypothesis is supported by the variance decomposition study, which showed that expenditure strongly influences revenue in Malaysia, Indonesia, and the Philippines. Nonetheless, revenue was the primary factor in both Thailand's and Singapore's budget decisions, supporting the revenue-spending hypothesis.

Using the Blanchard and Perotti (2002) SVAR framework, Gnip (2013) assessed the stabilizing impacts of fiscal policy in Croatia for the quarters ending in the first quarter of 1996 and ending in the fourth quarter of 2011. The empirical findings showed that Croatia's fiscal transmission mechanism follows the principles of the Keynesian model, with output reacting favorably to shocks related to government spending and negatively to shocks related to taxes. Indirect taxes had a major role in the negative reaction to tax shocks, whereas government investment and consumption drove the positive response to expenditure shocks.

Boiciuc (2015) applied a VAR technique based on the Recursive Approach and Blanchard and Perotti (1999) to quarterly data from 2000 to 2012 to examine the effects of government expenditure and tax revenue shocks on economic development in Romania. The impulse response functions showed that positive shocks to government spending and revenue both cause the GDP to rise.

Saba et al. (2015) used data from 1972 to 2014 to study the impact of changes in fiscal policy on Pakistan's economy using the SVAR model. The study's findings showed that raising government revenue and spending increases economic output in the short and medium terms, but has little long-term effect and raises prices.

Using ARDL co-integration and ECM, Efuntade et al. (2020) examined the relationship between capital spending, taxes, and economic development in Nigeria from 1989 to 2019. The research indicates that long-term economic growth is positively impacted by capital spending and petroleum profit tax, whereas growth is negatively impacted by business income tax and VAT. The findings confirmed the Wagner and Friedman hypotheses, which hold that government expenditure is driven by economic growth and that economic growth is influenced by taxes. The government should strengthen fiscal cooperation, as the research recommended.

Using panel causality tests, Gurdal et al. (2021) examined the relationship between tax income, government spending, and economic growth in the G-7 from 1980 to 2016. The study revealed a bidirectional correlation between government spending and economic growth, as well as a unidirectional association between tax revenue and economic growth. According to the study, the G-7 countries' tax policies can accomplish their economic objectives.

From 1991 to 2018, Moyo et al. (2021) investigated the relationship between taxation, government spending, and economic growth in South Africa. Using a range of econometric techniques, the study discovered that while tax and spending policies help South Africa's economy thrive, government spending has a beneficial short- and long-term influence on economic growth. Policymakers in South Africa are advised by the report to concentrate on these areas. Using a VAR model, Priyadipa et al. (2022) examined the impact of fiscal instruments on economic development in Indonesia from 2005 to 2020. According to the study, government expenditure has a negative influence on growth, but government revenue has a beneficial impact. The study also demonstrated that while government spending and growth are correlated, government revenue and economic growth are not.

Using the SVAR model, Bonzu (2022) investigated the effects of fiscal policy shocks on important economic variables in Sierra Leone between 1980 and 2014. The results demonstrated that, in line with Keynesian theory, government expenditure increases output and private consumption. Higher government expenditure results in higher revenue, while tax shocks reduce output and private investment. To stabilize the economy, the research suggested emphasizing direct taxes and capital spending.

Jimenez et al. (2023) used hybrid TVP-VAR-SV models to examine how fiscal shocks affected Peru's GDP growth between 1995 and 2018. The study's conclusions demonstrated that, with capital spending multipliers rising over the previous 20 years, fiscal shocks-particularly expenditure shocks are the significant contributors to GDP growth. The report recommended concentrating on capital investment in fiscal policy and routinely updating fiscal multipliers.

Tiony (2023) used a VAR technique to study the relationship between fiscal policy and important economic parameters in Kenya from 1998 to 2023. According to the study, rising tax and spending levels both influence interest rates and spur economic growth. To effectively design monetary and fiscal policies that support stability and growth, policymakers must consider these facts.

2. Methods

To achieve the objective of this study, which is to investigate the nexus between government revenue, government expenditure, and economic growth in Nepal from 1975 to 2022, the following implicit functional model in equation (1) is adopted:

NGDP= (EXP, REV, INT)   (1)

Where: NGDP = Nominal GDP, EXP = Government expenditure, REV = Government revenue, and INT = Interest rate

Taking natural logs on both sides:

$\ln NGDP = \beta_0 + \beta_1 \ln EXP + \beta_2 \ln REV + \beta_3 \ln INT + \varepsilon_t$ (2)

This study uses data from 1975 to 2022 for 47 years to apply modern time series to analyze and estimate the relationship between the selected fiscal instruments like government expenditure, government revenue and interest rate; and the growth variable, nominal GDP. The techniques of time series analysis employed in this study include the unit root test, Engle-Granger cointegration techniques and ECM. This study uses E-views 10, econometric software for carrying out different tests.

3. Results and Discussion

This section presents the empirical findings, offering a foundation for a more comprehensive understanding of the linkage between public revenue, public expenditure, and economic growth. These findings contribute valuable insights for informed decision-making and the formulation of policies that support sustained economic growth in Nepal. Table-1 portrays ADF Unit Root tests results of all the variables under study.

Table 1. ADF Unit Root Tests Results

Variable	Level	First Difference	Order of Integration
$LNNGDP$	-1.8786	-3.9177**	$I(1)$
$LNEXP$	-2.1331	-3.9845**	$I(1)$
$LNREV$	-1.1444	-3.4263*	$I(1)$
$LNINT$	-2.2106	-6.3245***	$I(1)$

***,**,* significant at 1%, 5% and 10% levels, respectively
Source: Data Processed (2025)

It is concluded that the existence of the unit root at this level is acknowledged in all situations after interpreting data and comparing the exported values with the corresponding critical values for ADF at a significance level of 1%, 5%, and 10% and p-values for 0.01, 0.05, and 0.1 respectively. Our research's variables are therefore not levelly stationary. We find that, at the significance levels of a = 1%, 5%, and 10%, our data are stationary rather than running the same test for the initial differences. The variables are determined to be stationary at $I(1)$.

The Engle-Granger cointegration test is based on the simple idea that if there is a cointegration relationship, the OLS estimates of the regression $Y_t = a + bX_t + e_t$ are reasonable, so the residuals $e_t = Y_{t-a} - bX_t$ should be $I(0)$. So, an ADF test in the residuals for the regression below should show that there is no unit root. The *OLS* results *between LNNGDP and LNEXP, LNREV, and LNINT* are portrayed in table 2.

Table 2. OLS results between LNNGDP and LNEXP, LNREV, and LNIN

Variable	Coefficient	Std. Error	t-Statistic	Prob.
$LNEXP$	-0.1058	0.1764	-0.5998	0.5531
$LNINT$	-0.0120	0.0162	-0.7392	0.4655
$LNREV$	0.9020	0.1639	5.5017	0.0000
C	3.9649	0.2038	19.4476	0.0000

Source: Data Processed (2025)

To examine the cointegration among the variables, the stationary test of the residuals is performed using the ADF test and test results are presented through Table 3.

Table 3. E-G Cointegration Test Results

Description	t-Statistic	Prob.
Augmented Dickey-Fuller test statistic	-3.919685	0.0039

Source: Data Processed (2025)

As can be seen from the accompanying table, the residuals seem to be $I(0)$. At a significance level of 1%, the nonstationary null hypothesis is thus rejected. This finding suggests that there is an equilibrium link, or long-term relationship, between the variables and nominal GDP since they are integrated. Now, the next job is to test VECM and the VECM results between LNNGDP and other parties are presented through Table 4.

Table 4. ECM Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.0764	0.0158	4.8329	0.0000
$D(LNEXP)$	0.3180	0.1045	3.0407	0.0049
$D(LNREV)$	0.4088	0.0939	4.3515	0.0001
$D(LNINT)$	0.0012	0.0140	0.0860	0.9320
$RESID01(-1)$	-0.1930	0.1255	-1.5374	0.0134

Source: Data Processed (2025)

The results from the Error Correction Model (ECM) suggest both short-term dynamics and long-term adjustments among the variables in the model. In the ECM, the dependent variable $[(D(LNNGDP)]$ is the first difference of the logarithm of GDP which is regressed on the first differences of the explanatory variables ($D(LNEXP), D(LNREV)$, and $D(LNINT)$), as well as the lagged residual from the co-integration equation ($RESID01(-1)$). The coefficient of $D(LNEXP)$ is 0.318045, which is statistically significant with a p-value of 0.0049. This indicates a positive short-term relationship between changes in expenditure and changes in GDP. A 1% increase in expenditure is associated with a 0.318% increase in GDP in the short run. The coefficient of $D(LNREV)$ is 0.408809, also statistically significant with a p-value of 0.0001. This shows that a 1% increase in revenue leads to a 0.409% increase in GDP in the short term, suggesting that revenue is a strong driver of short-

term economic growth. The coefficient of $D(LNINT)$ is 0.001210, which is statistically insignificant ($p-value = 0.9320$). This indicates that changes in interest rates do not have a significant short-term impact on GDP growth in this model. The coefficient of the lagged residual ($RESID01(-1)$) is -0.193001, with a p-value of 0.01347. This is statistically significant and indicates the speed of adjustment back to the long-term equilibrium after a short-term shock. The negative sign of the coefficient suggests that if the economy deviates from its long-run equilibrium (as indicated by the residual), there will be a correction towards the long-run path at a rate of 19.3% per period. Overall, the ECM results show that while government revenue and expenditure have a significant short-term impact on economic growth, interest rates do not, and the model suggests a relatively quick adjustment process towards the long-term equilibrium, as evidenced by the significant and negative coefficient on the lagged residual.

4. Conclusion

A key component of macroeconomic management, fiscal policy entails the deliberate manipulation of taxation and spending by the government to accomplish certain national economic objectives. Using the Engle-Granger cointegration and ECM tests, the study aims to investigate the relationship between public revenue, public expenditure, and economic growth. A long-run relationship between the independent variables and nominal GDP is confirmed by the Engle-Granger cointegration test, which show that the variables are integrated. A short-run causality is detected between GDP and government; and expenditure and GDP and government revenue. Government expenditure and revenue Granger causes GDP during the study period.

The findings have important implications for policymakers, indicating that effective revenue generation strategies may be better supported by focusing on fostering economic growth, rather than solely adjusting fiscal variables like government expenditure or interest rates. Ultimately, the study contributes to a deeper understanding of the dynamics between fiscal policy and economic growth in the context of Nepal's economy.

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