The Impact of Foreign Aid and Domestic Revenue on Government Expenditure in Nepal: An Error Correction Approach

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ABSTRACT

The Impact of Foreign Aid and Domestic Revenue on Government Expenditure in Nepal: An Error Correction Approach explored the impact of foreign aid and domestic revenue on government expenditure in Nepal using an Error Correction Model and time series data from 1975 to 2022. The study aimed to find both short- and long-term correlations between these factors.

The empirical findings demonstrated that both foreign aid and domestic revenue had a statistically significant and favourable influence on government expenditure in the short and long term. More precisely, there was a direct correlation between a 1 percent increase in foreign aid and a 0.42 percent increase in government expenditure, while a 1 percent increase in domestic revenue was associated with a 0.58 percent increase. The Error Correction Model confirmed a cointegrating relationship, suggesting a stable equilibrium between the variables and indicating that deviations from the long-run equilibrium were corrected over time.

The study concluded that external assistance and domestic resource mobilization were essential for financing government spending in Nepal. These findings underscored the importance of implementing effective policies to attract foreign aid and enhance domestic revenue collection to support sustainable economic growth.

1. INTRODUCTION

The Nepalese economy, classified among the least-developed countries globally, remains heavily dependent on foreign aid for several decades (Karki & Pappas, 2020). Nepal utilizes foreign aid for both

budgetary support and non-budgetary purposes, with such aid forming a significant portion of its government budget in recent years (Kharel et al., 2021).

The effect of foreign aid on Nepal's economic progress generates significant controversy.Some research indicates that foreign aid is crucial for maintaining public investment and achieving the government's development goals (Kharel et al., 2021; Sharma, 2011). Conversely, other studies suggest that foreign aid negatively affects the country's economic growth (Karki & Pappas, 2020).

Government expenditure is pivotal in economic development as It provides funding for vital areas including healthcare, education, infrastructure, and social services. Government expenditure in a developing country like Nepal is vital for addressing socio-economic challenges and promoting sustainable development (Kharel et al., 2021). Nonetheless, the government's capacity to fund these expenditures often faces constraints due to limited domestic resources and fluctuating foreign aid inflows (Mainali, 2013).

In many developing nations, foreign aid and domestic revenue are the primary funding sources for government expenditure. Foreign aid, encompassing grants and concessional loans from international donors, significantly contributes to Nepal's development budget (Pandey, 2018). Historically, Nepal has relied on foreign aid to supplement its domestic revenue, which frequently falls short of the total government expenditure requirements (Shrestha & Kautish, 2020). This reliance underscores the importance of understanding foreign aid's impact on government spending patterns.

Domestic revenue, generated mainly through taxes and non-tax revenues, is another crucial component of government finances (Vasishtha, 2023). The government's ability to mobilize domestic resources reflects its fiscal health and economic stability. Efficient domestic revenue mobilization reduces dependency on foreign aid and enhances the government's capacity to independently finance public goods and services (Wilford & Wilford, 1978). However, fluctuations in domestic revenue, influenced by economic cycles, policy changes, and administrative efficiency, challenge consistent government spending (Akter & Nila, 2021).

This study explores the complex relationship between Nepal's foreign aid, domestic revenue, and government expenditure. It acknowledges that foreign assistance can create dependency but, if well-managed, can complement domestic revenue by funding growth-stimulating investments (Moyo, 2009; Chenery, 1967). This research fills a significant need in the existing literature by utilizing an Error Correction Model (ECM) to examine the combined influence of foreign aid and domestic revenue on government spending. The ECM approach allows for the analysis of both short-term fluctuations and long-term correlations. (Alogoskoufis & Smith, 1991; Engle & Granger, 1987).

Despite the crucial role of government expenditure in Nepal's economic development, the country's dependence on foreign aid and volatile domestic revenue complicate sustainable fiscal management (Mainali, 2013). Foreign aid can create dependency and hinder domestic revenue mobilization, while insufficient domestic revenue limits the government's capacity to finance essential services independently. Understanding the joint influence of foreign aid and domestic revenue on government expenditure is vital. An Error Correction Model (ECM) is crucial in analyzing short-term fluctuations and long-term relationships between these variables, providing insights to inform balanced and sustainable fiscal policies in Nepal (Kunwar, 2022). This approach is essential for delivering nuanced insights into the dynamic interactions and informing policies to achieve a balanced and sustainable fiscal framework in Nepal.

This study seeks to empirically examine the influence of foreign aid and local revenue on government expenditure in Nepal through the utilization of an Error Correction Model (ECM). The main objective is to evaluate these variables' short-term changes and long-term equilibrium interactions. The research seeks to understand how changes in foreign aid and domestic revenue influence government spending over time, providing insights to inform policy decisions for optimizing foreign aid use and enhancing domestic revenue mobilization, contributing to a sustainable and effective fiscal policy framework in Nepal.

2. LITERATURE REVIEW

Theoretical Framework

Government expenditure, foreign aid, and domestic revenue are interrelated components that influence a country's fiscal policy and economic development. Several theories provide a foundation for understanding these relationships.

The Keynesian Theory asserts that government spending can enhance economic growth by increasing aggregate demand, especially during periods of economic recession. According to this theory, government spending on infrastructure, education, and health can create jobs, increase income, and spur economic activity (Keynes, 1936). This theory emphasises the significance of adequate government spending in stimulating economic growth.

Public Finance Theory examines the methods by which governments generate income and distribute funds in order to accomplish economic and social goals. This theory emphasizes the role of efficient tax systems in mobilizing domestic revenue and the importance of public expenditure management in ensuring fiscal sustainability (Musgrave & Musgrave, 1989). It suggests balancing foreign aid and domestic revenue is crucial for sustainable government expenditure.

The Dependency Theory criticizes the dependence on foreign aid, contending that it might engender a dependency syndrome, in which recipient nations grow reliant on external funds, preventing their capacity to establish autonomous fiscal systems (Dos Santos, 1970). This hypothesis emphasizes the possible adverse effects of foreign aid on the ability to generate local revenue and maintain budgetary independence.

Empirical Studies

Several studies conducted in developed and developing countries looked at how foreign aid affects public spending. As an example, research by Burnside and Dollar (2000) indicates that developing nations' economies benefit from foreign aid, leading to growth with sound policies, suggesting that aid can support government expenditure when aligned with good governance. Similarly, Morrissey (2012) argued that foreign aid can enhance public investment and social spending, contributing to economic development.

In contrast, some studies highlight the potential adverse effects of foreign aid. Rajan and Subramanian (2005) found that high aid levels can undermine institutional quality and create aid dependency, reducing incentives for domestic revenue mobilization. These findings support the dependency theory's critique of foreign aid.

Studies conducted at the regional level have produced inconsistent results. Foreign aid in sub-Saharan Africa has had a positive influence on public spending and economic growth in nations with strong governance and efficient institutions. However, in nations with inadequate institutions, foreign assistance might result in inefficiencies and heightened corruption (Moyo, 2009).

Empirical research on Nepal's fiscal dynamics reveals the critical role of foreign aid and domestic revenue in government expenditure. Empirical research specifically examining the aid-expenditure nexus in Nepal remains limited. Existing studies often rely on aggregate data and face methodological constraints in establishing causality. In a study conducted by Dangi et al. (2021), the researchers investigated the influence of foreign aid on the economic performance of Nepal and found a positive but insignificant relationship. Furthermore, an analysis of Nepal's national development plans reveals a significant reliance on foreign aid, consistently exceeding 20% of the government's total annual budget between 2009 and 2018 (Chamlagai, 2015). This highlights the importance of understanding how this reliance on aid influences government spending patterns and, by extension, its economic performance.

Dahal and Budhathoki (2022) analyzed public expenditure, revenue, and the resource gap in Nepal using 26 years of secondary data (1995-2020). Employing econometric tools, they found that government expenditure moderately increased the resource gap, while revenue decreased it. Sharma and Bhattarai (2019) investigated the influence of foreign aid on Nepal's export performance, providing insights into economic development despite not focusing directly on government expenditure. Their analysis used time series data and econometric techniques. Lastly, Sharma and Bhattarai (2013) studied the effect of foreign aid on Nepal's economic growth from 1960 to 2009, using an autoregressive distributed lag approach. Their conclusion was that foreign aid has a favourable impact on economic growth, but its effectiveness was significantly enhanced by sound economic policies, particularly fiscal policy. These studies collectively highlight Nepal's intricate dynamics of foreign aid, revenue, and government expenditure. While numerous studies have explored the broader relationship between foreign aid and government spending, research specifically focusing on Nepal and employing rigorous time series econometric analysis remains limited.

This study attempts to do a complete analysis of the connections between foreign aid, domestic revenue, and government expenditure in Nepal using the ECM framework. The ECM enables a comprehensive comprehension of the interplay between various factors across time by covering both immediate fluctuations and long-term associations.

From the above literature, this study formulates the following assumptions to investigate the correlation between foreign aid, domestic revenue, and government expenditure in Nepal:

H1: There exists a significant positive relationship between foreign aid and government expenditure in Nepal over a lengthy period.

H2: There exists a significant positive relationship over a long period between the Money supply of Nepal and the government expenditure.

H3: In Nepal, foreign aid and domestic revenue have a notable and beneficial effect on government expenditure in the short term.

To understanding, the relationship between foreign aid, domestic revenue, and government expenditure has significant policy implications for Nepal. This study provides valuable insights for policymakers to optimize foreign aid use and strengthen domestic revenue mobilization. Effective management of

foreign aid can enhance development, reduce dependency, and foster sustainable growth, while improved domestic revenue systems can ensure stable and independent funding for government expenditure. International development partners can also benefit by understanding how their aid impacts Nepal's fiscal dynamics, aligning aid with domestic priorities, and supporting capacity-building initiatives to enhance aid effectiveness and contribute to long-term development goals.

3. DATA AND METHODOLOGY

This study utilizes a quantitative research approach to assess how foreign aid and domestic revenue impact government expenditure in Nepal. The Error Correction Model (ECM) is a statistical tool that looks at how factors change over time and how they stay in balance over time. This model is particularly suitable for time-series data, where variables may be non-stationary but cointegrated, indicating a stable long-term relationship despite short-term fluctuations (Engle & Granger, 1987). When investigating the interplay of foreign aid, domestic revenue, and government expenditure, the ECM framework is excellent since it separates short-term adjustments from long-term stability. By applying this model, the study seeks to understand the immediate and long-term effects of fluctuations in foreign aid and domestic revenue on government spending, providing a nuanced view of these dynamics over time.

The analysis is based on time-series data from 1965 to 2022, sourced from the Ministry of Finance of Nepal. The data includes government expenditure, foreign aid, and domestic revenue. Government expenditure covers all forms of public spending, foreign aid includes grants and concessional loans from international donors, and domestic revenue encompasses taxes and non-tax revenues. The study employs the ECM, as developed by Engle and Granger in 1987, to explore the short-term and long-term interactions between these variables.

4. DATA ANALYSIS AND RESULTS

Trend of Government Expenditure, Foreign Aid and Domestic Revenue

From 1975 to 2022, Nepal experienced significant growth in domestic revenue (DR), government expenditure (GE), and foreign aid (FA)
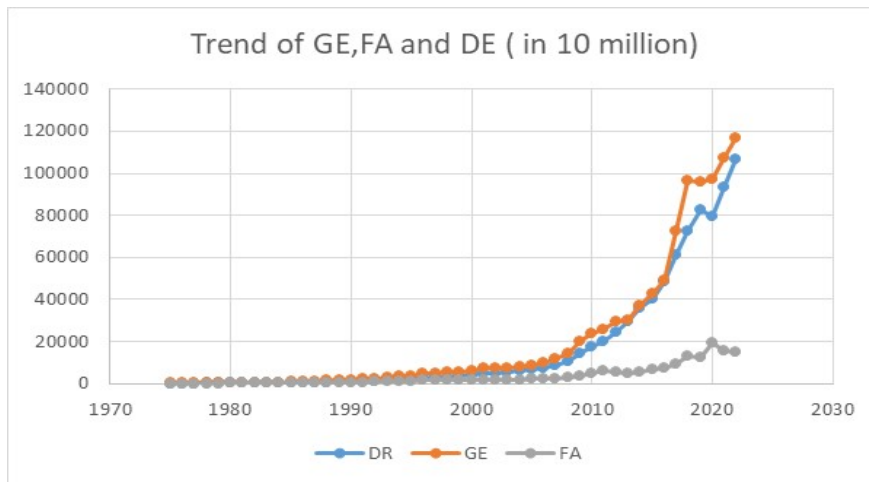

Figure 1: Trend of GE, FA, and DR

Both domestic revenue and government expenditure saw dramatic increases, particularly from the early 2000s, reflecting robust economic growth and expanding governmental financial activities. While foreign aid also increased, its growth was more variable. Overall, the trends highlight Nepal's economic expansion, increased fiscal capacity, and continued reliance on foreign aid for development.

Descriptive Statistics: Descriptive statistics show summary statistics to help understand the essential characteristics of the data.

Table 1:

Descriptive Statistics

	LNGE	LNDR	LNFA
Mean	8.518685	8.088661	7.100720
Median	8.621988	8.161326	7.342961
Maximum	11.67038	11.57716	9.863785
Minimum	5.019727	4.613535	3.655840
Std. Dev.	1.907875	2.099067	1.654576
Skewness	-0.063211	0.019798	-0.298049
Kurtosis	2.018865	1.850028	2.240574
Jarque-Bera	1.957217	2.648007	1.864122
Probability	0.375834	0.266068	0.393741
Sum	408.8969	388.2557	340.8346
Sum Sq. Dev.	171.0793	207.0859	128.6682
Observations	48	48	48

Source: author calculation using Eviews

The table presents summary statistics for three logged variables (LNGE, LNFA, and LNDR) across 48 observations. LNGE has the highest mean (8.518685) and median (8.621988), indicating generally larger values, while LNFA has the lowest mean (7.100720) and median (7.342961), showing smaller values. LNDR has intermediate values with the highest variability (standard deviation of 2.099067). Skewness values suggest LNGE and LNFA are slightly left-skewed, and LNDR is nearly symmetric. Kurtosis values indicate near-normal distributions for all variables. Jarque-Bera test results confirm none of the variables deviate significantly from normality. LNGE shows higher logged values with moderate variability, LNFA has lower values with the least variability, and LNDR exhibits the highest variability.

The Classical Assumption Test for the ECM Model

The classic assumption test used in linear regression with the Ordinary Least Squared (OLS) approach includes Linearity, Autocorrelation, Heteroscedasticity, Multicollinearity and Normality tests. However, not all classic assumption tests must be performed on every linear regression model using the OLS approach. Linearity tests are hardly carried out on every linear regression model. Because it is assumed that the model is linear. Even if it has to be done solely to see the extent of the linearity

Normality test: Normality Test is a test conducted with the aim to assess the distribution of data in a group of data or variables, whether the distribution of data is normally distributed or not. Normality Test is useful for determining data that has been collected in normal distribution or taken from a normal
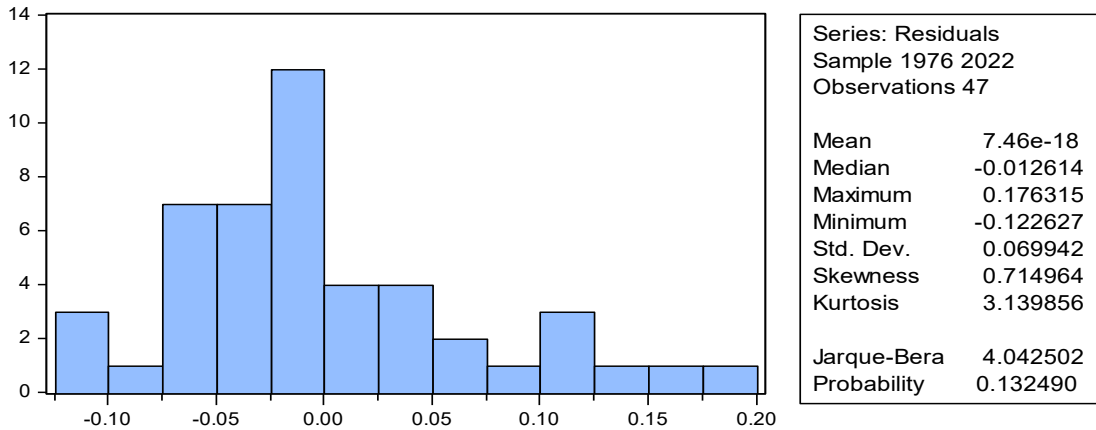
population. In normality test the value of Jarque-Bera and Probability. If Probability> 0.05, Ho is accepted otherwise H1.

H0: there is normal distribution of data

H1: there is not normal distribution of data.

Table 2

Jarque-Bera normality test

In above table the value of Jarque-Bera and Probability is 0.132> 0.05, here Ho is accepted. This means that the data used in analyzing the ECM model has a Normal distribution.

Linearity test: In the context of classical linear regression models, testing for linearity is crucial to ensure that the relationship between the independent variables (predictors) and the dependent variable is linear. Linearity means that the change in the dependent variable is proportional to the change in the independent variables.

Table 3

Ramsey Reset Linearity test

Ramsey RESET Test
Equation: UNTITLED
Omitted Variables: Squares of fitted values
Specification: D(LNGE) D(LNFA) D(LNDR) ECT(-1) C

	Value	df	Probability
t-statistic	0.228320	42	0.8205
F-statistic	0.052130	(1, 42)	0.8205
Likelihood ratio	0.058300	1	0.8092

In above table probability of s statistics is 0.8205> 0.05. This means that the model used fulfilled the linearity assumption.

Autocorrelation Test: Autocorrelation is the correlation between members of a series of observations sorted by time (time series). Autocoreation causes the residual variance to be obtained lower than it should be, resulting in R2 being higher than it should be. Besides testing hypotheses using t-statistics and F-statistics will be misleading.

Table 4

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	2.666117	Prob. F(2,41)	0.0816
Obs*R-squared	5.409084	Prob. Chi-Square(2)	0.0669

Significance value of Obs * R-squared 0.0669 which is greater than 0.05 so we accept Ho ie the model does not contain Autocorrelation or there is no serial correlation at up to 2 lags.

Heteroscedasticity Test: One of the assumptions that must be met for the estimated parameters in the regression model to be BLUE is that var (ui) must be equal to $\sigma 2$ (constant), or in other words, all residuals or errors have the same variant. Such conditions are called homoscedastic. Meanwhile, if the variant is not constant or changing is called heteroscedastic. Formal tests for this problem include the Breusch-Pagan-Godfrey Test, the Harvey Test, the Glejsyer Test, the ARCH Test and the Custom Test Wizard.

Table 5

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	0.138473	Prob. F(3,43)	0.9365
Obs*R-squared	0.449718	Prob. Chi-Square(3)	0.9298
Scaled explained SS	0.402751	Prob. Chi-Square(3)	0.9397

In above table Obs * R-squared value 0.9298 which is more than 0.05 means that the model does not contain heteroscedasticity.

Multicollinearity Test: Multicollinearity is the correlation between independent variables with other independent variables. Consequently, even though the estimation results are still BLUE (Best Linear Unlimited Estimator), multicollinearity can cause a larger standard error, the coefficient of determination (R2) remains high and the F-stat test is significant even though there are many insignificant variables The multicollinearity test is used to assess whether there is a correlation or intercorrelation between independent variables in the regression model or is also commonly used to determine whether or not there ECM Model Regression Teaching Materials Agus Tri Basuki, M.Sc. is a deviation from the classic assumption of multicollinearity, namely the existence of a linear relationship between the independent variables in the regression model. In testing the presence or absence of multicollinearity symptoms is done by looking at the value of VIF (Variance Inflation Factor) and Tolerance.

Hypothesis:

H0: There is a multicollinearity problem

H1: There is no multicollinearity problem

Table 6

Variance Inflation Factors
Date: 07/23/24   Time: 16:43
Sample: 1975 2022
Included observations: 47

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
D(LNFA)	0.005190	1.866961	1.120857
D(LNDR)	0.024983	5.949165	1.023628
ECT(-1)	0.018550	1.144167	1.143689
C	0.000743	6.672642	NA

In above table all Centered VIF values are less than 10, so it can be concluded that the ECM model does not contain Multicollinearity.

Error Correction Model (ECM)

The short-term dynamics and long-term equilibrium linkages between variables can be better understood using an ECM. Government expenditure (GE), foreign aid (FA), and domestic revenue (DR), an ECM can help to analyze how short-term changes in FA and DR influence GE while maintaining a long-term equilibrium relationship. Following sections explain the error correction model (ECM) and the associated tests step-by-step to understand their purposes and what they achieve in the context of your analysis.

Stationarity Analysis (ADF) Test)

The first step is to check if the time series data for each variable (government expenditure (GE), foreign aid (FA), and domestic revenue (DR)) are stationary.

Table 7

Unit-root Tests of all variables

Variable	Unit Root Test					
	Level			1st Difference		
	ADF	Prob	Conclusion	ADF	Prob	Conclusion
LNGE	-1.2261	0.6554	Non Stationary	-4.9377	0.0002	Stationary
LNFA	-2.0465	0.2667	Non Stationary	-7.9219	0.0000	Stationary
LNDT	-0.0619	0.9475	Non Stationary	-5.9245	0.0000	Stationary

Source: author calculation using eviews

Table 2 shows the results of the ADF test for all variables (LNGE, LNFA, LNDP) at the level data indicate non-stationarity, as the ADF t-statistics values are less than -3.6891. Consequently, the test proceeds with the first difference (first derivative). At the first difference, the ADF results show that all variables are stationary because the t-statistics values are negative and exceed -3.6891, indicating that the first-differenced data series of the variables are stationary.

Cointegration Test

The Johansen cointegration test exmines a long-term equilibrium relationship amoung variables when their integration orders are the same, namely I(1). This test aids in identifying if multiple non-stationary time series share a stable, long-term connection despite their individual non-stationarity. It is a crucial instrument in econometrics for investigating long-term relationships between economic variables. The hypothesis of the Johansen test is H0: there is no cointegration.

Table 8

Johansen Co-integration test
Trend assumption: Linear deterministic trend
Series: LNGE LNDR LNFA
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.329946	32.41319	29.79707	0.0416
At most 1	0.193648	9.994958	15.49471	0.2811
At most 2	0.002045	0.094160	3.841466	0.7589

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the null hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Based on the data presented in the table 3, it is evident that the trace value exceeds the critical value. Therefore, we can conclude that the null hypothesis (H0) is rejected. This suggests that cointegration is present in the equation with a significance level of 0.05. The test indicates the presence of at least one cointegrating connection, indicating a long-term equilibrium between the variables.

Estimate long-run relationship

In the cointegration test, cointegration is confirmed at a level of confidence 0.05. The ECM combines short-term changes with long-term balance, making it possible to adjust any deviations from the long-term trend over time. So the long-run equation of Government Expenditure (GE) on Foreign Aid (FA) and Domestic Revenue (DR) is as follows

$GE_t = f(FA_t, DR_t)$

$GE_t = \alpha + \beta_1 FA_t + \beta_2 DR_t + \epsilon_t$

where GE_t is government expenditure,

FA_t is the foreign aid,

DR_t is the domestic revenue,

α is the intercept term,

β_1 and β_2 are short-term coefficients,

ϵ_t is the error term.

Table 9

Model Summary and Coefficient

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFA	0.421114	0.048152	8.745554	0.0000
LNDR	0.578706	0.037955	15.24704	0.0000
C	0.847516	0.062929	13.46774	0.0000
R-squared	0.998076	Mean dependent var		8.518685
Adjusted R-squared	0.997991	S.D. dependent var		1.907875
S.E. of regression	0.085521	Akaike info criterion		-2.019651
Sum squared resid	0.329122	Schwarz criterion		-1.902701
Log likelihood	51.47162	Hannan-Quinn criter.		-1.975455
F-statistic	11673.12	Durbin-Watson stat		1.053884
Prob(F-statistic)	0.000000			

Dependent variable: LNGE

Source: author calculation using Eviews

All the variables and the overall model are significant from the above table. F-statistics is 0.0000 and the model will explain the variable.

$GE_t = 0.84 + 0.42 FA_t + 0.58 DR_t + \epsilon_t$

the equation indicates that foreign aid and domestic revenue have positive and significant impacts on government expenditure in Nepal in the long run. The magnitude of the coefficients suggests that while both funding sources are important, domestic revenue has a relatively stronger impact on government expenditure than foreign aid. This highlights the importance of strengthening domestic revenue generation mechanisms to ensure sustainable government spending.

To acquire the residuals from the long-run relationship, one must first estimate the regression model to obtain the projected values. Then, the differences between the actual values and these anticipated values are calculated. The residuals are utilized in the Error Correction Model (ECM) to address deviations from the long-term equilibrium, hence facilitating the adjustment of short-term dynamics towards the long-term trajectory. Perform the ADF Unit root test on the Error Correction Term (ECT).

Table 10

ADF Unitroot Test

Null Hypothesis: ECT has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.984046	0.0033
Test critical values:	1% level	-3.577723	
	5% level	-2.925169	
	10% level	-2.600658	

*MacKinnon (1996) one-sided p-values.

Source: author calculation using Eviews

Based on the ADF test applied to the Error Correction Term (ECT), we can see a test statistic of -3.984046 and a p-value of 0.0033. This provides strong evidence to reject the null hypothesis of a unit root. The fact that the ECT is stationary due to this finding supports the existence of a long-term cointegrating link between the model's variables.

Estimation of Error Correction Model (ECM)

The ECM can be specified to capture both the short-term dynamics and the adjustment towards long-term equilibrium. The general form of the ECM is:

$$\Delta GE_t = \gamma 0 + \gamma 1 \Delta FA_t + \gamma 2 \Delta DR_t + \gamma 3 ECT_t - 1 + v_t$$

Where,

- Δ represents the first difference (e.g., $\Delta GE_t = GE_t - GE_{t-1}$).
- γ is the intercept.
- $\gamma 1$ and $\gamma 2$ are the short-term coefficients. The coefficients $\gamma 1$ and $\gamma 2$ show the immediate effect of changes in FA and DR on GE.
- ECT_{t-1} is the error correction term (lagged residuals from the cointegration equation), representing the deviation from long-term equilibrium.
- $\gamma 3$ is the adjustment coefficient, indicating the speed at which GE returns to equilibrium. The coefficient $\gamma 3$ indicates how quickly deviations from the long-term equilibrium are corrected. A significant and negative $\gamma 3$ suggests that GE adjusts towards the long-term equilibrium after a shock.
- v_t is the error term.

Table 11

Model Summary and Coefficient

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNFA)	0.249317	0.072044	3.460612	0.0012
D(LNDR)	0.499031	0.158060	3.157220	0.0029
ECT(-1)	-0.413807	0.136197	-3.038290	0.0040
C	0.035323	0.027257	1.295917	0.2019

R-squared	0.363229	Mean dependent var	0.141503
Adjusted R-squared	0.318803	S.D. dependent var	0.087649
S.E. of regression	0.072341	Akaike info criterion	-2.333594
Sum squared resid	0.225027	Schwarz criterion	-2.176135
Log likelihood	58.83946	Hannan-Quinn criter.	-2.274341
F-statistic	8.176076	Durbin-Watson stat	1.654036
Prob(F-statistic)	0.000203		

Dependent variable: D(LNGE)

Source: author calculation using Eviews

The estimated Error Correction Model (ECM) equation provides insights into both the short-term dynamics and the long-term adjustment mechanism of government expenditure (GE) with foreign aid (FA) and domestic revenue (DR). The interpretation of the results is as follows:

$$\Delta\ln(GEt) = 0.0353 + 0.2493\Delta\ln(FAt) + 0.4990\Delta\ln(DRt) - 0.4138ECTt - 1 + \varepsilon t$$

The data shows that a 1% increase in foreign aid corresponds to a 0.2493% increase in government expenditure. Similarly, a 1% increase in domestic revenue leads to a 0.4990% increase in expenditure. It is worth noting that both of these effects are highly significant at the 1% level. The ECT, with a coefficient of -0.4138, shows that about 41.38% of the previous period's disequilibrium is corrected each period, indicating a significant and statistically confirmed adjustment towards long-term equilibrium. The constant term of 0.0353 is not statistically significant, and the overall model, with an F-statistic of 8.1760 and a p-value of 0.0002, is statistically significant, demonstrating that the independent variables collectively explain the variation in government expenditure.

Table 12

Summary of Hypothesis Testing

Hypothesis		Coefficient (β)	P-value	Result
H$_1$:	There exists a significant positive relationship between foreign aid and government expenditure in Nepal over a lengthy period.	0.4211	0.000	Significant (Supported)
H2:	There exists a significant positive relationship over a long period between the Money supply of Nepal and the government expenditure.	0.5787	0.000	Significant (Supported)
H3:	In Nepal, foreign aid and domestic revenue have a notable and beneficial effect on government expenditure in the short term.	-0.4138	0.004	Significant (Supported)

In table no 7, summary of the hypothesis is presented. According to long run regression analysis At a 5 percent level of significance and 95 percent level of confidence, since the observed Beta is 0.4211 and the p-value is equal to 0.000, which is less than the significance level. ($\alpha = 0.05$), So, There exists a significant positive relationship between foreign aid and government expenditure in Nepal over a longrun. Hence, alternative hypothesis 1 is Accepted.

Similarly, for hypothesis second in same level of significance the observed Beta is 0.5787 and the p-value is equal to 0.000, which is less than the significance level. ($\alpha = 0.05$), we accept statement, There exists a significant positive relationship over a long period between the Money supply of Nepal and the government expenditure.

Finally, from the error correction model value of short run error correction term (ECT) is -0.4138 and p- value is 0.004, which is less than the significance level. ($\alpha = 0.05$), So, In Nepal, foreign aid and domestic revenue have a notable and beneficial effect on government expenditure in the short term and hypothesis 3 is also Accepted.

5. DISCUSSION

The long-term regression results indicate that both foreign aid (LNFA) and domestic revenue (LNDR) have significant positive impacts on government expenditure (LNGE) in Nepal, with coefficients of 0.4211 and 0.5787, respectively. This suggests that a 1% increase in foreign aid is associated with a 0.4211% increase in government expenditure, while a 1% increase in domestic revenue corresponds to a 0.5787% increase in government expenditure. The high R^2 value of 0.998 indicates that nearly all the variation in government expenditure is explained by the model, and the significant F-statistic further confirms the model's overall validity. However, the constant term is not statistically significant, indicating that other factors might not have a significant standalone effect in the long term.

In the short-term model (ECM), both changes in foreign aid (D(LNFA)) and domestic revenue (D(LNDR)) also show significant positive impacts on government expenditure, with coefficients of 0.2493 and 0.499, respectively. The error correction term (ECT(-1)) is significant. It indicates that about 41.38% of the disequilibrium from the previous period is corrected in the current period, showing a moderate speed of adjustment back to long-term equilibrium. The short-term model also has a good fit, with an R^2 of 0.8528, and the F-statistic confirms its overall significance. The Durbin-Watson statistics for both models suggest no significant autocorrelation issues. Overall, the analysis highlights the critical roles of foreign aid and domestic revenue in influencing government expenditure in both the short and long term.

6. CONCLUSIONS

Based on the study and above model of the long-term and short-term regression results, it is evident that both foreign aid and domestic revenue significantly impact government expenditure in Nepal. Policymakers should focus on enhancing domestic revenue generation through tax reforms and improved collection mechanisms to ensure a stable and sustainable funding source for government expenditures. Additionally, while foreign aid positively contributes to government spending, efforts should be made to diversify aid sources and ensure its effective utilization to maximize developmental outcomes. Implementing sound economic policies, particularly in fiscal management, can further enhance the positive impacts of both domestic revenue and foreign aid, fostering long-term economic stability and growth. Lastly, monitoring and maintaining the speed of adjustment back to equilibrium can help mitigate any short-term discrepancies and ensure consistent economic development.

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