Foreign Remittance and Economic Growth: An Empirical study from Nepal

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Abstract

This research empirically explores how foreign remittances affect Nepal's economic growth, using annual time-series data covering the period from 2001/02 to 2023/24. As one of the world's largest recipients of remittances relative to GDP, understanding the role of remittances is crucial for Nepal's economic policy. The study applies the Autoregressive Distributed Lag (ARDL) model to assess both short-term and long-term relationships. The results reveal a mixed effect: remittances have a statistically significant and positive impact on real GDP in the short run, but this effect becomes insignificant over the long run. On the other hand, gross private capital formation, government expenditure, and exports are found to be strong and significant contributors to long-term economic expansion. The study concludes that while remittances remain an important source of income and stability, excessive reliance on them cannot ensure sustained economic growth. Therefore, policymakers should aim to create a conducive environment for productive investment and strengthen the core drivers of long-term development.

Key words: *Remittances, Economic Growth, ARDL, Nepal, Dutch Disease, Cointegration*

Introduction

Earnings differences and disparities in economic opportunities are significant drivers of international migration (Mishra et al., 2022). In addition, advances in digital connectivity, migration networks, and transportation have facilitated the international flow of migrants (Ghodsi et al., 2024; Kshetri & Thapa-Parajuli, 2022; Munshi, 2003). In 2000, the number of international migrant workers was 173 million, and this figure rose to 281 million by 2020, representing 3.6% of the global population (IOM, 2022; Kshetri & Thapa-Parajuli, 2022). As a result, the flow of remittances from destination countries to home countries has also increased over time (World Bank, 2023). In 2000, global remittances amounted to $128 billion, climbing to $857 billion in 2023, with projections to reach $930 billion by 2025 (Wold Bank, 2024b). This international migration has significantly contributed to poverty reduction and the expansion of economic opportunities in low- and middle-income countries, promoting economic growth in developing nations (World Bank, 2024a).

Nepal is one of the top recipients of remittances relative to its GDP. According to Wold Bank (2024b), it ranks as the sixth largest recipient of remittances based on GDP share in the world. Over the past decade, the average ratio of remittances to GDP has been 23.6%. Additionally, the NRB/GON (2025) report that Nepal trade deficit (which is intergral part of BOP) stand NPR 1543.56 billion while Nepal received foreign remittance NPR 1723.27 billion in 2024. Therefore, the international inflow of remittances plays a significant role in financing imports and maintaining equilibrium in the external sector. Additionally, access to the international labour market offers economic opportunities to Nepalese households, which enhances education, reduces poverty (Wagle & Devkota, 2018), and contributes to economic growth (Dahal, 2014), ultimately improving the living standards of the people.

However, the impact of remittances on the economy is not a straightforward issue among policymakers and economists. Various studies indicate that international migration and remittances can negatively affect the economy by increasing dependency on imported goods and the labor market. This reliance has created long-term economic vulnerability, as the focus shifts from domestic production to trade in order to meet the demand generated by remittance income. Additionally, a heavy dependence on remittances can decrease the labor participation rate and slow economic growth in the short term. In this paper, we assess the impact of remittances on economic growth in Nepal, focusing on both the short and long term. The paper is organized as follows: the next section will provide a literature review, followed by the methodology in section three. The final section will present the results, discussion, and conclusion.

Literature Review

The relationship between remittances and economic growth can be understood through different theories. The Pure Altruism theory (Lucas & Stark, 1985) suggests that migrants send money mainly to support their families' welfare and daily needs. In contrast, the Pure Self-Interest theory views remittances as a strategy for migrants to secure their own future, often through investments or asset-building.

At the macro level, Loser et al. (2006) analysed remittances using the IS-LM-BP model. They found that remittance inflows increase overall spending but may also cause exchange rate appreciation, higher wages and prices, and pressure on trade balances.

Overall, remittances serve as a crucial source of external finance, alleviating credit constraints, fostering investment, and stabilizing the economy during downturns (Cazachevici et al., 2020; Giuliano & Ruiz-Arranz, 2009; Yang & Choi, 2007). However, they can also produce adverse effects, such as Dutch disease and reduced labour supply in the

home country (Acosta, Lartey, & Mandelman, 2009; Cazachevici et al., 2020).

Empirical research on the relationship between remittances and economic growth presents mixed evidence. A meta-analysis by Cazachevici et al. (2020) found that approximately 40% of studies reported a positive effect of remittances on growth, another 40% found no significant impact, and the remaining 20% suggested an adverse effect. At the regional level, Meyer and Shera (2017), using a panel study of Albania, Bulgaria, Macedonia, Moldova, Romania, and Bosnia and Herzegovina, concluded that remittances have a positive contribution to economic growth. Similarly, remittances have been shown to support development by providing alternative financing for investment, education, and reducing inequality (Cooray, 2012; Fayissa & Nsiah, 2010).

Country-specific evidence, however, is more nuanced. Siddique et al. (2012) reported that remittances promote economic growth in Sri Lanka and Bangladesh, but found no causal relationship in the case of India. Likewise, Pradhan et al. (2008) observed, in their study of 39 developing countries, that remittances generally have a growth-enhancing effect. In contrast, Narayan et al. (2011) argued that remittances may increase inflation, which in turn raises nominal GDP rather than real growth. More recent evidence by Azizi (2023) suggests that remittances benefit countries with higher levels of human capital, while they can have an adverse effect on economies with lower levels of human capital.

Methodology

Variables Selection and Data Source

The study applies the expenditure approach to examine the relationship between remittances and economic growth following (Kshetri et al., 2023). Real GDP at producers' prices, adjusted for inflation using the GDP deflator, serves as the dependent variable. The explanatory variables comprise foreign remittances, gross private capital formation, total

government expenditure, and exports. The analysis utilizes secondary data covering the fiscal years 2001/02 to 2023/24, as remittance data are unavailable for periods prior to 2001/02. Table 1.1 presents a summary of the variables and their respective sources. All data series are transformed into natural logarithms.

Table 1: List of Variables Used under Study

Code	Variable	Source	Measurement
RGDP	Real Gross Domestic Product	Nepal Rastra Bank	In Million
FR	Foreign Remittance	Nepal Rashtra Bank	In Million
GPCF	Gross Private Capital Formation	Ministry of Finance	In Million
TGE	Total Government Expenditure	Ministry of Finance	In Million
EXP	Total Export	Nepal Rashtra Bank	In Million

Model Specification

Time series analysis requires careful model selection based on the properties of the data. OLS and VAR are suitable only for stationary series (Brooks, 2014). Differencing non-stationary series can lead to the loss of long-term information and potential over- or under-differencing issues (Maddala & Kim, 1998), while ignoring non-stationarity can produce spurious results (Granger & Newbold, 1974). To address this, Engle and Granger's two-step co-integration test is commonly used, though it requires all variables to be first-order integrated (Das, 2019).

Johansen and Juselius (1990) developed a maximum likelihood co-integration method, but it is unreliable for small samples (Maddala & Kim, 1998; Toda, 1994). Pesaran et al. (2001) introduced the ARDL approach, which can estimate long-run relationships with variables integrated of order I(0), I(1), or a mix, though not I(2) (Nkoro & Uko, 2016). ARDL is also suitable for small sample sizes (Narayan, 2004). To estimates short run and long run relatioanhhip between the variable we estimate following ARDL model of Bound test:

$$ln(RGDP) = \alpha \sum_{i=0}^{p} h_i \Delta \ln(FR_{t-i}) + \sum_{i=0}^{q} k_i \Delta \ln(GFCF_{t-i})$$
$$+ \sum_{i=0}^{r} d_i \Delta \ln(TGE_{t-i}) + \sum_{i=0}^{s} e_i \Delta \ln(EXP_{t-1})$$
$$+ \gamma_1 Ln(FR_{t-1}) + \gamma_2 Ln(GFCF_{t-1}) + \gamma_3 Ln(TGE_{t-1})$$
$$+ \gamma_4 Ln(EXP_{t-1})$$
$$+ \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots. 1$$

Here, h_i, k_i, d_i, e_i are short run coefficient of the model and $\gamma_1, \gamma_2, \gamma_3, \gamma_4$ are long run coefficeing which measure the lalng run relationship between the variable. The term ε_t is error term which is $\varepsilon_t \sim iid(0, \sigma^2)$. Similarly, the error correction specification is specified as

$$ln(RGDP) = \alpha \sum_{i=0}^{p} h_i \Delta \ln(FR_{t-i}) + \sum_{i=0}^{q} k_i \Delta \ln(GFCF_{t-i})$$
$$+ \sum_{i=0}^{r} d_i \Delta \ln(TGE_{t-i}) + \sum_{i=0}^{s} e_i \Delta \ln(EXP_{t-i}) + \gamma ECM_{t-1}$$
$$+ \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 2$$

The model's validity and statistical reliability are assessed by examining residuals for stability, serial correlation, heteroscedasticity, misspecification, and normality.

Data analysis and result

Diagnosis test and preliminary result

To determine whether the data are stationary or non-stationary, the Dickey-Fuller test is applied, including versions with and without an intercept and trend. The results of the stationarity test are presented in the following table:

Table 2: Unit root test using augmented Dickey-Fuller test

Variable	Level		First Difference	
Intercept				
	T-Stat	P-value	T-stat	P-value
Ln(RGDP)	-0.285	0.912	-4.513***	0.001
Ln(FR)	-0.931	0.934	- 4.598***	0.001
Ln(GPCF)	-1.112	0.692	-1.904	0.320
Ln(TGE)	-0.492	0.875	-2.871*	0.065
Ln(EXP)	-1.141	0.690	-2.669*	0.087
Trend and Intercepts				
Ln(RGDP)	- 3.176	0.102	-6.717***	0.000
Ln(FR)	-0.931	0.934	-3.291*	0.094
Ln(GPCF)	-3.049	0.147	-4.735***	0.005
Ln(TGE)	-1.242	0.875	-4.311***	0.007
Ln(EXP)	-2.420	0.360	-4.207*	0.015
Note: ***, **, and * denote significance at 99%, 95% and 90% confidence intervals.				

Source: Author's calculation

When tested with only an intercept, none of the variables are stationary at their level, indicating that their mean and variance vary over time. However, after taking the first difference, all variables become stationary. Moreover, when a trend is added to the intercept, gross private capital formation and real GDP are found to be stationary at their level values (Table 2). Consistent with the intercept-only case, all variables remain stationary in first differences when both trend and intercept are included. The presence of non-stationarity in level series rules out the application of OLS. Furthermore, the mixture of level-stationary and non-stationary variables under trend and intercept specifications highlights the suitability of the ARDL approach compared to the Johansen and Juselius (1990) framework.

Table 3: Lag Selection Criterion Using VAR

Lag	AIC	SBC
o	- 4.8721	-4.6261
1	- 12.3702	- 10.8824*
2	- 12.8415*	- 10.1139

Source: Author's calculation, 2025.

Note: *Indicate lag order selected by the criterion.

AIC: Akaike Information Criterion; SBC: Schwarz Bayesian Criterion

According to the lag order criteria, AIC suggests two lags, while SBC indicates a single lag for the model variables (Table 3). Asghar and Abid (2007) recommend SBC as more appropriate for larger datasets, although they acknowledge its limitations in the presence of regime shifts or shocks. In line with Liu (2009), this study adopts the SBC-based lag length for the subsequent analysis.

Table 4: Bound Test under ARDL

F-statistic	Presence of Co-integration*	
5.800	Yes	
Critical Value	Lower Bound I (0)	Upper Bound I (1)
1%	4.093	5.532
5%	2.974	4.088
10%	2.46	3.46
Dependent variable: RGDP ; Independent variables: FR, GPCF, TGE, EXP, EXP		
Obs.: 24 years from 2000/01 - 2023/24, Optimum Lag length (1,1,1,0,0) using SBC		

Source: Authors' calculation, 2025.

The bounds test yields an F-statistic of 8.505, which surpasses the upper critical bounds at all significance levels. Consequently, the null hypothesis of no cointegration is rejected, providing evidence of a long-run equilibrium association among the variables (Table 4).

Table 5: ARDL Model Using SBC Selected Lags

Variables	Coefficients	Std. error	t-statistic	P-value
RGDP$_{t-1}$	0.693***	0.141	4.887	0.005
FR	0.0469*	0.0265	1.765	0.097
FR $_{t-1}$	-0.0892**	0.0321	- 2.776	0.014
GPCF	0.0102**	0.0327	2.714	0.016
GPCF $_{t-1}$	0.1180**	0.042	-2.793	0.013
TGE	0.136***	0.039	3.407	0.003
EXP	0.046**	0.021	2.135	0.049
Constant	2.862*	1.425	2.008	0.063

$R^2 = 0.999$ and D-W statistic = 1.95;

Dependent variable: RGDP; Observations: 24 years from 2000/01 - 2023/24

Source: Authors' calculation, 2025.

Note: ***, **, and * denote significance at 99%, 95% and 90% confidence intervals.

Since all variables are integrated of order one and a long-run association exists among them, the ARDL framework is suitable for analyzing both short- and long-run dynamics showed in (Table 5) . The estimated model shows no evidence of serial correlation, heteroscedasticity, residual non-normality, instability, or specification errors in (Table 6). Moreover, the model demonstrates a very high explanatory power with an R^2 of 0.999, which is common in time-series analyses.

Table 6: Diagnostic Tests

Types of Test	Test Statistic	p-value	Presence
Serial autocorrelation	Breush-Goldfrey LM test	χ^2 = 0.086 (0.769)	No
Heteroscedasticity	Breusch-Pagan test	χ^2 = 7.171 (0.411)	No
Normality of residual	Jarque-Bera test	JB = 0.642 (0.725)	Yes
Test for stability	CUSUM & CUSUMSQ	Figure 1	Yes
Regression specification error	Ramsey's RESET	F = 0.644 (0.4355)	No

Source: Author's Calculation 2025

Long Run and Short Run Relationship

Gross private capital formation, total government expenditure, and exports are statistically significant determinants of real GDP in the long run, with confidence levels of 99%, 95%, and 95%, respectively (Table 7). In contrast, foreign remittances do not exhibit a statistically significant impact on real GDP. Quantitatively, a 1% increase in gross private capital formation is associated with a 0.05% growth in real GDP, whereas a 1% increase in total government expenditure corresponds to a 0.444% rise in real GDP.

Table 7: Long-Run Coefficients

Regressors	Coefficients	Standard Error	t-statistic	p-value
FR	0.138	0.109	1.258	0.227
TEG	0.444**	0.207	2.138	0.049
EXP	0.150**	0.054	2.781	0.010
GPCF	0.050***	0.0123	4.065	0.00
R^2= 0.999 and D-W statistic = 1.95; Dependent variable: RGDP Observations: 24 years from 2000/01 - 2023/24				

Source: Author's Calculation 2025

Note: ***, **, and * denote significance at 99%, 95% and 90% confidence intervals.

Table 8: Error Correction Model

| Regressors	Coefficients	Standard Error	t-statistic	p-value
ΔWR	0.0469*	0.026	1.765	0.097
ΔTEG	0.136***	0.039	3.407	0.003
ΔGPCF	0.102**	0.0131	2.714	0.016
ECM_{t-1}	- 0.571***	0.0816	6.997	0.000
R^2 = 0.762;		Ad. R^2 = 0.724;	D-W statistic = 1.99	
Dependent variable: RGDP; Observations: 24 years from 2000/01 - 2023/24				

Source: Author's calculation, 2025.

Note: ***, **, and * denote significance at 99%, 95% and 90% confidence intervals.

In the short run, foreign remittances, total government expenditure, and gross private capital formation have a positive relationship with real GDP. Holding other factors constant, a 1% increase in remittances raises real GDP by 0.0469%. The error correction term (ECM_{t-1}) has a coefficient between -1 and 0 and is significant at the 99% confidence level, indicating the presence of a stable long-run relationship (Table 8). Short-run deviations from equilibrium adjust toward the long-run equilibrium at an annual speed of 57 %. The model's coefficients are stable, as the stability parameter lies within the acceptable bounds (Figure 1).

Figure 1: Stability Test (CUSUM & CUSUMQ)
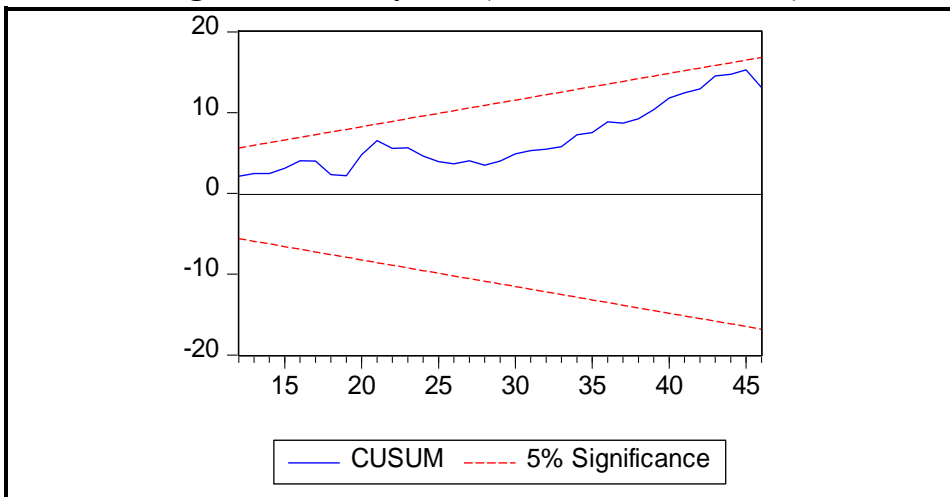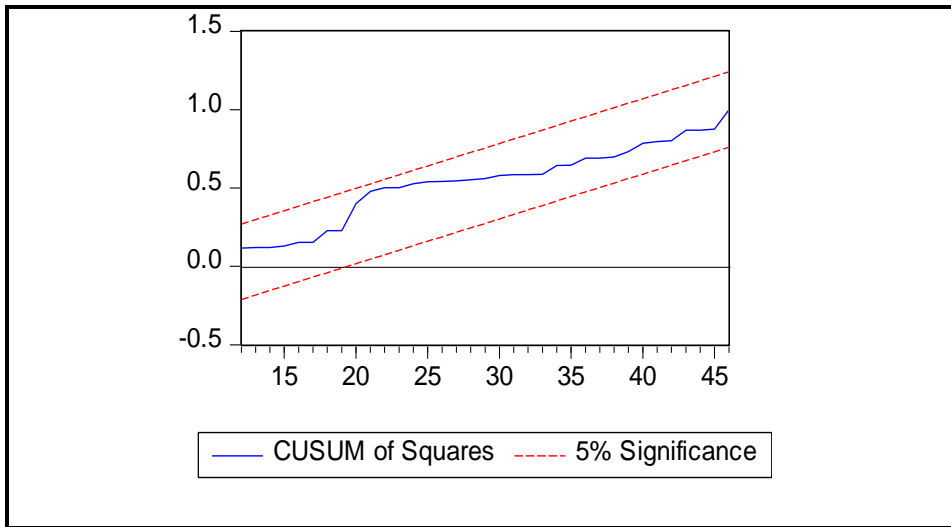
Source: Author's calculation 2025

Discussion

This study identifies a significant short-run relationship between remittances and economic growth in Nepal; however, this relationship becomes insignificant in the long run. This finding offers a more nuanced perspective than the uniformly positive results reported in some prior studies, such as Meyer and Shera (2017), while aligning with the ambiguities highlighted by Siddique et al. (2012). The absence of a long-term effect implies that, unlike the growth-enhancing role of remittances observed by Pradhan et al. (2008), Nepal's economy may be experiencing challenges associated with phenomena such as "Dutch disease" or dependence on consumption-driven growth that fails to strengthen productive capacity, as theorized by Acosta et al. (2009). This outcome reinforces Azizi's (2023) argument that the developmental impact of remittances is contingent upon domestic conditions. Structural constraints in Nepal, particularly human capital flight and the lack of effective channels for productive investment—appear to limit the ability of remittance inflows to foster sustainable economic growth.

Conclusion

The analysis finds that while foreign remittances give a strong short-term boost to Nepal's economy, but do not support long-term economic growth. The results show that most remittances are used for consumption and economic stability rather than for productive investment, which limits their role in promoting sustainable development. Therefore, to achieve lasting growth, Nepal should strengthen key areas such as domestic capital formation, efficient government spending, and export competitiveness instead of depending on remittance inflows for long-term growth.

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