Factors Affecting Youth Unemployment in Nepal

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Abstract

Youth unemployment remains a critical socio-economic challenge in Nepal, despite notable economic growth and substantial remittance inflows. This study examines the determinants of youth unemployment, focusing on economic, demographic, and policy-related factors such as GDP growth, remittances, foreign direct investment (FDI), population growth, and trade openness. Utilizing secondary time series data from 1993 to 2023, the research applies the Autoregressive Distributed Lag (ARDL) model, complemented by unit root tests and co-integration analysis, to evaluate short- and long-term relationships. The findings indicate that while GDP growth positively influences youth labor force participation, remittances and FDI contribute to higher unemployment by failing to create sustainable domestic job opportunities. Population growth and urbanization further exacerbate unemployment challenges, and the impact of trade openness is mixed, with short-term benefits overshadowed by potential long-term job losses. These results underscore structural inefficiencies in Nepal's labor market. The study concludes that policy interventions are essential to ensure that economic growth translates into inclusive employment opportunities for the youth. Emphasizing targeted investment in labor-intensive industries and addressing demographic pressures are vital for mitigating youth unemployment. This research provides novel insights by integrating FDI and trade openness into the analysis, offering a comprehensive understanding of youth unemployment dynamics in Nepal. Future research should focus on the sectoral distribution of FDI, the role of technology in employment, and the effectiveness of government programs in reducing youth unemployment.

Keywords: youth unemployment, GDP growth, remittances, foreign direct investment, ARDL model

Factors Affecting Youth Unemployment in Nepal

Youth unemployment has emerged as a critical socio-economic challenge in Nepal, hindering the potential of the country's most dynamic demographic. The National Statistics Office [NSO] (2023) defines youth unemployment as individuals aged 15–24 actively seeking work but cannot find employment. Youth employment, in contrast, encompasses both formal and informal sectors, where many young individuals are engaged in low-skill, low-wage jobs that often fail to match their qualifications or aspirations. With approximately 40% of Nepal's population under 25 (NSO, 2023), the labor market faces mounting pressure to absorb the influx of young job seekers.

Despite economic progress and high remittance inflows, the persistence of youth unemployment in Nepal highlights significant structural issues within the labor market. Existing studies, such as those by Sharma et al. (2019) and Dhakal (2015), have underscored the influence of remittances and GDP growth on employment trends. However, a notable gap exists in understanding how foreign direct investment (FDI) and trade openness shape youth unemployment. While remittances have boosted consumption and economic stability, they have failed to create sustainable job opportunities within the country. Similarly, the limited inflows of FDI have often been directed toward capital-intensive rather than labor-intensive industries, further exacerbating youth unemployment (Pandey, 2022).

Nepal's demographic and economic realities amplify these challenges. Rapid urbanization, driven by population growth and rural-to-urban migration, has increased the demand for employment in urban centers (Nepali et al., 2014). However, job creation has not kept pace, leading to a rise in informal sector employment, which offers minimal job security and limited opportunities for advancement. Furthermore, Nepal's education system struggles to equip youth with market-relevant skills, resulting in a mismatch between the supply of

graduates and labor market demands (Dhakal, 2015). These mismatches contribute to underemployment, where youth often accept jobs that do not utilize their skills and qualifications.

Compounding these structural issues, the reliance on remittances as a significant component of Nepal's GDP has created a paradoxical dynamic. While remittances reduce immediate economic pressures for many families, they inadvertently discourage labor market participation among youth and exacerbate dependency on external income (Sharma et al., 2019). Similarly, trade openness, although a driver of economic growth, has produced mixed outcomes for employment. In the short term, it creates opportunities in export-oriented industries, but in the long term, it can lead to job losses in less competitive domestic sectors (Nepali et al., 2014).

Against this backdrop, this study adopts an econometric approach to analyze the factors influencing youth unemployment in Nepal. By integrating underexplored variables such as FDI and trade openness alongside established determinants like GDP growth and remittances, the research provides a comprehensive framework for understanding youth labor market dynamics. Using time-series data from 1993 to 2023 and the ARDL model, this study captures both short- and long-term relationships, contributing to the growing body of literature on youth unemployment. The findings aim to guide policymakers in developing targeted strategies to create sustainable and inclusive employment opportunities for Nepal's youth.

Literature Review

Youth unemployment is a significant socio-economic issue, particularly in developing economies, where structural barriers and labor market inefficiencies hinder employment creation. Numerous studies have examined the factors influencing youth unemployment, focusing on variables such as economic growth, remittances, education, population dynamics, and trade openness. While global

research provides valuable insights, the context-specific challenges faced by Nepal remain underexplored, creating a critical gap in the literature that this study seeks to address.

Globally, economic growth is often associated with job creation, as outlined by Magrini and Rocco (2013) and Roodman (2009), who emphasize that robust GDP growth can reduce unemployment by stimulating labor demand. However, Sharma et al. (2019) argue that in Nepal, economic growth has not translated into proportional employment gains, primarily due to structural inefficiencies and reliance on low-productivity sectors. Okun's Law, which posits an inverse relationship between GDP growth and unemployment, underpins this analysis and highlights the complexity of addressing youth unemployment in developing economies.

Remittances, a key driver of economic stability in Nepal, present a paradoxical relationship with youth unemployment. Studies by Sharma et al. (2019) and Dhakal (2015) demonstrate that while remittances alleviate immediate financial pressures for households, they reduce labor force participation by creating dependency on external income. Globally, Giuliano and Ruiz-Arranz (2009) and Lefresne (2003) observe similar trends, noting that remittances often fail to spur domestic job creation. This phenomenon is particularly relevant in Nepal, where remittances constitute a significant share of GDP yet do not contribute to sustainable employment opportunities.

Education and skill mismatches significantly affect youth employment outcomes. Nepali et al. (2014) emphasize that Nepal's education system is misaligned with labor market demands, producing graduates whose skills are not adequately matched to available jobs. This challenge is mirrored in global studies, with Sianesi and Van Reenen (2003) and McGuinness (2006) identifying over-education as a driver of unemployment in developing economies. Kluve (2010)

underscores the importance of vocational training in addressing these mismatches, a solution that has shown promise in neighboring India.

Demographic factors such as population growth and urbanization exacerbate youth unemployment in Nepal. Dumont and Lemaître (2005) note that rapid population growth often outpaces job creation, a finding supported by Dhakal et al. (2007) and Rahman et al. (2018) in the context of Nepal and Bangladesh, respectively. Urbanization adds another layer of complexity, as highlighted by Sharma et al. (2019), who observes that while urban areas offer better job opportunities, the influx of labor often exceeds demand, leading to underemployment in informal sectors.

Trade openness and foreign direct investment (FDI) have mixed implications for youth employment (Bleaney & Greenaway, 2001). Nepali et al. (2014) suggest that while trade liberalization in Nepal has created short-term job opportunities, it has also led to long-term job losses in non-competitive domestic industries. Similarly, Sharma et al. (2019) and Pandey (2022) argue that FDI inflows in Nepal are concentrated in capital-intensive sectors, limiting their impact on employment generation. These findings align with global research by McMillan and Rodrik (2011) and Rodriguez and Rodrik (2001), who cautions that trade and investment policy must be balanced to maximize employment benefits.

Globally, youth unemployment is influenced by broader labor market dynamics, as explored by Nickell (1997) and O'Higgins (2012), who link youth unemployment to structural rigidities and inadequate policy interventions. Assaad and Roudi (2005) identify similar patterns in the Middle East and North Africa (MENA) region, where demographic pressures compound unemployment challenges. Kucera and Roncolato (2008) further highlight the role of informal employment in shaping labor market outcomes, an issue that is particularly relevant in the context of Nepal.

The theoretical framework guiding this study draws on Okun's Law and dual-sector theory. Okun's Law provides a foundation for analyzing the relationship between economic growth and unemployment, while dual-sector theory captures the transition of labor from informal to formal sectors. This framework integrates key variables, including GDP growth, remittances, trade openness, FDI inflows, population growth, and urbanization, enabling a comprehensive analysis of both short- and long-term determinants of youth unemployment in Nepal.

In conclusion, the existing literature underscores the multifaceted nature of youth unemployment, shaped by economic, demographic, and policy-related factors. By incorporating insights from global, regional, and country-specific studies, this review establishes the relevance of the variables under investigation and positions the study to address critical gaps in understanding youth unemployment dynamics in Nepal.

Materials and Methods

Scientific knowledge advances through scholarly research design (Khatri, 2020). This quantitative study utilizes analytical and descriptive research designs to investigate the factors affecting youth unemployment in Nepal. The secondary data were employed to evaluate the impact of various independent variables on the dependent variable, which is the labor force participation rate (LFPR) for individuals aged 15-24.

The research encompasses 31 sets of time series data collected from 1993 to 2023, focusing on the relationships between youth unemployment and several economic indicators. The independent variables analyzed include GDP growth rate (GDPGR), inflation rate (CPIGR), population growth rate (PGR), urban population growth rate (UPGR), personal remittances as a percentage of GDP (REMGR), foreign direct investment net inflows as a percentage of GDP (FDIGR), and trade openness index (TOI).

Data analysis and interpretation were conducted using EViews version 12, which provides a comprehensive framework for understanding the dynamics among these variables. This study relies on secondary and time series data to yield valuable insights into the factors influencing youth unemployment in Nepal.

Model Formulation and Study Variables

The relationship between youth unemployment in Nepal and its contributing factors is modelled as follows:

$$LFPR_t = f(GDPGR_t, CPIGR_t, PGR_t, UPGR_t, REMGR_t, FDIGR_t, TOI_t) \qquad (1)$$

Logarithmic transformations are applied to both sides of the equation to establish a linear relationship among the variables. This transformation facilitates the calculation of elasticities, enabling a clearer understanding of how changes in independent variables affect the dependent variable, the labor force participation rate (LFPR) for ages 15-24.

$$LFPR_t = \alpha + \beta_1 GDPGR_t + \beta_2 CPIGR_t + \beta_3 PGR_t + \beta_4 UPGR_t + \beta_5 REMGR_t + \beta_6 FDIGR_t + \beta_7 TOI_t + \epsilon_t \qquad (2)$$

Where, LFPR = Labor Force Participation Rate (ages 15-24, total %)

GDPGR = GDP Growth Rate (annual %)

CPIGR = Inflation Rate (annual %)

PGR = Population Growth Rate (annual %)

UPGR = Urban Population Growth Rate (annual %)

REMGR = Personal Remittances received (% of GDP)

FDIGR = Foreign Direct Investment, net inflows (% of GDP)

TOI = Trade Openness Index

e_t = error term

β_i = constant coefficients

This model captures the complex interplay between youth unemployment and various economic indicators, facilitating an empirical investigation into the

significant factors that influence labor force participation among the youth in Nepal.

Sources of Data

This study relies on secondary time-series data spanning from 1993 to 2023, sourced from the World Bank's World Development Indicators (2024), to ensure data accuracy and consistency, which are critical for robust econometric analysis. The data extraction process involved systematic screening to ensure completeness and alignment with the study's objectives. Key variables such as GDP growth, inflation, population growth, urbanization, remittances, foreign direct investment (FDI), and trade openness were selected based on their theoretical relevance and empirical significance in explaining youth unemployment, as highlighted in prior literature (Sharma et al., 2019; Nepali et al., 2014).

Table 1

Variables, Abbreviations, Units, and Data Sources Used in Research

Variable Names	Symbols	Units
Labor Force Participation Rate	LFPR	Total % (ages 15-24)
GDP Growth Rate	GDPGR	Annual %
Inflation Rate	CPIGR	Annual %
Population Growth Rate	PGR	Annual %
Urban Population Growth Rate	UPGR	Annual %
Personal Remittances Received	REMGR	% of GDP
Foreign Direct Investment	FDIGR	% of GDP
Trade Openness Index	TOI	Index

The rationale for choosing these variables stems from their critical role in labor market dynamics, particularly in developing economies like Nepal. GDP growth, for instance, is tied to job creation through Okun's Law, while remittances and FDI influence labor market participation and employment opportunities. Trade openness reflects Nepal's increasing integration into the global economy, and demographic factors such as population growth and urbanization capture the pressures on the labor market. The variable selection criteria were informed by a review of global and regional studies, ensuring both theoretical grounding and contextual relevance.

Econometric Method

This study employs a comprehensive econometric methodology to analyze the factors affecting youth unemployment in Nepal using time series data. To ensure the validity of the econometric results, this study employed model diagnostic tests, including unit root tests (ADF and PP) to examine stationarity (Dickey & Fuller, 1979; Poudel, 2023; Khatri et al., 2024), the ARDL bounds test for co-integration, Granger causality test and the error correction model to capture short-run dynamics (Granger, 1969; Johansen, 1988; Pesaran & Shin, 1995). Additional diagnostics, such as the Breusch-Godfrey test for serial correlation, the Breusch-Pagan test for heteroscedasticity, and the Ramsey RESET test for model specification, were conducted to verify the reliability and robustness of the findings (Pesaran et al., 2001; Pesaran, 2004). These diagnostics are crucial to minimize biases and ensure the results accurately reflect the relationships between the variables under investigation.

Results

The study presented data in tables and figures and analyzed it using econometric methods, as described earlier.

Nepalese Labor Force Participation Rate, GDP Growth, Inflation, and Other Economic Factors over 31 years

The figure illustrates the trends of critical economic variables affecting youth unemployment in Nepal from 1993 to 2023. The variables analyzed include the labor force participation rate (LFPR) for ages 15-24, GDP growth rate (GDPGR), inflation rate (CPI), population growth rate (PGR), urban population growth rate (UPGR), personal remittances (% of GDP) (REMGR), foreign direct investment (% of GDP) (FDIGR), and the trade openness index (TOI).

Figure 2

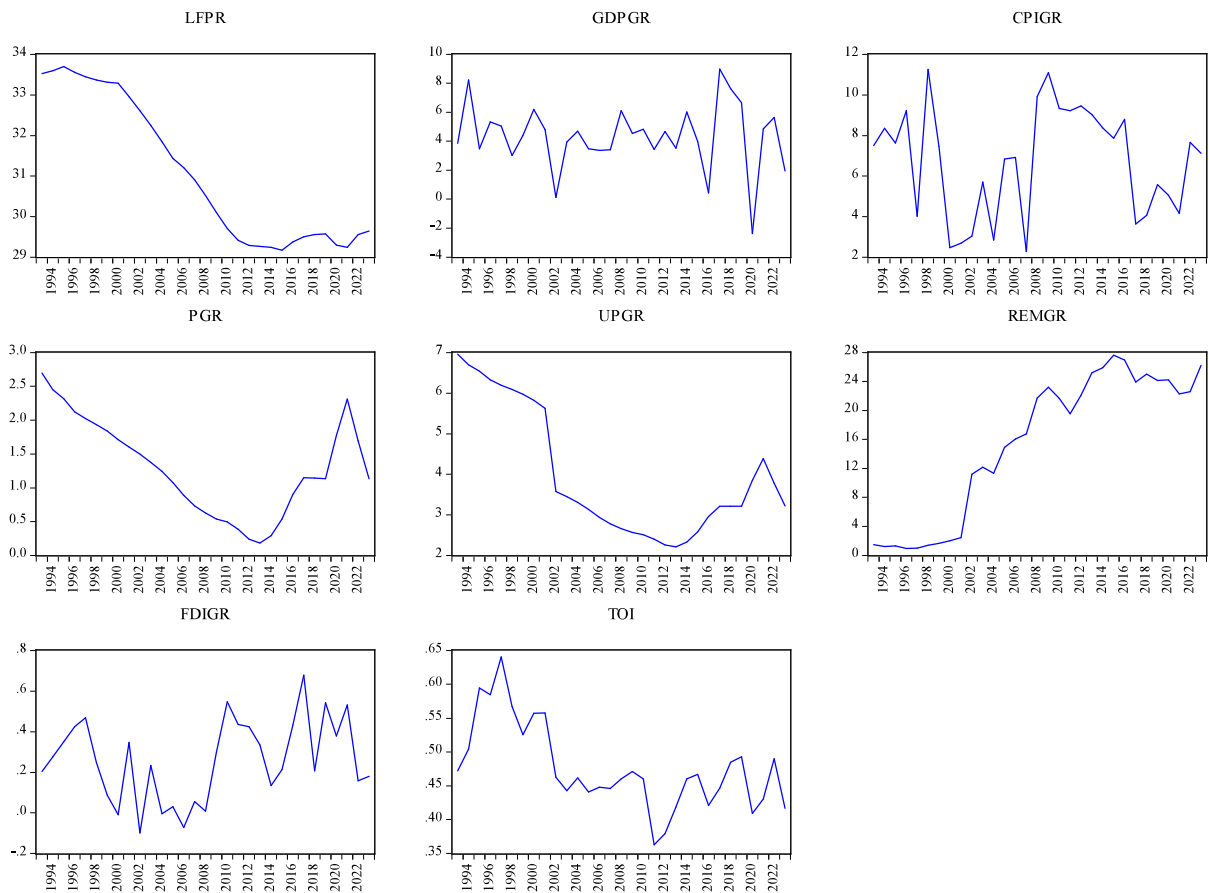*Trends in Key Economic Indicators for Nepal*

Figure 2 illustrates the key economic indicators trends influencing Nepal's youth unemployment from 1993 to 2023. The data highlights fluctuations in the labor force participation rate (LFPR), GDP growth rate (GDPGR), inflation (CPI), population growth rate (PGR), urban population growth rate (UPGR), remittance inflows (REMGR), foreign direct investment (FDIGR), and trade openness index (TOI). The LFPR for youth (ages 15-24) displays significant volatility, reflecting Nepal's labor market struggles to absorb young workers. Periods of higher GDP growth, while reducing unemployment, do not show a consistent correlation with youth employment due to structural issues like limited formal job creation and dependency on the informal sector. Inflation trends further exacerbate employment challenges by eroding purchasing power and discouraging investment.

Meanwhile, rising remittance inflows and urbanization have paradoxically contributed to underemployment, as remittances promote consumption without stimulating domestic job creation, and rapid urban population growth outpaces employment opportunities. The trend in FDI remains relatively low, limiting industrial expansion needed to absorb the growing labor force. This analysis demonstrates how the interplay of these economic variables complicates youth unemployment reduction efforts, calling for comprehensive policy responses that target structural weaknesses in the labor market.

Unit Root Testing

To implement the bounds testing approach, the time series data must be integrated at either order zero [I(0)] or order one [I(1)]. Consequently, unit root tests are conducted to ascertain the order of integration. This study employs the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests to evaluate the stationarity of the following variables: Labor Force Participation Rate (LFPR), GDP growth rate (GDPGR), inflation rate (CPI), population growth rate (PGR), urban population growth rate (UPGR), personal remittances (% of GDP)

(REMGR), foreign direct investment (% of GDP) (FDIGR), and the trade openness index (TOI).

Table 2

Unit Root Test Results

Unit Root Test Table (PP)									
At Level		LFPR	GDPGR	CPIGR	PGR	UPGR	REMGR	FDIGR	TOI
With Const.	t-Stat.	-1.1386	-10.2945***	-3.7868***	-2.0559	-1.9738	-0.9450	-3.4848**	-1.9580
With C & T.	t-Stat.	-0.5902	-10.7381***	-3.7194**	-1.4740	-1.1078	-1.4650	-3.4999*	-3.0758
None	t-Stat.	2.0872**	-1.8043*	-0.8669	-1.9930**	-2.0561**	1.0175	-1.7738*	-0.4792
First Diff.		d(LFPR)	d(GDPGR)	d(CPIGR)	d(PGR)	d(UPGR)	d(REMGR)	d(FDIGR)	d(TOI)
With Const.	t-Stat.	-2.1424	-15.1561***	-8.0321***	-2.3733	-4.1144***	-4.7539***	-10.8162***	-7.7374***
With C.& T.	t-Stat.	-2.4732	-15.0340***	-7.9022***	-1.5390	-4.2066**	-4.6554***	-10.3805***	-6.1785***
None	t-Stat.	-1.7488*	-15.1409***	-8.1788***	-2.3660**	-3.9471***	-4.2278***	11.0780***	-6.1913***
Unit Root Test Table (ADF)									
At Level		LFPR	GDPGR	CPIGR	PGR	UPGR	REMGR	FDIGR	TOI
With Const.	t-Stat.	-1.7958	-5.8015***	-3.7239***	-1.4664	-1.9738	-0.9450	-3.4848**	-1.4894
With C.& T.	t-Stat.	-0.8961	-5.6863***	-3.6540**	-0.8059	-1.0367	-1.3856	-3.5634*	-1.8466
None	t-Stat.	-1.2914	-0.9894	-1.1961	0.1870	-2.1847**	1.0680	-1.2014	-1.0292
First Diff.		d(LFPR)	d(GDPGR)	d(CPIGR)	d(PGR)	d(UPGR)	d(REMGR)	d(FDIGR)	d(TOI)
With Const.	t-Stat.	-2.1149	-7.3690***	-8.0321***	-1.0345	-4.1144***	-4.7504***	-8.8109***	-5.8457***
With C & T.	t-Stat.	-2.4991	-7.2192***	-7.9022***	-1.5775	-4.3433***	-4.3181**	-8.6565***	-5.7338***
None	t-Stat.	-1.7488*	-7.4315***	-6.2317***	-1.3226	-3.9471***	-4.2748***	-8.9701***	-5.8512***

Note. * Significant at the 10%; **Significant at the 5%; ***Significant at the 1%.

Table 2 presents the results of the unit root tests (PP and ADF) conducted to evaluate the stationarity of key economic variables influencing youth unemployment in Nepal. The tests are crucial for determining whether the variables are integrated at levels or first differences, which is necessary for selecting appropriate econometric models like ARDL. At level, variables such as GDP growth rate (GDPGR) and inflation rate (CPIGR) are found to be stationary with significant t-statistics at the 1% level, while others like labor force

participation rate (LFPR), population growth rate (PGR), and remittances (REMGR) are non-stationary.

However, after first differencing, all variables become stationary, with significant t-statistics at the 1% or 5% level. This indicates that most variables are integrated of order I (1), confirming the appropriateness of using ARDL for co-integration analysis. These findings suggest that short-term fluctuations in key economic indicators are largely transitory, with long-run equilibrium relationships potentially existing between the variables. Ensuring stationarity is essential to avoid spurious regression results and to accurately capture the dynamics between youth unemployment and the economic factors analyzed.

VAR Lag Order Selection Criteria

The selection of the appropriate lag length is critical in ensuring the accuracy and stability of the VAR model. An inadequate lag length could lead to model misspecification, resulting in biased parameter estimates or omitted variable bias (Acharya et al., 2024). In contrast, selecting too many lags may over fit the model, reducing its predictive power.

Table 3

VAR Lag Order Selection Criteria Results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-197.9569	NA	0.000204	14.20392	14.58111	14.32205
1	-28.73129	233.4146	1.70e-07	6.946985	10.34165	8.010152
2	103.0961	109.0985*	5.26e-09*	2.269233*	8.681379*	4.277437*

Table 3 presents the results of the VAR lag order selection criteria used to determine the optimal lag length for the Vector Autoregression (VAR) model analyzing the factors influencing youth unemployment in Nepal. The criteria considered include the Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn

Criterion (HQ). Among these, the second lag is chosen as optimal based on the lowest values for FPE, AIC, SC, and HQ, with significant LR statistics (Poudel, 2022).

The selection of two lags balances the need to capture the dynamics of the variables without over fitting. This ensures that the relationships between youth unemployment and other economic indicators, such as GDP growth, inflation, and remittances, are adequately modeled, providing a robust framework for further econometric analysis.

ARDL Long-run Form and Bounds Test

Within the ARDL framework, the co-integrating equation outlines the long-term relationship among the variables being studied. This equation is established when co-integration is detected, signifying that the variables share a common stochastic trend (Stock & Watson, 1993). The hypotheses for the co-integration test are as follows: H0, stating that there is no co-integrating equation, and H1, asserting the existence of a co-integrating equation. To further investigate these long-term relationships, the ARDL Long Run Form and Bounds Test are performed in Table 4.

Table 4

ARDL Long-run Form and Bounds Test

F-Bounds Test		Null hypothesis: No levels relationship			
Test Statistic		Value	Signif.	I(0)	I(1)
Asymptotic: n=1000					
F-statistic		7.742502			
K		7	5%	2.17	3.21
Actual Sample Size	29	Finite Sample: n=35			
			5%	2.597	3.907
Finite Sample: n=30					
			5%	2.73	4.163

Table 4 presents the results of the ARDL Long Run Form and Bounds Test, which examines the long-run relationships between youth unemployment

(measured by Labor Force Participation Rate, LFPR) and key economic variables in Nepal. The F-statistic value of 7.7425 exceeds the critical upper bound values at the 5% significance levels, confirming the presence of co-integration among the variables. This indicates that there is a long-run equilibrium relationship between LFPR and factors like GDP growth rate (GDPGR), inflation rate (CPIGR), population growth rate (PGR), urban population growth rate (UPGR), remittances (REMGR), foreign direct investment (FDIGR), and trade openness (TOI).

The presence of co-integration suggests that although short-term fluctuations in these variables may occur, they move together in the long run, influencing youth unemployment in Nepal. For example, while remittances and foreign direct investment may temporarily reduce unemployment or increase labor market participation, their long-term effects may reflect deeper structural imbalances in the economy. The ARDL model's ability to capture both short-term dynamics and long-run relationships makes it ideal for analyzing the persistent unemployment challenges faced by Nepalese youth, driven by economic, demographic, and policy factors. This finding underlines the importance of stable economic policies to foster sustainable employment growth over time.

Table 5

Long-run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPGR	0.236272	0.085909	2.750261	0.0250
CPIGR	-0.121444	0.079971	-1.518595	0.1673
PGR	-0.182002	0.554129	-0.328446	0.7510
UPGR	0.367427	0.569300	0.645402	0.5367
REMGR	-0.153553	0.034557	-4.443520	0.0022
FDIGR	-1.705020	0.446826	-3.815847	0.0051
TOI	-2.982853	4.178601	-0.713840	0.4956
C	33.86463	0.998924	33.90110	0.0000

Table 5 presents the long-run coefficients derived from the ARDL model, analyzing the relationship between the labor force participation rate (LFPR) for youth (ages 15-24) in Nepal and various economic factors. The results highlight that the GDP growth rate (GDPGR) has a positive and statistically significant impact on LFPR, with a coefficient of 0.236, indicating that higher GDP growth leads to an increase in youth labor participation, potentially due to greater job creation during periods of economic expansion.

In contrast, remittances (REMGR) and foreign direct investment (FDIGR) exhibit significant negative effects on LFPR, with coefficients of -0.153 and -1.705, respectively. This implies that higher remittances may reduce the need for young people to seek employment domestically, as families can rely on external income sources. Similarly, the negative impact of FDI suggests that foreign investments might not be translating into sufficient job opportunities for the youth, possibly due to capital-intensive rather than labor-intensive projects.

The inflation rate (CPIGR), population growth rate (PGR), urban population growth rate (UPGR), and trade openness index (TOI) show mixed and statistically insignificant results, suggesting that these factors may not have a consistent or long-term influence on youth labor participation. Overall, the long-run coefficients point to the importance of GDP growth for employment generation while highlighting the potential distortions caused by remittances and foreign investments. These findings stress the need for policies that not only promote economic growth but also ensure that the benefits of growth translate into sustainable job creation for Nepalese youth.

Short-run Coefficients

Table 6 presents the short-run coefficients from the ARDL model, revealing how changes in key economic variables impact youth labor force participation (LFPR) in Nepal over the short term. The results show that lagged LFPR has a positive and significant coefficient (1.135), indicating strong

persistence in youth employment trends, meaning that past labor force participation influences current levels.

Table 6

Short Run Coefficients

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LFPR(-1))	1.135412	0.053961	21.04148	0.0000
D(CPIGR)	0.026120	0.003445	7.582432	0.0001
D(CPIGR(-1))	-0.043780	0.005009	-8.740898	0.0000
D(PGR)	-0.393595	0.064485	-6.103697	0.0003
D(UPGR)	-0.307570	0.040957	-7.509636	0.0001
D(UPGR(-1))	0.503075	0.039894	12.61032	0.0000
D(REMGR)	-0.023709	0.005892	-4.024152	0.0038
D(REMGR(-1))	0.039587	0.006970	5.679333	0.0005
D(FDIGR)	-0.063286	0.050512	-1.252904	0.2456
D(FDIGR(-1))	-0.573423	0.063383	-9.046949	0.0000
D(TOI)	2.757953	0.288014	9.575766	0.0000
D(TOI(-1))	-3.974444	0.313939	-12.65995	0.0000
CointEq(-1)*	0.357591	0.030291	11.80530	0.0000

R-squared	0.977744	Mean dependent var		-0.136138
Adjusted R-squared	0.961053	S.D. dependent var		0.205800
S.E. of regression	0.040615	Akaike info criterion		-3.267527
Sum squared resid	0.026393	Schwarz criterion		-2.654601
Log likelihood	60.37914	Hannan-Quinn criter.		-3.075566
Durbin-Watson stat	2.994257			

The short-run impact of inflation (CPIGR) is mixed: the current period coefficient is positive and significant (0.026), suggesting that moderate inflation could stimulate labor market participation by increasing nominal wages. However, the lagged coefficient is negative and highly significant (-0.043), indicating that inflationary pressures can dampen labor participation in the subsequent period, likely due to eroded purchasing power or economic instability.

Population growth rate (PGR) has a significant negative coefficient (-0.394), indicating that higher population growth exacerbates youth unemployment in the short run by increasing the supply of labor faster than the economy can create jobs. Similarly, the urban population growth rate (UPGR) shows both negative and positive coefficients, with the first lag being positive (0.503), suggesting that while rapid urbanization initially reduces unemployment, it may later lead to underemployment as urban job markets become saturated.

Remittances (REMGR) also display mixed effects, with a negative contemporaneous impact (-0.024) but a positive lagged effect (0.040), highlighting the complex role of remittances. In the short term, remittances might discourage job-seeking behavior, but in the long term, they can improve human capital investments, enhancing employability. Foreign direct investment (FDIGR) shows a significant negative lagged effect (-0.573), suggesting that short-term FDI inflows may not immediately create jobs for the youth.

Trade openness (TOI) exhibits a significant positive coefficient (2.758) in the short run, indicating that increasing trade boosts youth labor force participation by creating job opportunities in trade-related sectors. However, the negative lagged coefficient (-3.974) suggests that over-reliance on trade could lead to job losses in the following period, perhaps due to the displacement of local industries or competition from imports.

The short-run coefficients highlight the immediate and lagged effects of key economic variables, emphasizing that while certain factors like GDP growth and trade openness may initially boost youth employment, others like inflation and FDI can have delayed adverse effects. This underscores the need for balanced economic policies.

The Wald Test

Table 7 in the Annex presents the results of the Wald Test, which assesses the joint significance of multiple coefficients in the ARDL model explaining

youth unemployment in Nepal. The null hypothesis for the test assumes that all the coefficients of the included variables—GDP growth rate (GDPGR), inflation rate (CPIGR), population growth rate (PGR), urban population growth rate (UPGR), remittances (REMGR), foreign direct investment (FDIGR), and trade openness (TOI) are jointly equal to zero.

The test results show a highly significant F-statistic value of 8.3219 with a corresponding p-value of 0.0024, which leads to the rejection of the null hypothesis. This indicates that the independent variables collectively have a significant impact on youth unemployment. The Wald Test's chi-square statistic (149.7947, with a p-value of 0.0000) further supports the joint significance of the coefficients, implying that the variables significantly influence labor force participation among youth in Nepal.

This finding underscores the importance of considering multiple economic indicators simultaneously when formulating policies to address youth unemployment. It suggests that addressing issues like GDP growth, inflation, remittances, and FDI in isolation may not be sufficient, and a comprehensive, multi-faceted policy approach is necessary to improve youth employment outcomes in the long run.

Granger Causality Test

Table 8 from the Granger Causality Test results reveals significant predictive relationships between key economic variables and youth labor force participation (LFPR) in Nepal. Population growth (PGR) and urban population growth (UPGR) are both Granger-cause changes in LFPR, with F-statistics of 4.5924 (p = 0.0205) and 5.1538 (p = 0.0137), respectively. This indicates that shifts in demographic factors, particularly population and urbanization, are significant predictors of youth employment trends. Additionally, LFPR Granger-causes changes in the Trade Openness Index (TOI), as shown by an F-statistic of

7.1171 (p = 0.0037), suggesting that youth labor force dynamics influence trade activities.

Table 8

Granger Causality Test Results

Null Hypothesis:	Obs	F-Statistic	Prob.
PGR →LFPR	29	4.59237	0.0205
LFPR →PGR		1.79603	0.1876
UPGR →LFPR	29	5.15381	0.0137
LFPR →UPGR		1.12080	0.3425
REMGR →LFPR	29	1.85558	0.1781
LFPR →REMGR		3.36241	0.0516
TOI →LFPR	29	0.80254	0.4599
LFPR →TOI		7.11712	0.0037
PGR →GDPGR	29	0.37482	0.6914
GDPGR →PGR		7.96841	0.0022
FDIGR →GDPGR	29	1.19261	0.3208
GDPGR →FDIGR		2.91154	0.0738
TOI →PGR	29	2.78995	0.0814
PGR →TOI		3.24550	0.0566
TOI →UPGR	29	0.36316	0.6992
UPGR →TOI		8.93119	0.0013
TOI → REMGR	29	1.36671	0.2741
REMGR →TOI		3.42461	0.0492

The test also shows that GDP growth Granger-causes population growth, highlighting the interconnection between economic development and demographic changes. Other variables, such as remittances and foreign direct investment, show less predictive power in this context. Overall, these findings emphasize the importance of population dynamics, urbanization, and labor market participation in shaping Nepal's economic and trade environment.

Diagnostics and Stability Tests

Diagnostics and stability tests are essential for validating model assumptions, detecting issues, assessing parameter stability, ensuring robustness, improving model specification, and avoiding invalid inferences. They are integral to credible and accurate econometric analysis, ensuring that findings and recommendations are based on sound and reliable models.

Table 9

Diagnostics and Stability Tests

Diagnostics	Statistics	p-value
Normality(J-B)	0.390586	0.822594
Serial Correlation $x^2(2)$	12.51173	0.0019
B-P-G Test (Scaled explained SS)	1.12595	1.0000
Ramsey RESET(F_{STAT})	0.158104	0.7028
CUSUM Test	Stable	
CUSUM of Square Test	Stable	

The diagnostic tests conducted for the regression model yield important findings. The Jarque-Bera test suggests that the residuals follow a normal distribution, with a p-value of 0.822594, supporting the use of inferential statistics (see Figure 3). The Breusch-Godfrey test for serial correlation presents evidence of autocorrelation (p-value = 0.0019), confirming the dependence of residuals, as seen in Table 10. Furthermore, the Breusch-Pagan-Godfrey test for heteroscedasticity reports a p-value of 1.0000, indicating that the residuals exhibit constant variance, as shown in Table 11.

Additionally, the Ramsey RESET test, with a p-value of 0.7028, suggests that the model is correctly specified. The CUSUM and CUSUMQ tests, which assess model stability, involve plotting the cumulative sum of recursive residuals within the 95% confidence bounds. The plots, illustrated in Figures 4 and Figure 5 (see Annex), confirm that the model remains stable over time. Together, these diagnostic results demonstrate the model's robustness and reliability.

Discussion

This research builds on existing literature regarding youth unemployment in Nepal by expanding the scope of variables and applying a robust econometric framework. Past studies, such as Sharma et al. (2019) and Nepali et al. (2014), emphasized the role of structural unemployment, migration, and the informal sector as key determinants. Dhakal (2015) highlighted remittances, while boosting consumption, often exacerbate youth unemployment by failing to create sustainable job opportunities. These studies align with the current research's findings, which indicate that remittance inflows negatively impact youth employment. However, unlike previous works, this research integrates foreign direct investment (FDI) and trade openness, revealing that FDI may not lead to job creation due to its capital-intensive nature, a nuance not previously explored.

Further comparisons can be drawn with international studies like those of Assaad (2013) and Meyer and Meyer (2015), which suggest that GDP growth positively correlates with job creation but highlight demographic pressures as challenges. In line with these findings, this research shows that while GDP growth supports employment, population growth strains labor market absorption. Additionally, the research extends the analysis of urbanization, supporting Nepali et al. (2014) and Pandey (2022) by showing that rapid urban population growth worsens youth unemployment. This study's comprehensive model, incorporating inflation, trade, and remittances, provides a broader perspective on youth unemployment determinants, filling gaps left by earlier research.

Conclusion and Implications

This research provides a comprehensive analysis of the factors influencing youth unemployment in Nepal, focusing on key economic, demographic, and policy-related variables such as GDP growth, remittances, population growth, and foreign direct investment (FDI). The findings reveal that while GDP growth plays a crucial role in boosting labor force participation, remittances and FDI have

adverse effects, reflecting structural inefficiencies in the labor market. The negative impact of remittances on youth employment suggests that families may rely more on external income rather than local employment opportunities, while FDI has failed to create labor-intensive jobs necessary to absorb the growing workforce. Additionally, population and urbanization pressures further complicate job creation efforts. The study highlights important policy implications for addressing youth unemployment in Nepal. First, there is a need for policies that not only stimulate economic growth but also ensure that the benefits translate into employment opportunities for young people. Secondly, the reliance on remittances for economic stability must be balanced with domestic job creation strategies. Lastly, attracting FDI in labor-intensive sectors could help alleviate youth unemployment by generating more employment opportunities in industries that require significant workforce involvement.

The novelty of this research lies in its integration of variables such as FDI and trade openness, which have not been extensively explored about youth unemployment in previous studies on Nepal. Unlike existing literature that focuses on remittances and economic growth, this study provides a more nuanced understanding of how FDI, trade, and inflation influence youth labor force participation. Additionally, the use of a robust econometric approach, including the ARDL model and co-integration analysis, offers a deeper insight into both the short-run and long-run dynamics affecting youth unemployment. Future research could further explore the sectoral distribution of FDI and its impact on employment generation, particularly focusing on labor-intensive versus capital-intensive investments.

References

Acharya, B., Poudel, O., Upadhyaya, Y. M., & Acharya, P. (2024). A comprehensive analysis of remittances and basic level government school enrollment in Nepal. *International Research Journal of MMC*, *5*(3), 86-103. https://doi.org/10.3126/irjmmc.v5i3.68503

Assaad, R. (2013). Youth unemployment in the MENA region. *ILO Reports*.

Assaad, R., & Levison, D. (2013). Employment for youth: A growing challenge for the global community. *IZA World of Labor*.

Bleaney, M., & Greenaway, D. (2001). The impact of terms of trade on employment and investment. *Economica, 68*(1), 34-47.

Dhakal, B., Bigsby, H. R., & Cullen, R. (2007). The link between community forestry policies and poverty and unemployment in rural Nepal. *Mountain Research and Development*, *27*(1), 32-39.

Dhakal, R. (2015). Impact of informal sector on poverty and employment in Nepal: A micro-level study of Chitwan district. *Research Journal of Nepal, 12*(3), 45-59. https://www.researchgate.net/publication/281457268

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association, 74*(366), 427–431. https://doi.org/10.2307/2286348

Dumont, J. & Lemaitre, G. (2005). Counting immigrants and expatriates in OECD countries: A new perspective. *Conference on Competing for Global Talent*, Singapore Management University, Singapore, 13-14 January.

Giuliano, P., & Ruiz-Arranz, M. (2009). Remittances, financial development, and growth. *Journal of Development Economics, 90*(1), 144-152.

Granger, C. W. (1969). Investigating causal relations by econometric models and cross-spectral methods. *Econometrica, 37*(3), 424–438. https://doi.org/10.2307/1912791

International Labour Office (2012). *Global employment trends for youth 2012*. Geneva: ILO, 2012.

Johansen, S. (1988). Statistical analysis of cointegration vectors. *Econometrica, 56*(6), 1551-1582.

Khatri, B. B. (2020). Peer review process in scholarly communication and scientific publishing. *Nepalese Journal of Development and Rural Studies, 17*, 15–19. https://doi.org/10.3126/njdrs.v17i0.34947

Khatri, B. B., Poudel, O., Kafle, S. C., Acharya, P., & Simkhada, D. (2024). Trend analysis of tourist-arrivals in Nepal using auto-regressive integrated moving average (ARIMA) model. *Journal of Tourism & Adventure, 7*(1), 120-143. https://doi.org/10.3126/jota.v7i1.69542

Kluve, J. (2010). The effectiveness of European active labor market programs. *Labour Economics, 12*(5), 599-614. https://doi.org/10.1016/j.labeco.2010.02.004

Kucera, D., & Roncolato, L. (2008). Informal employment: Two contested policy issues. *International Labour Review, 147*(4), 321-348.

Lefresne, F. (2003). Explaining youth labour market volatility. *Labour Economics, 10*(3), 265-287.

McGuinness, S. (2006). Over-education in the labour market. *Journal of Economic Surveys, 20*(3), 387-418.

Meyer, N. & Meyer, D. (2017). An econometric analysis of entrepreneurial activity, economic growth and employment: The case of the BRICS countries. *International Journal of Economic Perspectives, 11*(2), 429-441.

National Statistics Office (NSO) (2023). *Nepal labour force survey 2022/23*. National Statistics Office, Nepal.

Nepali, R., Pandey, B., & Sharma, S. (2014). Urbanization and youth employment in Nepal. *Nepal Journal of Development Studies, 8*(2), 37-54. https://nepjol.info/index.php/njdrs/article/view/64159

Nickell, S. (1997). Unemployment and labor market rigidities: Europe versus North America. *Journal of Economic Perspectives, 11*(3), 55-74.

O'Higgins, N. (2012). This time it's different? Youth labour markets during 'the great recession. *IZA Discussion Paper* No. 6434. http://dx.doi.org/10.2139/ssrn.2032002

Pandey, B. (2022). Analysis of employment and economic patriotism: A case of Nepal. *Nepal Journal of Economics, 17*(1), 63-77. https://www.researchgate.net/publication/357945674

Pesaran, M. H. (2004). General diagnostic tests for cross-sectional dependence in panels. *Empirical Economics, 30*(3), 1–38. https://doi.org/10.1007/s00181-004-0206-3

Pesaran, M. H., & Shin, Y. (1995). *An autoregressive distributed lag modeling approach to cointegration analysis* [Conference presentation]. Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium, 1–12.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics, 16*(3), 289–326. https://doi.org/10.1002/jae.616

Poudel, O. (2023). Relationship between defense expenditure and economic growth in Nepal. *Unity Journal, 4*(1), 208–226. https://doi.org/10.3126/unityj.v4i01.52242

Rahman, M., Omar Farooq, M., & Selim, M., (2018). Mitigating educated youth unemployment in Bangladesh. *The Journal of Developing Areas*, *55*(1). https://doi.org/10.1353/jda.2021.0014

Sharma, S., Pandey, B., & Dhakal, R. (2019). The rhetoric of unemployment, racism, and sexism in Nepal. *Nepal Journal of Social Sciences, 9*(1), 14-29. https://www.researchgate.net/publication/337073992

Sianesi, B., & Van Reenen, J. (2003). The returns to education: Macroeconomics. *Journal of Economic Surveys, 17*(2), 157–200.

Stock, J. H., & Watson, M. W. (1993). A simple estimator of co-integrating vectors in higher order integrated systems. *Econometrica*, *61*(4), 783–820. https://doi.org/10.2307/2951763

Appendix

Table 7

Wald Test

Test Statistic	Value	Df	Probability
F-statistic	8.321927	(18, 8)	0.0024
Chi-square	149.7947	18	0.0000

Null hypothesis: C(3)=C(4)=C(5)=C(6)=C(7)=C(8)=C(9)=C(10)=C(11)=C(12)=C(13)=C(14)=C(15)=C(16)=C(17)=C(18)=C(19)=C(20)=0

Null hypothesis summary:

Normalized restriction (= 0)	Value	Std. Err.
C(3) = GDPGR	-0.084489	0.014001
C(4)= CPIGR	0.026120	0.009248
C(5) = CPIGR(-1)	-0.026474	0.008421
C(6)= CPIGR(-2)	0.043780	0.009027
C(7) = PGR	-0.393595	0.238946
C(8) = PGR(-1)	0.458677	0.152715
C(9) = UPGR	-0.307570	0.129093
C(10) = UPGR(-1)	0.679256	0.114469
C(11) = UPGR(-2)	-0.503075	0.102601
C(12) = REMGR	-0.023709	0.019503
C(13) = REMGR(-1)	0.118205	0.023517
C(14) = REMGR(-2)	-0.039587	0.014386
C(15) = FDIGR	-0.063286	0.109770
C(16) = FDIGR(-1)	0.099563	0.127363
C(17) = FDIGR(-2)	0.573423	0.138686
C(18) = TOI	2.757953	0.784391
C(19) = TOI(-1)	-5.665755	0.827510
C(20) = TOI(-2)	3.974444	0.622386

Restrictions are linear in coefficients.

Figure 2

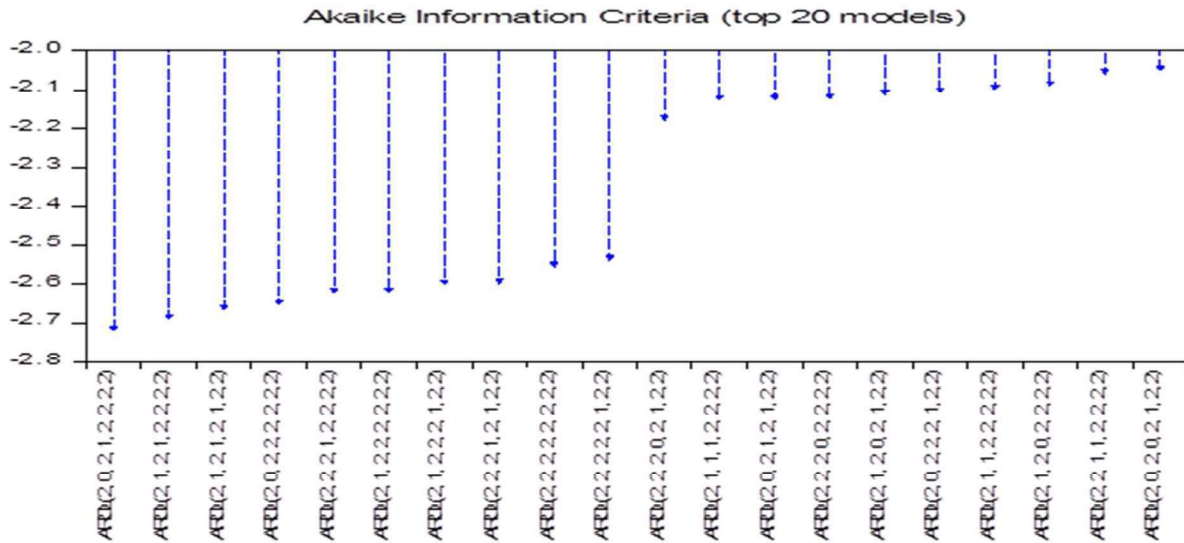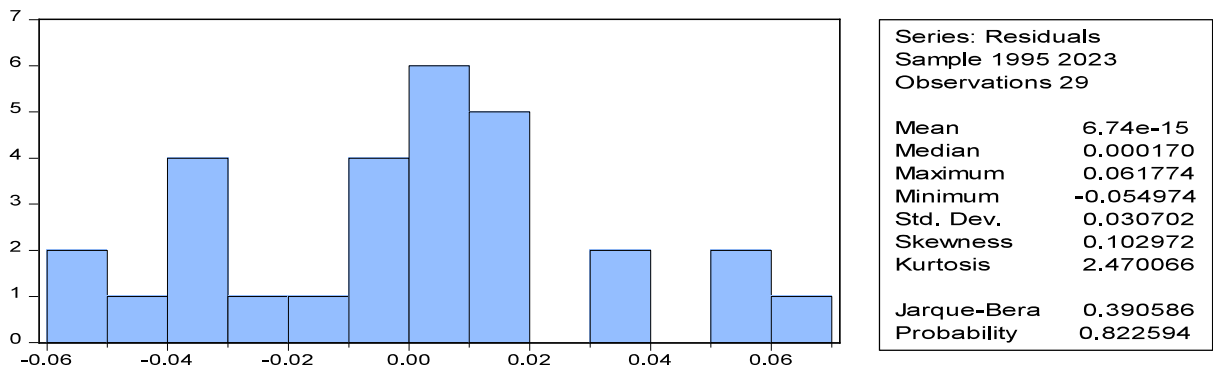*Akaike Information Criteria (Top 20 Models)*

Figure 3

Normality Test

Table 10

Breusch-Godfrey Serial Correlation LM Test

F-statistic	2.276478	Prob. F(2,6)	0.1838
Obs*R-squared	12.51173	Prob. Chi-Square(2)	0.0019

Table 11

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.907678	Prob. F(20,8)	0.5976
Obs*R-squared	20.12931	Prob. Chi-Square(20)	0.4499
Scaled explained SS	1.125952	Prob. Chi-Square(20)	1.0000

Table 12

Ramsey RESET Test

Specification: LFPR   LFPR(-1) LFPR(-2) GDPGR CPIGR CPIGR(-1) CPIGR(-2) PGR PGR(-1) UPGR UPGR(-1) UPGR(-2) REMGR REMGR(-1) REMGR(-2) FDIGR FDIGR(-1) FDIGR(-2) TOI TOI(-1) TOI(-2) C

Statistics	Value	df	Probability
t-statistic	0.397623	7	0.7028
F-statistic	0.158104	(1, 7)	0.7028

F-test summary:

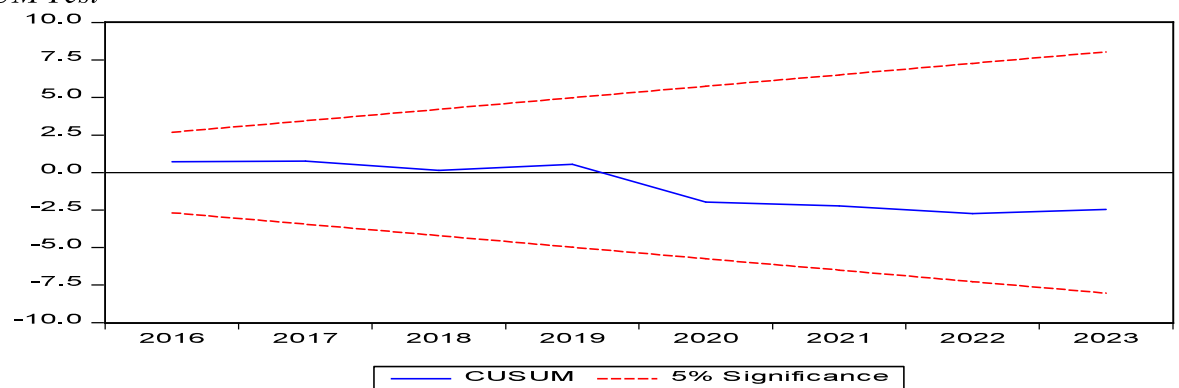|	Sum of Sq.	df	Mean Squares
Test SSR	0.000583	1	0.000583
Restricted SSR	0.026393	8	0.003299
Unrestricted SSR	0.025810	7	0.003687

Figure 4

CUSUM Test

Figure 5

CUSUM of Square Test