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IMPACT OF INTERNATIONAL MIGRATION ON ECONOMIC GROWTH IN NIGERIA: 1986-2023

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Abstract

Immigration of foreign populations can affect economic growth through two main channels: human capital and demographic shifts. However, Nigeria has consistently maintained a negative net migration rate over the past 4 decades. Thus, this study investigated the impact of international migration on economic growth in Nigeria from 1986 to 2023 using the Autoregressive Distributed Lag (ARDL) Regression technique. Results revealed that the net migration rate at level is positively related to economic growth in the short-run. However, one period lagged net migration rate is negatively and significantly related to economic growth in the short-run. Similarly, net migration rate appears to positively affect economic growth in the long run. On the other hand, the findings indicated that migrant remittances at level affect economic growth positively and significantly in the short-run. However, one period lagged migrant remittances is negatively related to economic growth in the short-run. Migrant remittances are positively related to growth in the long run. Furthermore, the estimated impact of labour force participation rate at level on growth is negative and significant in the short run. However, one period lagged labour force participation rate is significant and positively related to economic growth in the short-run. Similarly, labour force participation is positively related to growth in the long-run. The unemployment rate coefficient is negative and significant in the short run. However, the unemployment rate is negative and significantly related to growth in the long-run. Therefore, the Federal Ministry of Labour and Employment (FMLE) in collaboration with Nigerians in Diaspora Commission (NiDCOM) should introduce skills certification, microfinance schemes, and business incubation programs for returnee migrants, especially targeting their integration into the local labour market. Furthermore, the Nigerians in Diaspora Commission (NiDCOM) should establish a National Diaspora Investment

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Framework to create incentives such as tax rebates, risk guarantees, and matched funding programmes to channel migrant remittances into productive sectors like manufacturing, agribusiness, and technology. The Federal Ministry of Labour and Employment (FMLE) can boost labour force participation through inclusive economic policies. Specifically, the FMLE should implement gender-sensitive labour policies, expand childcare services, and introduce flexible working conditions to raise female labour force participation. The National Directorate of Employment (NDE) should design targeted youth employment and upskilling programmes by investing in vocational training, digital skills development and entrepreneurship support for youths and women in urban and rural areas.

JEL Codes: F22, F24, E61, F34, and N47

I. Introduction

International migration has become an integral component of the global development agenda. Both the 2015 Addis Ababa Action Agenda and the 2030 Agenda for Sustainable Development acknowledge migrants' positive contribution to inclusive growth and sustainable development in their countries of origin, transit, and destination. They also highlight the need to strengthen international co-operation to ensure safe, orderly, and regular migration, with full respect for human rights, regardless of migration status. The Sustainable Development Goals (SDGs) incorporate these concerns through the need to protect the rights of migrant workers, especially women (Target 8.8), adopt well-managed migration policies (Target 10.7), and reduce remittance transfer costs (Target 10.c) (United Nations, 2015a). In addition, the spread of humanitarian refugee crises led the international community to discuss the implementation of two global compacts: one for safe, orderly, and regular migration; the other for refugees (United Nations, 2017 and 2016).

In the last few decades' migration has become a factor in the promotion of the international development of the economy. Migrants have ties with their country of origin, their initial household there (by remittances, investment, lobbying), and the home community, which is the main channel of migration contribution to the migrant's native economy development. Migrants exchange money, knowledge, and ideas between the host and home countries. Remittances are the most important international migration contribution for developing countries. The volume of such remittances has reached a significant global level. These flows have become an important source of foreign exchange and financing for many developing countries. They are arguably less volatile than other types of capital flows, such as portfolio investment, foreign direct investment, and official foreign aid.

Not all aspects of migration are beneficial for developing countries. Migration may impose a high cost on developing countries by leaving the country without the human capital necessary to achieve long-term economic growth. At the same time, human capital flight may impose a significant economic burden on developing countries as migrants take with them the value of their training, which is often subsidized by governments with limited resources. While migration impacts development, economic conditions are important migration drivers. People migrate for various reasons, including the search for better economic opportunities, education, family reunion, and escaping violence. People often migrate for a combination of these and other reasons. However, the expected income gap between developed and developing countries is a strong incentive for migrants. As such, migration affects development, but development also affects migration.

Immigration of foreign populations can affect economic growth through two main channels: human capital and demographic shifts. Migration is assumed to elevate global GDP and boost productivity, but Nigeria has consistently maintained a negative net migration rate over the past 4 decades. Factors contributing to this trend include high unemployment rates, migrant remittances, population growth, unstable politics, ethno-religious conflicts, and poverty.

Migrant remittances are another crucial factor for economic growth, as they can be used for human capital investments, such as healthcare, funding acquisition, and education. However, their positive impact depends on how the receiving homes use their remittances. Remittances can improve economic growth in countries with open policies and better financial institutions but can also prolong growth if used for consumption instead of investments. International migration can also boost the capital accumulation of migrants and natives, increasing the employment-to-population ratio in host countries. Migrants also foster labor productivity, innovation, and complementarities with native workers by increasing productive skills diversity. Thus, this study examined the impact of international migration on economic growth in Nigeria from 1986 to 2023, with a special focus on potential channels such as net migration rate, migrant remittances, and labor force participation rate.

II. Literature Review

Theoretical Framework

The theoretical background of this study is rooted in the Solow neoclassical growth model. The Solow model, in particular, was a seminal contribution to the neoclassical theory of growth and earned Robert Solow the Noble Prize in economics. It expanded on the Harrod-Dormar formulation by adding a second factor, labour, and introducing a third independent variable, technology, to the growth equation. Unlike the Harrod–Dormar model's fixed-coefficient, constant-returns-to-scale assumption, Solow's neoclassical growth model exhibited diminishing returns to labour and capital separately and constant returns to both factors jointly. Technological progress became the residual factor explaining long-term growth, and its level was assumed to be exogenously determined, that is, independently of all other factors. The Solow neoclassical growth model uses a standard aggregate production function in which

$$Y = K^{\alpha}(\mathrm{AL})^{1-\alpha} \qquad (1)$$

Where Y is the gross domestic product, K is the stock of capital (which may include human capital as well as physical capital), L is labour, and A represents productivity of labour, which grows at an exogenous rate. For developed countries, this rate has been estimated at approximately 2% per year. It may be smaller or larger in developing countries, depending on whether they are stagnating or catching up with developed countries. Because the rate of technological progress is given exogenously (at 2% per year), the Solow neoclassical model is sometimes called an "exogenous growth model. In equation 2.1, α represents the elasticity of output with respect to capital (the percentage increase in GDP resulting from a 1% increase in human and physical capital). The physical capital component is usually measured statistically as the capital share in a country's national income accounts. Since α is assumed to be less than 1 and private capital is assumed to be paid its marginal product so that there are no external economies, this formulation of neoclassical growth theory yields diminishing returns to both capital and to labour.

As people flow across borders through immigration, labour and human capital are moving from country to country, including the flow of technology and ideas. In line with the Solow-Swan growth model, immigration of foreign population into the host country can affect economic growth through two main channels. Initially, migration's primary effect on the host country's economy arises from demographic shifts, with the arrival of foreign workers leading to an increase in the growth of the labour force. The second channel through which

immigration influences the endowments of production factor is through human capital, including skills and abilities (Weil, 2013).

Therefore, this study added a vector of explanatory variables to Eq. (3.1) in order to capture the impact of international migration variables on economic growth. The explained variable in Eq. (3.1) is represented by the real GDP growth rate, which is a proxy for economic growth. The net migration rate; migrant remittances; and labour force participation rate were the explanatory variables. This study incorporated the unemployment rate (Ur) as a relevant control variable to better understand the signs of the relation between international migration on the one hand and economic growth on the other, this study incorporated unemployment rate (Ur) as a relevant control variable (Dritsaki & Dritsaki, 2024., Iscan & Demirel, 2021., Mtiraoui, 2024 and Șerban et al., 2020).

Empirical Review

Various studies have been conducted across developed and developing economies on the impact of international migration on economic growth and other macroeconomic indicators, with varying outcomes and conclusions. Therefore, this study reviews some of these works with a focus on the currency, relevance, and appropriateness of empirical studies as follows:

Sofia (2024) replicated a statistical investigation of immigration's effect on economic growth, by also incorporating labour participation and labour force with advanced education into the model. Furthermore, the study explores whether different levels of migration policies have various impacts on economic growth. The analysis uses data from 20 OECD countries from 2000 to 2020, divided in five sub-periods. An OLS regression analysis and logarithmic regression are applied to conduct the examination. Furthermore, the regression results indicate that immigration has no statistically significant effect on economic growth. The study also concluded that there is no evidence implying that more developed migration policies contribute more to economic growth than those of low levels.

Mtiraoui (2024) elucidated the direct and indirect repercussions of migration on economic growth, specifically examining its interaction with unemployment against the backdrop of political instability. Employing a simultaneous equation model, this study spans the period from 1990 to 2020, providing comprehensive insights into the intricate dynamics at play. The findings affirmed a global resonance, particularly across most Middle East and North Africa (MENA) nations. This analysis not only contributes to the existing body of knowledge but also underscores the complexity and multifaceted nature of these interactions in the MENA region.

Lanati and Thiele (2024) investigated the relationship between income per capita and emigration to OECD countries separately for three different skill groups—low-skilled, medium-skilled, and high-skilled emigrants—being the first to employ panel regression approaches that account for cross-country heterogeneity and cover a policy-relevant time frame of about 5 years. Findings revealed a universal negative association between income per capita and emigration for all three skill groups and for different income thresholds. This implies that policymakers should not be too concerned about potential trade-offs between (successful) development cooperation and immigration management, at least in the short- to medium-term.

Chernobay et al. (2024) studied theories that reflect the initiation of international migration and describe migration decisions or situations independent of structural or individual factors that originally caused migration. The study outlined a variety of influences on the host country's economy by the migrants and focused on: migrants-workers, migrants-students, migrants-entrepreneurs, migrants-consumers, migrants-savers, migrants-tax-payers. The research found that the contribution that immigrants can make to the economy of their host countries depends on the following factors: the socioeconomic characteristics of the immigrants themselves; immigration status and labour rights; level of integration into society; economic environment of the destination country; and policies and

institutional environment. The study conducted a correlation analysis and constructed a correlation matrix between GDP per capita growth and migrants' remittances for some developing countries that showed a strong direct level of correlation. The research showed a strong direct correlation between the remittances of migrants from developed countries and the growth of GDP per capita in developing countries. The strongest link is observed in India, Nigeria, and the Philippines, the country's most dependent on remittances from migrants. The research confirmed that India, China, Mexico, the Philippines, and Nigeria benefited in GDP per capita due to migrants' remittances. The study developed priorities for the policy of migration countries, the base of which should be adaptation of the migration policy to labour market needs; protection of migrant's rights and nondiscrimination; investment into integration of migrants; leveraging the impact of migration on the economy; and monitoring the economic impact of migration.

Dritsaki and Dritsaki (2024) scrutinized the impact of migration on economic development and unemployment across the 27 EU nations from 1990 to 2020, using a polynomial probabilistic analysis regression model. The Pesaran CIPS test (2007) was employed for second-generation unit root testing, while co-integration was examined using the ARDL panel model. The ARDL panel and error correction models were employed to assess the causal relationships and their directions. The study's findings demonstrated a significant positive correlation between GDP per capita and the unemployment rate and the net migration rate to EU countries. Causal effects revealed a bidirectional long-term causal relationship between migration and unemployment and a unidirectional long-term causal relationship between growth and migration and growth and unemployment. Short-term Granger causality indicated a bidirectional causal relationship among all variables under examination. The study recommended that EU countries should adopt effective immigration policies to attract a highly qualified labour force, serving as a primary driver for achieving sustainable growth objectives.

Nwokoro (2024) examined the effect of globalization and migration on Nigeria's economic growth. The study covered 33 years (1990 – 2022). The variables used in this study are FDI, trade openness, foreign exchange rate, remittances, and gross domestic product. The Autoregressive Distributed Lag model was employed in the study, and a long-run relationship was established. Further findings revealed that remittances had a significantly positive effect on Nigeria's economic growth eventually. The study suggested that the government, as a key player, should take immediate action to develop policies that bolster and optimize the advantages of remittance inflows.

Kwara and Abdullahi (2024) investigated the potential impact of net migration on Nigeria's economic growth from 1974 to 2021. Autoregressive Distributed Lag (ARDL) bounds testing method was employed. The results of the cointegration test indicate that net migration and economic growth have a co-integrating relationship. The empirical findings revealed a strong negative long-run relationship between Nigeria's net migration and economic expansion. Based on this finding, the study suggested that the government should work to reverse the undesirable factors that contribute to emigration from Nigeria, including low wages and an unfavorable incentive structure.

Rayevnyeva et al. (2023) investigated the influence of general migration on GDP in Spain. The study analyzed five factors that have major influences on GDP: migration (I), interest rate (IR), active population (AP), export (E), and consumer price index (CPI). The study employed Vector Autoregressive Models (VAR models) to perform the analysis. Furthermore, the Granger causality test was used to investigate the lag structure and identify the exogenous variables in the VAR model, such as GDP, migration, and the active population. Furthermore, the study investigated the cross-influence between these factors and found that migration has a negative effect on the active population and a positive effect on GDP, while GDP growth leads to a decrease in migration. The impulse analysis of shock influences identifies the structure of the reaction seen in GDP and migration, depending on their shock factors. Using decomposition analysis, the research found that migration and GDP influence each other by

10%–14%, which can improve the forecasting of these factors and the study of structural migration using these three types. To improve the efficiency of migration process management in Europe and Ukraine, the study recommended that attention should be paid to the influence of three components of migration such as labour migration; educational migration; refugee migration.

Savin et al. (2023) studied the theoretical foundations and practical aspects of the analysis of international migration and identified its impact on countries' financial and economic cooperation. The methodological basis of the study is built on general and special methods of economic analysis and scientific cognition, namely: system analysis, synthesis, scientific abstraction, comparison, analogy, statistical analysis, functional-systemic approach, graphical and tabular methods, generalization, systematization, grouping, and k-means clustering method. The results indicated that international migration has significantly aggravated and significantly impacted the formation of the basic principles of financial and economic cooperation of countries. The largest migration flows from Ukraine to European countries have been identified, which is due to the intensification of the financial, economic, humanitarian, and socio-political crisis caused by Russia's full-scale invasion of Ukraine. The greatest destructive impact of international migration is experienced by countries such as Poland, the Czech Republic, Germany, and Hungary, where the largest number of refugees and socially vulnerable populations are concentrated. A significant level of financial support has been established for Ukraine from highly developed countries. This is manifested in the provision of significant credit and grant assistance. Strengthening interstate cooperation between countries in the field of migration has been suggested to overcome the crisis.

Oyegoke and Amali (2022) empirically estimated the effects of international labour emigration and remittances on Nigeria's economic development using annual time series data for the period 1977-2021. The Ordinary Least Squares (OLS) was employed to analyze the model. Findings suggested a significant positive effect on Nigeria's economic development. Therefore, the study concluded that labour migration is an alternative source of income in Nigeria that positively enhances economic development and should not be discouraged (ceteris paribus).

To gauge the potential impact of the coronavirus-induced reduction in the international flow of student migrants, Rasamoelison et al. (2021) estimated the pre-pandemic effects of student migration from 122 low- and middle-income countries to French- and English-speaking high-income countries on the economic growth of the sending countries. Using regional fixed-effects and instrumental-variables estimators to address the potential endogeneity of student-migrant flows, the study found positive and statistically significant effects of student migration on per capita GDP in sending countries. These findings are robust to different time lags and increase over time. Results indicated that student migrants have a modest but meaningful impact on their home countries' short-run economic growth. In terms of the mechanisms through which student-migrant flows can affect home country growth, the study found evidence of 'incentive effects' for students going to English-speaking countries and evidence of student-migrant flows affecting the sending countries' political and democratic political systems. The study findings suggest that the growth benefits of education migration for developing countries are also real and that the 'brain drain' of this sort of migration may in fact be a 'brain gain.

Iscan and Demirel (2021) investigated the interplay among migration, unemployment, and economic growth across 33 Organization for Economic Cooperation and Development (OECD) countries from 2000 to 2019. Causality analyses are implemented using the Panel Autoregressive Distributed Lag (ARDL) and Panel Vector Error Correction Model (VECM) to elucidate their relationships and directions. The outcomes revealed a substantial and enduring connection between migration and economic growth, indicating that a 1% rise in migration levels correlates with a 0.43% increase in GDP.

Lupoiu and Raceanu (2019) investigated the economic advantages of migration by highlighting the impact of remittances on Romania's economic progress. They view remittances as an external source of significant and

steady funds that contribute to the economic advancement of a nation. The study used panel data regression, and the results indicated a favorable relationship between globalization and remittances, as well as a positive impact of remittances on gross domestic product (GDP). They concluded that remittances play a beneficial role in a country's economy and that their growth coincided with the increasing trend of globalization, making them greatly influenced by the current era.

III. Data and Methods

The selected research design in this paper is the ex-post facto design. The ex-post facto design is particularly suited for studies that aim to decipher statistical associations between dependent and independent variables, primarily to establish cause-and-effect relationships.

Model Specification

The model for this research is based on the theoretical framework and modified model adapted from the work of Mtiraoui (2024), who examined the interaction between migration and economic growth through unemployment in the context of political instability in the MENA region. The specification model applied in the study is of the following form:

$$GDP = \beta_0 + \beta_1 MGR + \beta_2 UNE + \beta_3 TRADE + \beta_4 INV + \beta_5 FDI + \beta_6 INF + \beta_7 IQG + \beta_8 PIS + \varepsilon_t \quad (2)$$

Where, GDP = Gross Domestic Product Growth; MGR = Migration Rate; UNE = Unemployment Rate; TRADE = Trade; INV = Investment; FDI = Foreign Direct Investment; INF = Inflation Rate; IQG = Governance Quality Index; PIS = Political Instability; ε_t = Error term β_0 = Constant or intercept term

However, the above model was modified by including channels where the immigration of foreign population into the host country can affect economic growth. Thus, this study adds a vector of explanatory variables to capture the impact of international migration variables on economic growth. These variables include the real GDP growth rate, which is a proxy for economic growth. The net migration rate; migrant remittances; and labour force participation rate were the explanatory variables. This study incorporated the unemployment rate (Ur) as a relevant control variable to better understand the signs of the relation between international migration on the one hand and economic growth on the other, this study incorporated unemployment rate (Ur) as a relevant control variable (Dritsaki & Dritsaki, 2024., Iscan & Demirel, 2021., Mtiraoui, 2024 and Șerban et al., 2020). Thus, the modified model is presented as follows:

$$GDPGR_t = \beta_0 + \beta_1 NMR_t + \beta_2 MREM_t + \beta_3 LFPR_t + \beta_4 UNR_t + \varepsilon_t \quad (3)$$

Where, GDPGR = Real gross domestic product growth rate, a proxy for economic growth;
NMR = Net migration rate; MREM = Migrant remittances; LFPR = Labour force participation rate; UNR = Unemployment rate; β_0 = The intercept or autonomous parameter estimate, $\beta_1 to \beta_4$ = Parameter estimate representing the coefficients of NMR, MREM, LFPR and UNR respectively, and ε_t - other variables not explicitly included in the model. Furthermore, this research apriori expectations of the estimated parameters are expressed as follows:

$\beta_1 < 0$; The coefficient of net migration rate is expected to have a negative impact on economic growth;

$\beta_2 > 0$; The coefficient of migrant remittances is expected to positively impact economic growth;

$\beta_3 > 0$; The coefficient of labour force participation rate is expected to have a positive impact on economic growth;

$\beta_4 < 0$; The coefficient of unemployment rate is expected to negatively impact economic growth.

This study investigated the impact of international migration on economic growth in Nigeria, using the Autoregressive Distributed Lag (ARDL) framework introduced by Pesaran et al. (2001). The ARDL model is specified as follows to run the bound test for cointegration:

$$\Delta Y_t = \beta_0 + \sum_{i=1}^{p} \beta_i \Delta y_{t-1} + \sum_{j=0}^{q} \partial_j \Delta X_{t-J} + \phi_1 y_{t-1} + \phi_2 X_{t-1} + \mu_t \quad (4)$$

Where Δ denotes the first difference operator, β_i, ∂_j stand for the short-run coefficients, ϕ_1, ϕ_2 are for the long-run coefficients and μ_t is the disturbance(white noise) term. Transforming equation (3) into an ARDL model yields the following results:

$$\Delta GDPGR_t = \alpha_0 + \sum_{i=1}^{m} \alpha_{1i} GDPGR_{t-i} + \sum_{j=0}^{n} \alpha_{2i} \Delta NMR_{t-j} + \sum_{k=0}^{o} \alpha_{3i} \Delta MREM_{t-k} + \sum_{l=0}^{p} \alpha_{4i} \Delta LFPR_{t-l}$$

$$+ \sum_{l=0}^{r} \alpha_{5i} \Delta UNR_{t-l} + \alpha_6 GDPGR_{t-1} + \alpha_7 NMR_{t-1} + \alpha_8 MREM_{t-1} + \alpha_9 LFPR_{t-1} + \alpha_{10} UNR_{t-1} + \varepsilon_t \text{ -----} (3.12)$$

The bounds test is conducted by testing the null hypothesis (H_0) against the alternative hypothesis (H_1) using the following equations:

$H_0 : \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = 0$ and $H_1 : \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq 0$

The results of the bounds test derived from the computed F-Statistic are comparable to those of Pesaran et al. (2001), who concluded that cointegration between the series is present if the F-Statistic is greater than the upper bound I (1) in each case, rejecting the null hypothesis of no cointegration.

The series error correction model with the ARDL framework is as follows:

$$\Delta GDPGR_t = \alpha_0 + \sum_{i=1}^{m} \alpha_{1i} \Delta GDPGR_{t-i} + \sum_{j=0}^{n} \alpha_{2i} \Delta NMR_{t-j} + \sum_{k=0}^{o} \alpha_{3i} \Delta MREM_{t-k} + \sum_{l=0}^{p} \alpha_{4i} \Delta LFPR_{t-l} + \sum_{l=0}^{q} \alpha_{5i} \Delta UNR_{t-l}$$

$$+ ECT_{t-1} + \varepsilon_t \text{ ----------} (3.13)$$

Where,

ECT_{t-1} = lagged Error correction term. The ECT captures the output evolution process that agents use to react to the prior period of prediction errors.

The Autoregressive Distributed Lag (ARDL) technique has an added advantage in that it can be applied for any order of integration due to its dynamic nature. The ARDL method, as suggested by Pesaran et al. (2001), can be adopted regardless of the integration order of the independent variables, whether they are purely I (0), purely I (1), or mutually co-integrated (Gökmenoğlu & Taspinar, 2016; Katircioglu, 2009, 2010). The ARDL framework gives efficient results because it is free from serial correlation and endogeneity problems and can be estimated in the presence of endogenous explanatory variables (Pesaran et al., 2001). The ARDL technique gives more robust results than other conventional co-integration models for a small sample size.

Description and measurements of variables

Table 1: Variable Description and Measurements

Variable	Acronym	Description	Measurement	Source
Real GDP growth rate	GDPGR	The real GDP growth rate is generally taken as a measure of economic growth because it measures the total value created in an economy in a given period.	Annual (%)	Central Bank of Nigeria (CBN, 2024)
Net migration rate	NMR	This is the international migrant stock, total, Population ages 25-29, female (% of female population)	Annual (%)	Development Indicators (World Bank, 2024)
Migrant remittances	MREM	Personal cash transfers from a migrant worker or immigrant to a relative in the country of origin. Measured as the share of private remittances in the GDP	Annual (%)	World Development Indicators (World Bank, 2024)
Labour force participation rate	LFPR	This is the proportion of the population aged 15 and older that is economically active.	Annual (%)	World Development Indicators (World Bank, 2024)

Unemployment rate	UNR	Jobless share of the labour force, expressed as a percentage.	Annual (%)	National Bureau of Statistics (NBS, 2024)

Source: Compilation of Researchers, 2025

IV. Results and Discussions

Descriptive Statistics

Table 2 presents the descriptive statistics of the study.

Table 2: Descriptive Statistics for the study

	GDPGR	NMR	MREM	LFPR	UNR
Mean	4.128159	36764.97	2.978688	83.12947	9.221053
Median	3.921556	56064.50	2.928488	83.30950	7.500000
Maximum	15.32916	145575.0	8.333829	84.30100	33.30000
Minimum	-2.035120	-116162.0	0.004883	81.74200	3.500000
Std. Dev.	3.807491	69066.96	2.530795	0.938485	8.469888
Skewness	0.546333	-0.528678	0.229742	-0.160271	2.170053
Kurtosis	3.550660	2.406193	1.707045	1.352668	6.219125
Jarque-Bera	2.370477	2.328463	2.981192	4.459380	46.23219
Probability	0.305673	0.312162	0.225238	0.107562	0.000000
Observations	38	38	38	38	38

Source: Author's Computation, 2025 (Eviews-12)

From Table 2, Real gross domestic product growth rate (GDPGR) has an approximate average of 4.13% and ranges from 2.035120 (minimum) to 15.32916 (maximum), with a standard deviation of 3.81%. While, Net migration rate (NMR) has a mean value of 36764.97 percent, with standard deviation of 69,066.96%, minimum and maximum values of 116,162.0 and 145,575.0, respectively. Similarly, Migrant remittances (MREM) has an approximate average of 2.98% and ranges from 0.004883 (minimum) to 8.333829 (maximum), with a standard deviation of 2.53%. Also, Labour force participation rate (LFPR) has an approximate average of 83.13 % and ranges from 81.74200 (minimum) to 84.30100 (maximum), with a standard deviation of 0.94 %. Furthermore, the unemployment rate (UNR) has an approximate average of 9.22% and ranges from 3.500000 (minimum) to 33.30000 (maximum), with a standard deviation of 8.47%.

Furthermore, Table 2 displays the skewness coefficient, a measure of how far a distribution deviates from symmetry, with all variables having skewness values less than one, except the UNR variable with skewness value greater than one. The entire data series is not platykurtic (not having negative values), as confirmed by the kurtosis result, which measures a distribution's degree of peakedness in relation to a normal distribution. Additionally, as evidenced by the probability values of each variable's corresponding Jarque-Bera statistics, except for the UNR variable, the variables are nominally distributed. Since the accompanying Jarque-Bera probability values of these variables have a significance level greater than 5%, they may be normally distributed.

Correlation Analysis

Correlation analysis provides valuable insights into how each independent variable relates to the dependent variable. The correlation coefficients in this analysis help identify whether these variables move together in a positive or negative direction and the strength of these relationships.

Table 3: Correlation Matrix Result

	GDPGR	NMR	MREM	LFPR	UNR

GDPGR	1				
NMR	0.007588	1			
MREM	0.082647	-0.655101	1		
LFPR	-0.053407	0.654839	-0.760489	1	
UNR	-0.103387	-0.631669	-0.368797	-0.401116	1

Source: Computation Using EViews-12 (2025)

The correlation coefficients presented in Table 3 are considerably below 0.8, indicating that the model has no serious multicollinearity. By implications, all variables are free from the multicollinearity problem. Additionally, the correlation coefficients presented in Table 3 indicated a positive association between economic growth international migration variables such as Net migration rate (NMR) and Migrant remittances (MREM) in Nigeria. The correlation between economic growth (GDPGR)) Labour force participation rate (LFPR); and Unemployment rate (UNR) was negative. Furthermore, the correlation between economic growth (GDPGR) and unemployment rate (UNR) was found to be the strongest at 10%.

Unit Root Results

A unit root test, such as the Augmented Dickey-Fuller (ADF) test, is a common statistical method used to determine whether a time series data set is stationary. The ADF test checks for a unit root in a time series by testing the null hypothesis that the series has a unit root (non-stationary) against the alternative hypothesis that the series is stationary. The Augmented Dickey-Fuller (ADF) unit root test results are displayed in Table 4 as follows:

Table 4 Results of the Traditional Unit Root Test

Variable	Method	Level Stat. (Prob.)	First Diff. Stat. (Prob.)	Order of Integration
GDPGR	ADF	-4.082376* (0.0030)	-10.81274*(0.000)	I(0)
NMR	ADF	-4.571339* (0.0043)	-6.780731*(0.0000)	I(0)
MREM	ADF	-1.621727 (0.4617)	-6.089774*(0.0000)	I(1)
LFPR	ADF	-0.302421(0.5699)	-1.986166**(0.0463)	I(1)
UNR	ADF	-0.457617 (0.9813)	-5.026515*(0.0013)	I(1)

Note: * and ** indicate stationary at the 1% and 5% levels, respectively.

Source: Researcher's Computations using E-Views 12

Table 4 shows that the real gross domestic product growth rate (GDPGR); and Net migration rate (NMR) variables tend to be stationary at the level according to the conventional test of the Augmented Dickey-Fuller (ADF). However, Migrant remittances (MREM); Labour force participation rate (LFPR); and Unemployment rate (UNR) variables are likely to be stationary in first difference.

Co-integration Results

The variables were all found to be integrated at different orders; hence, they all satisfied the ARDL-bound testing approach, which requires every variable in the equation to be static either at the level or at the first difference or modification. The Augmented Dickey-Fuller (ADF) unit root results presented in Table 4 imply that the bounds testing approach is applicable in this investigation, as all the variables are a mixture of I(1) and I(0). The co-integration test helps to establish the existence of long-run equilibrium relationships among variables of interest. If co-integration is found among variables, ARDL error correction model becomes applicable. The results of the cointegration test are presented in Table 5:

Table 5: Result of ARDL Bounds Test for Co-integration

Null Hypothesis: No Long-run Relationships Exist

Test Statistic	Value	K
F-Statistic	11.94323	4
Critical Value Bounds		
Significance	Lower Bound	Upper Bound
5%	2.56	3.49

Source: Computations based on E-Views 12

From Table 5, the bounds test value of the F-statistics, which is 11.94323, is higher than the values of the upper and lower bound limit, which are 2.56 and 3.49, respectively, at the 5% critical level of significance. This means that a long-run equilibrium relationship between the dependent variable and the explanatory variables of the model. Considering the correlation of the dependent variable with the regressors, the study proceeded to estimate the error correction and the long-term models. Table 6 presents the outcomes of the estimates as follows:

Table 6: ARDL Regression Results

Dependent Variable: D(GDPGR)

Co-integrating Estimates (ECM Estimates)				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(GDPGR(-1))	0.720856	0.264719	2.723101	0.0185
D(GDPGR(-2))	-0.320478	0.262345	-1.221589	0.2453
D(GDPGR(-3))	0.157965	0.097208	1.625016	0.1301
D(NMR)	9.130006	5.830006	1.565709	0.1434
D(NMR(-1))	-3.280005	6.440006	-5.102624	0.0003
D(NMR(-2))	-1.820005	5.670006	-3.213849	0.0074
D(MREM)	0.774102	0.221127	3.500703	0.0044
D(MREM(-1))	-0.305587	0.190498	-1.604149	0.1347
D(LFPR)	-21.60775	1.611854	-13.40552	0.0000
D(LFPR(-1))	25.05352	7.323382	3.421031	0.0051
D(LFPR(-2))	-33.53874	10.63925	-3.152359	0.0083
D(LFPR(-3))	27.79711	7.602394	3.656363	0.0033
D(UNR)	-0.265132	0.090836	-2.918795	0.0129
D(UNR(-1))	-1.430235	0.150101	-9.528470	0.0000
D(UNR(-2))	-1.177491	0.160031	-7.357886	0.0000
D(UNR(-3))	-1.135144	0.180540	-6.287492	0.0000
CointEq(-1)*	-0.819282	0.081314	-10.07559	0.0000
R-squared	0.957844			
Adjusted R-squared	0.918168			
Durbin-Watson stat	1.777786			
Long Run				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
NMR	6.690005	5.310005	1.259359	0.2318
MREM	1.328867	1.236343	1.074837	0.3036
LFPR	1.370109	0.942428	1.453808	0.1716
UNR	1.802055	0.773749	2.328991	0.0381
C	-127.9953	82.99910	-1.542129	0.1490

Source: Computation Using EViews-12 (2025)

Table 6 shows that the net migration rate, migrant remittances, labour force participation rate, and unemployment rate variables employed in this investigation have a statistically significant impact on economic growth either at a level or in one period that lagged in the short-run. Only the unemployment rate variable has a statistically significant long-run impact on economic growth. Furthermore, one-period lagged net migration rate, migrant remittances at level, one-period lagged labour force participation rate, and unemployment rate at level in agreement with this study apriori expectation in the short-run. While, migrant remittances, and labour force participation rate variables conform to this study apriori expectations eventually. Thus, the estimated ARDL regression result indicated that the one-period lagged net migration rate, migrant remittances at level, one period lagged labour force participation rate, and unemployment rate at level are the main short-run drivers of economic growth in Nigeria during this study period. While migrant remittances, and labour force participation rate variables appear to drive long-term economic growth in Nigeria.

At the 1% level, the Error Correction Model is highly statistically significant, negatively signed, and as expected. This provides further proof that the dependent variable and the regressors have a long-run relationship. The coefficient's absolute value, which falls between 0 and 1, shows that to maintain the equilibrium, yearly corrections are made to the short-run divergence from the equilibrium (long-run) position, which is roughly 82%. Since the explanatory variables account for more than 96% of the variation in inflation rate, the model appears to be well-fitting, as indicated by the R-squared value of 0.957844. On the other hand, the DW figure of 1.777786 indicated that there is no problem with serial correlation. The conclusions of this study can be trusted for developing policy recommendations.

Post-Estimation Test Results

A few diagnostic tests were conducted to assess the model's stability and applicability as well as the validity of the results. Results is as presented in Table 7 as follows:

Table 7: Diagnostic Test Results

Test	Null Hypothesis	T-Statistic	Prob
Jarque-Bera	A normal distribution	2.55	0.28
Heteroskedasticity: LM	No conditional heteroscedasticity	0.14	0.87
Heteroskedasticity: Breusch-Pagan-Godfrey	No conditional heteroscedasticity	1.96	0.11

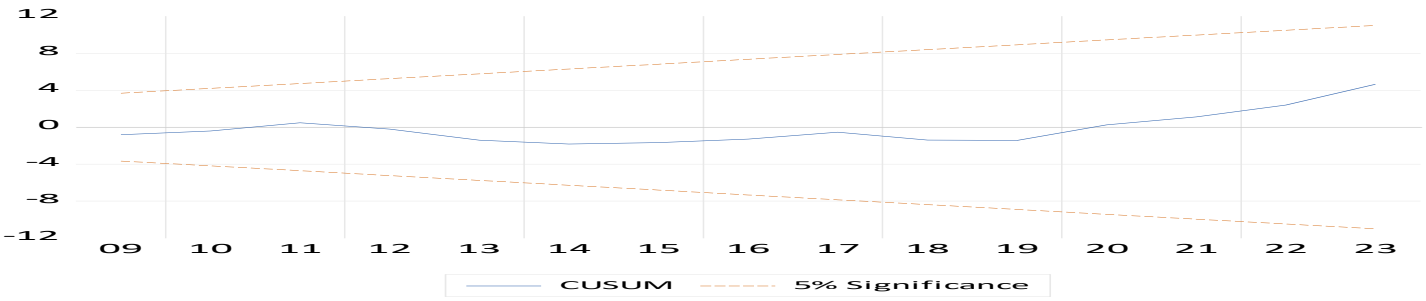
Source: Computations based on E-Views 12

From Table 7, the model did not display serial correlation or heteroskedasticity during the study period. Heteroscedasticity tests indicated that the residuals are homoscedastic. The results of the diagnostic tests for serial correlation and heteroscedasticity suggest that the data are reasonably well behaved. Furthermore, the p-value for the normality test for the research period was >0.05, indicating that the residues are distributed normally. This results in a uniform distribution of residuals. The normal distribution null hypothesis was not rejected.

Stability Test Results

The stability test in Figure 1 also revealed that the growth model is stable during the study period as the charts plots lie within the critical bounds at 5% significance level. Bahmani-Oskooee and Rehman, (2005) noted that the null hypothesis that states the regression equation is correctly specified cannot be rejected when the plot of these statistics is within the critical boundaries at 5% significance level.

Figure 1: Results of the Stability Tests



Source: Researcher's Plot using E-Views 12

Discussion of the Findings

The estimated ARDL regression results in Table 6 show that the net migration rate, migrant remittances, labour force participation rate, and unemployment rate variables employed in this investigation have a statistically significant impact on economic growth either at a level or one period that is lagged in the short-run. Only the unemployment rate variable has a statistically significant long-run impact on economic growth. Furthermore, one-period lagged net migration rate, migrant remittances at level, one-period lagged labor force participation rate, and unemployment rate at level in agreement with this study apriori expectation in the short-run. While, migrant remittances, and labour force participation rate variables conform to this study apriori expectations in the long run. Thus, the estimated ARDL regression result indicated that the one-period lagged net migration rate, migrant remittances at level, one-period lagged labour force participation rate, and unemployment rate at level are the main short-run drivers of economic growth in Nigeria during this study period. While migrant remittances, and labour force participation rate variables appear to drive long-term economic growth in Nigeria.

Upon variable-by-variable analysis, the research found that from the estimated ARDL regression in Table 6, net migration rate at level is positively related to economic growth in the short-run. Consequently, a one percentage increase in monetary policy rate will lead to an increase in inflation levels in Nigeria by 9.13 percent in the short run. This outcome is inconsistent with the a priori expectations of this investigation and studies such as Dritsaki and Dritsaki (2024)., Oyegoke and Amali (2022)., and Rasamoelison et al. (2021). However, one-period lagged net migration rate is negatively and significantly related to economic growth in the short-run. Consequently, a one-percentage increase in one-period lagged net migration rate will lead to a decrease in economic growth in Nigeria by 3.28% in the short run. This outcome is consistent with the a priori expectations of this investigation and prior studies, such as Kwara and Abdullahi (2024)., and Lanati and Thiele (2024), which reported a significant negative relationship between net migration rate and economic growth. Similarly, the net migration rate appears to positively affect economic growth in the long run. Specifically, a 1% increase in the net migration rate will increase economic growth by approximately 6.69% in the long-run.

On the other hand, the findings indicated that migrant remittances appears to affect economic growth positively and significantly in the short-run. Controlling for other factors, for instance, a 1% increase in migrant remittances will lead to a 0.77% increase in economic growth in the short run. This outcome is inconsistent with the apriori expectations of the research and prior studies, such as Lupoiu and Raceanu (2019) and Nwokoro (2024), which concluded that migrant remittances had a significantly positive impact on economic growth. Again, this finding is a clear indication that migrant remittances are significant drive of economic growth in the short-run. However, one-period lagged migrant remittances are negatively related to economic growth in the short-run. Consequently, a one-percentage increase in one-period lagged migrant remittances will lead to a decrease in growth by -0.31 percent in the short run. Migrant remittances are positively related to growth in the long run. Specifically, a 1%

increase in migrant remittances will increase growth by approximately 1.33% in the long-run. This outcome is consistent with apriori expectations of the research and prior studies, such as Chernobay et al. (2024), Nwokoro (2024), and Lupoiu and Raceanu (2019).

Furthermore, the estimated impact of labour force participation rate on growth is negative and significant in the short run. By implication, a one-percentage change or increase in force participation rate will lead to a 21.61% decrease in economic growth in the short-run. This outcome is inconsistent with the apriori expectations of this investigation, as labour force participation rate is expected to be directly related to growth. However, one-period lagged labor force participation rate is significant and positively related to economic growth in the short-run. Specifically, a one-percentage increase in one-period lagged labor force participation rate will lead to an increase in growth by approximately 25.05% in the short-run. This outcome is consistent with the apriori expectations of this investigation and indicates that the labour force participation rate is a key driver of short-term growth. Similarly, labour force participation is positively related to long-term growth and is in agreement with the theoretical expectations of this study.

The unemployment rate coefficient is negative and significant in the short run. Consequently, if there is a 1% increase in the unemployment rate, a decrease of -0.27% in growth in Nigeria is predicted in the short run. This outcome is consistent with the a priori expectations of this study. However, in the long run, the unemployment rate is negative and significantly related to growth. This outcome is consistent with Dritsaki and Dritsaki (2024), who examined the impact of migration on economic development and unemployment across the 27 EU nations from 1990 to 2020, concluding that the unemployment rate had a significant impact on growth.

To ascertain the joint impact of international migration on economic growth in Nigeria from 1986 to 2023, the Wald statistic and associated probability values (PV) were used as the test statistic. The results in Tables 4.7 to 4.9 indicate that the net migration rate and migrant remittances have no significant impact on economic growth in Nigeria during the period under investigation While, Labour force participation rate has a significant impact on economic growth in Nigeria during the period under investigation.

V. Conclusions and Recommendations

This study investigated the impact of international migration on economic growth in Nigeria from 1986 to 2023 using the Autoregressive Distributed Lag (ARDL) Regression technique. Results revealed that the variables of net migration rate, migrant remittances, labour force participation rate, and unemployment rate have a statistically significant impact on economic growth, either at the level or in one lagged period in the short-run. Only the unemployment rate variable has a statistically significant long-run impact on economic growth. Furthermore, one-period lagged net migration rate, migrant remittances at level, one period lagged labour force participation rate, and unemployment rate at level in agreement with this study apriori expectation in the short-run. Migrant remittances and labour force participation rate variables conform to this study apriori expectations in the long run. Therefore, the following recommendations were made based on the research findings.

i. Lagged net migration rate negatively affects growth in the short run, suggesting that returnees face economic reintegration issues. Therefore, the Federal Ministry of Labour and Employment (FMLE) in collaboration with Nigerians in Diaspora Commission (NiDCOM) should introduce skills certification, microfinance schemes, and business incubation programs for returnee migrants, especially targeting their integration into the local labour market.

ii. The Nigerians in Diaspora Commission (NiDCOM) should establish a National Diaspora Investment Framework to create incentives such as tax rebates, risk guarantees, and matched funding programmes to channel migrant remittances into productive sectors like manufacturing, agribusiness, and technology. This actionable

recommendation was due to the statistically significant positive impact of migrant remittances on economic growth both in the short and long run.

iii. The Federal Ministry of Labour and Employment (FMLE) can boost labour force participation through inclusive economic policies. Specifically, the FMLE should implement gender-sensitive labour policies, expand childcare services, and introduce flexible working conditions to raise female labour force participation. The lagged and long-run impact of labour force participation on growth is significantly positive, suggesting delayed but substantial benefits.

iv. The National Directorate of Employment (NDE) should design targeted youth employment and upskilling programmes. Specifically, the NDE should invest in vocational training, digital skills development, and entrepreneurship support for youths and women in both urban and rural areas, since unemployment has a significant negative impact on growth. Hence, improving employability will enhance economic growth.

References

Chernobay, L., Malibroda, S., & Shevchuk, Yu. (2023). The impact of international migration on the economy of developing countries. Economic Annals, XXI, 205(9-10), 4-13.

Dritsaki, M., & Dritsaki, C. (2024). Immigration, growth and unemployment: Panel VAR evidence from E.U. countries. Journal of the Knowledge Economy, 15, 19928–19963.

Ezie, O., & Ezie, P. (2021). Applied Econometrics: Theory and Empirical Illustrations. Kaduna: Kabod Limited.

Ghatak, S., & Siddiki, J. (2001). The use of ARDL approach in estimating virtual exchange rates in India, Journal of Applied Statistics, 11, 573-583.

Gökmenoğlu, K., & Taspinar, N. (2016). The relationship between CO2 emissions, energy consumption, economic growth and FDI: The case of Turkey. The Journal of International Trade & Economic Development, 25(5), 706–723.

Iscan, I. H., & Demirel, T. (2021). The effects of migration on growth and unemployment in developed countries: A Panel Autoregressive Distributed Lag analysis. Journal of Econometrics and Statistics, 35, 181–203.

Katircioglu, S. (2009). Revisiting the tourism-led-growth hypothesis for Turkey using the bounds test and Johansen approach for co-integration. Tourism Management, 30(1), 17–20.

Katircioğlu, S. (2010). International tourism, higher education, and economic growth: The case of North Cyprus. The World Economy, 33(12), 1955–1972.

Kwara, M. A., & Abdullahi, A. (2024). Nigerian economic growth: Does net migration improve it? Evidence from the ARDL modelling technique. Journal of Economics and Development, 1(1), 63-78.

Lanati, M., & Thiele, R. (2024). The link between economic growth and emigration from developing countries: Does migrants' skill composition matter? Kyklos, 77, 213–248.

Lupoiu, D. V., & Raceanu, C. (2019). The economic impact of migration in the Era of Globalization. Proceedings of the 13th International Conference on Applied Statistics, Romania, 1, 304-311.

Mtiraoui, A. (2024). Interaction between migration and economic growth through unemployment in the context of political instability in the MENA region. International Journal of Economics and Financial Issues, 14(1), 204-215.

National Bureau of Statistics (2023). Nigeria Labour Force Survey (NLFS), 4th Quarter 2022 & 1st Quarter 2023. Retrieved from https://nigerianstat.gov.ng/elibrary/read/1238

Nwokoro, A. N. (2024). Globalization, migration, and economic growth in Nigeria. Lapai Journal of Economics, 8(1), 165-174.

Oyegoke, E. O., & Amali, E. (2022). Labour emigration, remittances and economic development: An empirical analysis. African Journal of Social Issues, 5(1), 239-259.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. J. Appl. Econom. 16, 289–326.

Rasamoelison, J. D., Averett, S., & Stife, D. (2021). International student-migrant flows and growth in low- and middle-income countries: brain gain or brain drain? Applied Economics. https://doi.org/ 10.1080/00036846.2021.1886237.

Rayevnyeva, O., Stryzhychenko, K., Matúšová, S. (2023). Impact of migration processes on GDP. Presented at the 9th International Conference on Time Series and Forecasting, Gran Canaria, Spain.

Savin, V., Yin, L., Chernobay, L., Konokhov, S., Vasiltsova, N., Mosiiuk, S. (2023). Analysis of the impact of international migration on the financial and economic cooperation of countries. Intern. Journal of Profess. Bus. Review, 8(5), 01-15.

Sofia, R. (2024). Immigration and economic growth: An econometric study of the relationship between immigration and economic growth in 20 OECD countries between 2000 and 2020. Karlstad Business School, Karlstads University.

United Nations (2015a). Transforming our world: The 2030 agenda for sustainable development. United Nations, New York.

United Nations (2016). New York declaration for refugees and migrants. General Assembly, 71st session, A/RES/71/1.

United Nations (2017). Modalities for the intergovernmental negotiations of the global compact for safe, orderly and regular migration. A/71/L.58.