



## Remittance and Economic Development in Nigeria

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### ABSTRACT

Investments and remittances help eliminate poverty and hunger, promote standard of living, and quality education, economic growth and reduce inequalities. Rural dwellers receive almost 50% of remittances in Nigeria. This study examined the impact of remittances on economic development in Nigeria between 1980 and 2020. ARDL (Auto-regressive Distributed Lag) was used in this study. The unit root test was conducted by integrating variables such as gross domestic product per capita (GDPpc), gross fixed capital formation, as well as inflation, with order zero I(0), and variables such as exchange rate, household consumption expenditure, and remittances with order one I(1). Co-integration bound tests were used to confirm long-term relationships among variables. It was confirmed that the variables were related over the long term. Additionally, the study had no serial correlations and was stable. This study found that remittances, gross fixed capital formation, and household consumption expenditures were positively correlated with GDPpc (economic development), whereas the real exchange rate was negatively correlated with GDPpc. This study concluded that remittances are positively associated with economic development and are linked to economic development over time, and that remittances should be encouraged as an alternative means of financing investment.

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## 1. INTRODUCTION

In most countries, particularly those in developing countries, remittances account for a significant portion of their foreign exchange earnings, with remittances accounting for over 10% of their GDP in some cases. Remittances contribute significantly to income in developed countries, as they reduce current account deficits as well as stimulate economic growth. (Munir, Murred, Dar and Gardezi, 2016). Global Bank (2003) considers remittances as a more stable and frequent financial inflow than foreign direct investment (FDI) and official development assistance (ODA). In developing economies, remittances provide more foreign income than

financial flows. The amount of remittances has exceeded foreign direct investment in some economies since 2009, and it represents a large resource inflow that dominates other balance of payments flows. (IMF, 2009). Marx begins his analysis with unemployment caused by the scarcity of means of production. The author argues that both capital and production growth will be accompanied by rising unemployment, that real wages will remain at subsistence levels, and that unemployed people will become poorer and poorer. Marx's claim that capitalism generates and maintains a pool of (involuntarily) unemployed workers is based on Marx's correlation between mechanization, unemployment, and real wages. Nigerians have become accustomed to immigrating to other countries (developed countries). As migrants work to improve their livelihoods, they also support their families by sending remittances to their families (Mwangi & Mwenda, 2015). Remittances sent by migrants help improve consumption levels in families and contribute to the growth of the country's physical and human capital. Economic, political, social, and cultural connections migrants have with their countries of origin can be maintained through new technology and cheaper travel (Mwangi & Mwenda, 2015). The remittance sector is frequently prone to risks associated with exchange rates and the cost of transactions due to its importance as a source of financial aid. It impacts economic development differently depending on the extent to which remittances are utilised for domestic consumption or for capital expenditures. There are many informal money transfer services (IFTs) that are used by remittance services due to the high cost of transactions that are connected with sending and remitting remittances (Coxhead & Linh, 2010).

**Table 1.** The top remittance-receiving countries (2005-2018) (current USD billions)

2005	2010	2015	2018
China	23.63	India	53.48
Mexico	22.74	China	52.46
India	22.13	Mexico	22.08
Nigeria	14.64	Philippines	21.56
France	14.21	France	19.90
Philippines	13.73	Nigeria	19.75
Belgium	6.89	Germany	12.79
		India	68.91
		China	63.94
		Philippines	29.80
		Mexico	26.23
		Egypt	24.06
		France	21.16
		Nigeria	19.31
			78.61
			67.41
			35.66
			33.83
			28.92
			26.43
			24.31

*World Bank, 2019*

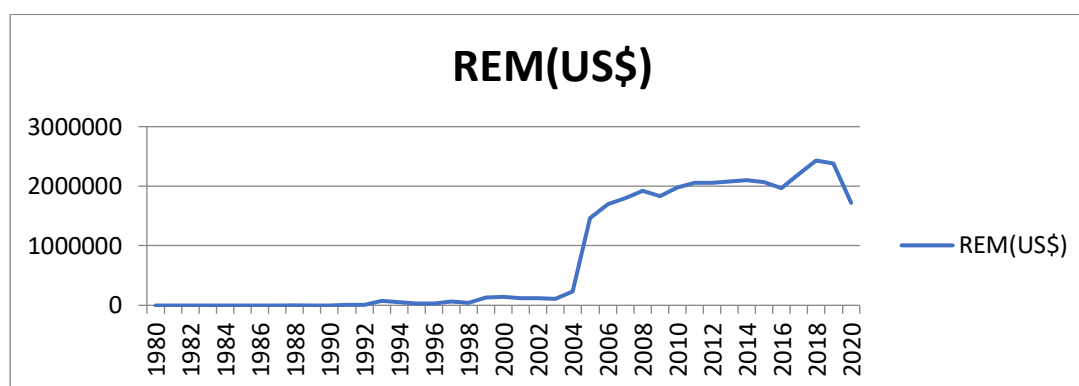
The number of migrants has increased steadily worldwide, especially between 2000 and 2010. Between 2000 and 2010, there were approximately 4.6 million new immigrants a year, in comparison with 2 million between 1990 and 2000 and 3.6 million between 2010 and 2013. As Nigeria's population migrated of various durations and natures in the past decades, migration assumed a phenomenal dimension. Migration is considered a panacea to economic problems by most Nigerians, especially the young. During the past few years, the country has experienced a rapid influx of migrants from rural areas to urban areas, as well as emigration from these regions. Many professionals have emigrated, especially scientists, academics, and those in the medical fields. In 2021, India received 89 billion dollars in remittances, Mexico received 54 billion dollars, China received 53 billion dollars, the Philippines received 37 billion dollars, and Egypt received 32 billion dollars, with Nigeria ranking tenth for remittance inflows of about 14.2 billion. As of 2008, India received the most remittances. A larger share of remittances went to smaller economies in 2021: Lebanon (54%), Tonga (44%), Tajikistan (34%), Kyrgyz Republic (33%), and Samoa (32%). In 2021, the United States accounted for 74.6 billion US dollars in remittances, Saudi Arabia accounted for 40.7 billion US dollars, China accounted for

22.9 billion USD, the Russian Federation accounted for 16.8 billion USD, and Luxembourg accounted for 15.6 billion USD (World Bank, 2019). The table below shows the top remittance-receiving countries (2005-2018) (current USD billions).

As shown in the above table, Nigeria is among the top receiving nations in terms of remittances. Migrants remit about US\$450 billion to developing countries every year (World Bank, 2017), over ten times as much as they did just 20 years earlier. Money is influenced by competition among transfer services, available information for senders and receivers, and legal restrictions imposed on service providers, senders, and receivers by monetary authorities. International remittances are becoming increasingly significant in many economies. The increase in consumption and poverty reduction boost economic growth as well as livelihoods in those countries. Traditional and contemporary economic growth theorists acknowledge remittances as a key driver of economic growth and development in countries that are developing.

Developing countries, especially Nigeria, suffer from inadequate savings, foreign exchange, government revenue, and human resources. The severe inadequacy of domestic supply, however, has led to migration and remittances as an alternative supply source for these critical development inputs. Family and friends sending money to developing countries now account for a significant percentage of household income. These are costless sources of cheap funds needed by recipient households for investments that will help them escape poverty and improve their health. A measure of the anti-poverty effect of migration can be the inflow of migrant remittances.

Having experienced a fallout of conditions from the global market, Nigeria experienced a rush for international jobs. As a result of a geometric increase in labour outflows to industrial countries, the capital inflow has become increasingly important through remittances. The result of Nwosa (2014) reveals that migrants' remittance has surpassed both foreign aid and foreign direct investment (FDI), that foreign workers' remittance is not only stable when compared to the other capital inflow into Nigeria but also increases when the receiver country is going through economic meltdown due to financial disorders, ecological problems or political revolution which force migrants to send more money back home to assist their family and relations which helps in the development of the economy as a whole. (Claudia & Anja, 2004; Junaid, Khalid, & Iqtidar, 2011; Ratha, 2007). In 1970, remittances accounted for \$644,000, in 1980, \$22 million, in 2000, \$1.391 billion, in 2013, \$21.958 billion, and in 2016, \$19.635 billion. 2017 marked the highest remittances at \$22.04 billion, followed by \$24.31 billion in 2018, \$23.809 billion in 2019, and \$17.207 billion in 2020 (World Bank, 2021).

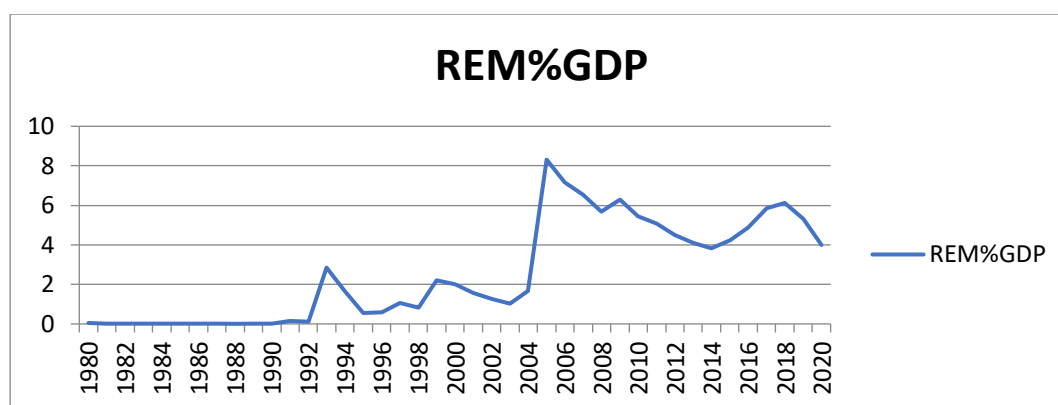


**Figure 1.** Remittance in Nigeria

Source: World Bank Indicator (2021)

This figure shows that remittances have risen in Nigeria over time. Since Nigeria's economy wasn't favourable, migrants moved to other countries to make a living. Even though Nigerians migrated overseas in 2003, the inflow of remittances into the country continued until 2016. Increasing consumption and investment in their home country led to migrant families investing more in housing and education. Growth and development are enhanced by increased consumption and investment. 2019 and 2020 saw a further contraction in remittances as a consequence of COVID-19. This affected consumption and investment, especially as prices surged and the value of the naira depreciated.

Many developing countries depend on remittances, including Nigeria (Odionye & Emerole, 2015). Remittances to Nigeria are the highest in Africa (World Bank, 2004) and rank fifth in the world, India followed (\$71 billion), China (\$60 billion), Philippines (\$26 billion), and Mexico (\$22 billion). Global Bank, 2013. Around 65% of African remittances are sent to Nigeria, and about 2% of world remittances are sent to Nigeria. The remittance sector is currently ranked second to oil receipts in terms of foreign exchange earnings to other forms of aid. (CBN, 2007).



**Figure 2.** Percentage of Remittances to GDP in Nigeria.

Source: World Bank Indicator (2021)

Based on the graph above, it can be seen that remittances to Nigerian GDP were below 1% from 1980 to 1992. As a result, many people did not migrate to other parts of the country because the economy was still prosperous and indigence was comfortable. From 1993 to 2004, the percentage increased above 1%, from 5% to 3%, 1.5% to 1.5%, and 2.3% to 2.3%. People are now leaving the country to seek greener pastures because of an economy or lack of jobs. Remittances have increased substantially from 2005 to 2009. Nigeria received 13% in 2005, a record high, 11% in 2006, 10% in 2007, and 10% again in 2009, which was the lowest ever. Over the past decade, remittances have declined. In 2010, it was 5.3%, in 2013, 4.0%, in 2014, and in 2017, it increased slightly to 5.8%. Some remittances come through informal means, for instance, friends and family arriving in the country, so the financial institution may not know how many remittances come into the country. Further decrease in remittances from 2017 to 2020, possibly due to the covid-19 pandemic.

As an economy develops, remittances increase savings and assets. A key source of revenue for the government is taxes and fees paid by households (Jongwanich, 2007; IMF, 2005; Kannan & Hari, 2002); it improves access to healthcare and nutrition as well as education (Yang, 2003; Edward & Ureta, 2001). It has also been shown that remittances from migrants can greatly reduce poverty and sustain livelihoods by increasing the purchasing power of migrants for food, education, health, consumer goods, and other necessities (Adams, 2006; Sherbinin, 2006; Haas, 2006; Well, 2007). Since remittances are viewed as a complementary

source of finance for development, these studies claim they have a significant impact on reducing poverty. Using 71 developing countries as a cross-country sample, there is an increase of 10% in remittances from abroad, resulting in an approximate 3.5 percent reduction in poverty (Adams & Page, 2005).

The effects of remittances in Nigeria have not been documented despite their importance as an income smoothening source and a contributing factor to the improvement of standards of living in many countries. Remittance flows in Nigeria are not properly managed due to an insufficient understanding of the impact of remittances on the economy (Chukwuone, 2007). Adams (2005) examines the economic impact of international remittances on households in developing nations despite the large size of transfers. Remittances from workers in Nigeria are misused, and the money sent home is not utilized properly even though a well-articulated remittance management regime will provide much-needed foreign exchange to the country and soothe its balance of payment deficit, aiding growth and development.

The appreciation of domestic currencies can cause Dutch disease if remittances are not managed correctly or used well (Beine et al, 2010). As Bryan (2004) points out, remittance flows also contribute to brain drain and reduce labour effort of receiving families, thereby negatively affecting growth. Remittance outflows can slow economic growth and development in labor-skilled countries and affect labour indirectly by discouraging remittance-receiving households from working.

In 2022, remittances are expected to continue to grow, but there are challenges ahead, such as the Covid-19 crisis, which is still the greatest risk to the flow of money to low-income countries, especially since fiscal stimulus programs cannot continue indefinitely for migrants' destination countries. It was predicted that remittances would decline due to the Covid-19 pandemic (in part due to travel restrictions).

There have been numerous studies conducted by different authors on the impact or the effect of remittances on economic growth and economic development both in a specific country, west African countries, sub-Saharan countries, and Asian countries (Munir, Murred, Dar, & Gardezi, 2016; Mwangi & Mwenda, 2015; Iheke, 2012; Odionye & Emerole, 2015; Ajayi&Adedeji, Giwa, Araoye, 2017; Kumar, Stauvermann, Patel & Prasad, 2018; Fayomi, Azuh & Ajayi, 2015; Oshota & Badejo, 2015; Akinpelu, Ogunbi, Bada & Omojola, 2013; Adeagbo & Ayansola, 2014). In most studies, remittances were found positively associated with economic growth and development, whereas very few were found to be negatively related. A number of researchers have examined how remittances affect economic growth, but very few have examined economic development. Even though remittances have been associated with economic growth, it remains unclear whether the impact of remittances on economic growth translates into real economic development in Nigeria, since both positive and negative effects are experienced by remittances on the national economy, and most of the countries that depend on remittances are still considered underdeveloped or developing.

Consequently, the present study examines how remittances have impacted on Nigeria's economic development through household consumption expenditure and human capital formation between 1980 and 2020 using an Autoregressive Distributive Lag (ARDL) model. Thus, this study is extremely significant since it unveils the substantial impact of international remittances on Nigeria's economic development. This study is essential since it would guide policy makers in formulating an effective policy that facilitates the management of the positive and negative effects of international remittances on the Nigerian economy. This study therefore investigated the impact of remittances on economic development through Gross domestic Product per capital (GDPpc) (household consumption and human capital development). This study would therefore help policy makers gain a deeper policy insight into the economy's development through remittances.

### ***Objective of the study***

The primary objective of this study was to establish the impact of international remittances on the Nigerian economy.

### ***Research question***

What is the impact of international remittances on the Nigerian economy?

### ***Theoretical Literature***

The intention to return theory is always a crucial factor in remitting money (Delpierre & Verheyden, 2009; Collier, Piracha, and Randazzo, 2011). A motive for returning is usually described as the desire to inherit (Lucas & Stark, 1985; Hoddinott, 1994) to keep in touch with their origin. Most often, the intention to relocate to the home of origin encourages a greater investment by migrants in residential real estate. Nevertheless, subjective research has demonstrated that relatives frequently benefit from such investments since the vast majority of migrant homes are not rented. In this hypothesis, migrants' hypotheses come from implicit family loan agreements they enter into as youth. Poirine (1997) proposes that migrant remittances result from household markets that finance family members' investments in human capital. If they are made by relatives abroad, loan repayments appear as remittances.

Linear stages of growth models were first introduced by W.W Rostow in the 1950s and early 1960s. Marx's stage theory of development was modified by this theory, which looked at accelerating capital accumulation as a basic means of promoting economic growth and development by using savings both domestically and internationally to stimulate investment. Every nation must pass through five conservative stages of development during the process of development, according to the theory. In a conventional society, takeoff preconditions, takeoff itself, technological advancement, and the mass consumption era are the stages of linear stage growth model.

### ***Empirical Literature.***

Islam (2020) looked at remittances and economic growth for 38 years in Bangladesh using an economic analysis approach (Granger causality). Economic growth was found to be related to remittance growth. The same approach was taken by Sarkar, Rahman, Islam, Sikdar, and Khan (2018) with their analysis of WDI data. Using Pearson's correlation coefficient, the study estimated. From 1995 to 2016, the country's remittances increased by 10.68% on average, which is higher than the GDP growth rate. Sutradhar (2020) conducted a panel study on remittances and economic growth across Bangladesh, India, Pakistan, and Sri Lanka. For estimation, the study used pairwise OLS, fixed, and random effects. Bangladesh, Sri Lanka, and Pakistan reported negative economic growth effects from remittances, while India reported a positive effect. In Bangladesh from 1981 to 2013, Masduzzaman (2014) examined workers' remittances, the development of the financial sector and economic growth. Long- and short-run trends were revealed using Johansen's cointegration test and the vector's error correction model. Results revealed a positive association between remittance growth and their amount used to finance development, as well as the way remittances affect Bangladesh's growth long-term.

FAGERHEIM (2015) studied remittance flows into ASEAN. The study used both the Ordinary Least Square (OLS) technique and the Instrumental Variable Two-Stage Least Square (IV 2SLS). A mixed relationship appears to exist between economic growth and remittances. In addition, Cooray (2012) examines the effects of migration and remittances on the economies of South Asian nations including Sri Lanka, Pakistan, the Maldives, Nepal, India, and Bangladesh. The study found that having a high level of educational achievement and effective financial development have an inexorable impact on remittances and economic growth. Salahuddin (2013) found a positive long-term association between remittances and economic

growth in three Asian countries (Philippines, India, and Pakistan). The impact of remittance inflows on economic growth was studied by Aboulez (2015) in Kenya using Granger causality and ARDL. It was discovered that economic growth is profoundly impacted by international remittances.

With the two countries (Tonga and Fiji) having varying levels of migration remittance development, Brown and Heaves (2011) adopted two-step least squares and three-step least squares estimators. More developed countries reported a positive relationship in migrant remittances whereas less developed countries did not report a positive relationship. The authors of Feeny, Lamsiraroj, and McGillivray (2014) used dynamic panel data estimation to study 25 small island developing countries. In all developing countries except Latin American and Caribbean countries, they appear to contribute positively to growth.

Between 1980 and 2015, Adigun and Ologunwa (2017) analyzed remittances and economic growth in Nigeria. By using secondary data, the study's finding shows that workers send money to their relatives to finance their consumption and investment, which impacts the wellbeing of the recipients, but has little impact on economic growth. In addition, Netor (2019) looked at the role played by the financial sector in Nigerian economic growth between 1981 and 2017 using the ARDL model to estimate short-term and long-term relationships. It was revealed that economic growth in a country and remittances have a negative correlation in the long run. In a recent article by Kudaisi, Ojeyinka, and Osinubi (2021), the authors explored financial liberalization, remittances, and economic growth in Nigeria from 1980 to 2018. The method of data analysis was the Generalized Method of Moments. A study found that remittances and financial liberalization are negatively correlated with economic growth, but the interaction terms are positive. By applying Vector error correction modeling (VECM), Loto and Alao (2018) analyzed foreign remittances and the Nigerian economy from 1980 to 2016 to find out the long-run and short-run effects of disaggregated remittances. Out of the various components, certain components are statistically significant, and positively impact economic growth, while others are negatively correlated.

## 2. METHOD

The theoretical framework (the design) of this study is based on the linear stage model of developmental theory. The economic model based on linear stages of growth is influenced by the Marshall Plan. Industrialization is required for economic growth. Institutional factors can undermine a country's growth and societal attitudes, particularly if they affect savings and investments. Economics considers internal constraints the major impediment to economic growth. A country's development would be facilitated by an appropriately designed massive injection of capital along with public sector assistance. Pesaren et al (2001) introduced the ARDL model, which employs bound tests to examine if variables are co-integrated. With bound testing (ARDL), it is possible to estimate long-run as well as short-run parameters simultaneously. The methods of Engle and Granger, (1987), as well as Johansen and Jeselius, (1990), are less preferred. Time series analyses using distributed lag models include both recurrent and lag-based data for the explanatory variables. By using the cointegration method, ARDL determines both short- and long-run associations among variables. ARDL is capable of handling any integration order, regardless whether it is pure  $I(0)$  or pure  $I(1)$ . The World Bank Development Indicator (WDI, 2021) and the Central Bank of Nigeria (CBN, 2021) was utilized for this study as secondary data. Based on the bound test regression model, ARDL (Bound test) can be formed as follows:



$$y_t = \beta_0 + \beta_1 y_{t-1} + \dots + \beta_p y_{t-p} + \alpha_0 x_t + \alpha_1 x_{t-1} + \alpha_2 x_{t-2} + \dots + \alpha_q x_{t-q} + \varepsilon_t \dots \dots \dots (1.)$$

Where “ $\varepsilon_t$  is a random disturbance term, and p and q are the lag lengths”.

### 3.1. MODEL SPECIFICATION

Error correction equation ..... (1)

$$\Delta y_t = \alpha_0 + \sum_{i=1}^p \alpha_i \Delta y_{t-i} + \sum_{j=0}^q \beta_j \Delta x_{1t-j} + \sum_{k=0}^q \gamma_k \Delta x_{2t-k} + \phi_0 y_{t-1} + \phi_1 x_{1t-1} + \phi_2 x_{2t-1} + \varepsilon_t \dots \dots \dots (2.)$$

### To investigate the impact of economic development on remittances in Nigeria

$$GDPpc = f(REM, GFCF, HCE, RER, INF) \dots \dots \dots (3)$$

#### Where (Variable measurement)

GDPpc = Gross Domestic Product per capital a proxy of Economic development.

REM = Remittances

GFCF = Gross Fixed Capital Formation

HCE = Household Consumption Expenditure

RER = Real Exchange Rate

INF = Inflation.

The data generating process of equation (3) is defined in econometric from as

$$GDPpc_t = \alpha_0 + \sum_{t=1}^p \alpha_{1i} \Delta GDPpc_{t-1} + \sum_{t=1}^p \alpha_{2i} \Delta REM_{t-1} + \sum_{t=1}^p \alpha_{3i} \Delta GFCF_{t-1} + \sum_{t=1}^p \alpha_{4i} \Delta HCE_{t-1} + \sum_{t=1}^p \alpha_{5i} \Delta RER_{t-1} + \sum_{t=1}^p \alpha_{6i} \Delta INF_{t-1} + \beta_1 GDPpc_{t-1} + \beta_2 REM_{t-1} + \beta_3 GFCF_{t-1} + \beta_4 HCE_{t-1} + \beta_5 RER_{t-1} + \beta_6 INF_{t-1} + \varepsilon_t \dots \dots \dots (4)$$

For a more accurate and robust result we log equation 4

$$\log GDPpc_t = \alpha_0 + \sum_{t=1}^p \alpha_{1i} \Delta \log GDPpc_{t-1} + \sum_{t=1}^p \alpha_{2i} \Delta \log REM_{t-1} + \sum_{t=1}^p \alpha_{3i} \Delta \log GFCF_{t-1} + \sum_{t=1}^p \alpha_{4i} \Delta \log HCE_{t-1} + \sum_{t=1}^p \alpha_{5i} \Delta \log RER_{t-1} + \sum_{t=1}^p \alpha_{6i} \Delta \log INF_{t-1} + \beta_1 \log GDPpc_{t-1} + \beta_2 \log REM_{t-1} + \beta_3 \log GFCF_{t-1} + \beta_4 \log HCE_{t-1} + \beta_5 \log RER_{t-1} + \beta_6 \log INF_{t-1} + \varepsilon \dots \dots \dots (5)$$

### 3.2 Analysis Techniques

#### (a) UNIT ROOT/ STATIONARITY TEST

Unit roots have become widely known in recent years. The unit root becomes a random walk demonstration without drift as a result, which is a non-stationarity stochastic outcome. In that case, we use the  $Y_{t-1}$  lagged esteem to regress  $Y$  and see if the evaluation is measurable as 1 in that case. They conceived a system in which the key concept was to test for non-stationarity, similar to testing for a unit root. The accompanying regression condition is proposed by Dickey Fuller (1979) to test for unit root closeness.

$$\Delta y_{t-1} = \alpha_0 + \gamma y_{t-1} + \mu_t \dots \dots \dots (5.)$$



To eliminate autocorrelation, Dicky and Fuller proposed an augmented version of their test that incorporates extra lagged terms of the dependent variable. The following equation describes the ADF.

$$\Delta y_t = a_0 + \lambda y_{t-1} + a_2 t + \sum_{i=1}^p \beta_i \Delta y_{t-1} + \mu_t \dots \dots \dots (6. )$$

When the variables are significant, then the variable series is stationary and does not have a unit root. The null hypothesis is accepted based on the significant test. This study hypothesizes:

H0: =0 (Present of unit root/non-stationary exist)

H0: ≠0 (no present unit root/stationary exist)

### (b) CO-INTEGRATION TEST (Bounds Testing Approach of Person et al 2001)

Co-integration was developed as a result of the work of Pesaran and Shin (1999) and Pesaran et al. (2001). This study examined long-run relations between variables through ARDL co-integration. Co-integration methods such as the ARDL Bounds tests have three advantages when compared to other methods, among them the fact that all variables under study need not be integrated in the same order and can be integrated into I(0), I(1), or fractionally; we can estimate the long run unbiased using tests in cases of small or finite data sizes (Harris & Sollis, 2003).

### (c) Stability Test

A study by Pesaran and Pesaran (1997) tested parameter stability and found that short run dynamics were essential for measuring the long run coefficient's stability. By applying CUSUM square and CUSUM recursive residuals (CUSUMSQ), this test suggests applying Broen et al's (1975) CUSUM test.

## 3. RESULTS AND DISCUSSION

### 3.1 Results

#### 3.1.1. Unit root test

Using unit root tests, Table 4.1 indicates a unit root in remittances (REM), household consumption expenditure (HCE), and real exchange rate (RER). As a result of differencing the series, the null hypothesis of the presence of a unit root is robustly rejected, indicating integration of order one, I(1). Based on the results in GDPpc, gross fixed capital formation (GFCF), and inflation (INF), the null hypothesis cannot be rejected. Therefore, I(0) is the order of integration for these series. The ARDL model can now be estimated from the unit root test result, I(0) and I(1). Below is a table showing the Augmented Dickey Fuller unit root test, which carries a 5% weight.

**Table 1.** The Augmented Dickey Fuller unit root test

Variables	ADF	Test Critical @ 5%	Level	Frist Diff	Order of Intergration
LogGDPpc	-3.529758		-3.838757		I(0)
Log REM	-3.529758		-1.805715	-4.612334	I(1)
Log GFCF	-3.533083		-7.752403		I(0)
Log HCE	-3.529758		-2.990348	-8.320494	I(1)
RER	-3.529758		-0.383693	-4.778466	I(1)
INF	-3.529758		-3.772278		I(0)

### 3.1.2. The ARDL Co-integration Bound Test

A calculated F-statistic that exceeds the upper bound I(1) indicates co-integration, i.e. a long-term relationship. In this case, the null hypothesis must be rejected. If, on the other hand, the F-statistic is under the critical value of I(0), then there is no co-integration. The null hypothesis should be accepted.

**Table 2.** The long-run form and bound test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	12.80001	10%	2.26	3.35
K	5	5%	2.62	3.79
		2.5%	2.96	4.18
		1%	3.41	4.68
		Finite Sample: n=40		
Actual Sample Size	40	10%	2.483	3.708
		5%	2.962	4.338
		1%	4.045	5.898
t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.588033	10%	-2.57	-3.86
		5%	-2.86	-4.19
		2.5%	-3.13	-4.46
		1%	-3.43	-4.79

Based on the above results of the long-run form and bound test, the F-test statistics show that I(1) exceeds the F-test statistics, which indicates a long-term relationship between

economic development and remittances in Nigeria. Therefore, the null hypothesis can be rejected and the co-integration hypothesis exists.

**Table 3.** Dependent Variable: LogGDPPC

Variable	Coefficient	Std.Error	t-Statistic	Prob
LOGGDPPC(-1)	0.489626	0.077470	6.320205	0.0000
LOGREMIT	0.025132	0.009852	2.550854	0.0161
LOGGFCF	0.071825	0.034576	2.077274	0.0464
LOGGFCF(-1)	0.069538	0.026690	2.605345	0.0141
LOGHCE	0.025072	0.008074	3.105198	0.0041
EXR	-6.896115	1.713667	-4.024185	0.0004
EXR(-1)	3.412253	2.090617	1.632175	0.1131
INF	-1.105685	2.199353	-0.502732	0.6188
INF(-1)	-3.272924	2.209462	-1.481322	0.1489
C	-866.3954	206.0424	-4.204937	0.0002
Adjusted R-S	0.959152		Akaike info criterion	13.40343
F-statistic	102.7515		Schwarz criterion	13.82565
Durbin-Watson stat	1.680865		Hannan-quinn criterion	13.55609

**Table 5.** The result of the regression

Variable	Coefficient	Std.Error	t-Statistic	Prob
LOGGDPPC(-1)	0.489626	0.077470	6.320205	0.0000
LOGREMIT	0.025132	0.009852	2.550854	0.0161
LOGGFCF	0.071825	0.034576	2.077274	0.0464
LOGGFCF(-1)	0.069538	0.026690	2.605345	0.0141
LOGHCE	0.025072	0.008074	3.105198	0.0041
EXR	-6.896115	1.713667	-4.024185	0.0004
EXR(-1)	3.412253	2.090617	1.632175	0.1131
INF	-1.105685	2.199353	-0.502732	0.6188

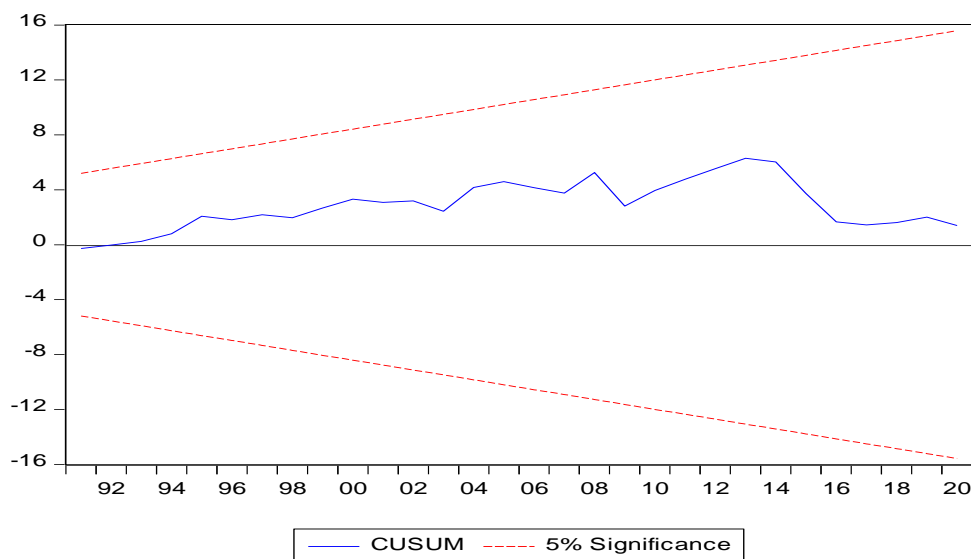
INF(-1)	-3.272924	2.209462	-1.481322	0.1489
C	-866.3954	206.0424	-4.204937	0.0002
Adjusted R-S	0.959152		Akaike info criterion	13.40343
F-statistic	102.7515		Schwarz criterion	13.82565
Durbin-Watson stat	1.680865		Hannan-quinn criterion	13.55609

From the result of the regression above it can be seen that the past value of GDPpc, remittance, the current and past value of gross fixed capital formation, household consumption, and the current real exchange rate have a statistically significant relationship with the gross domestic product per capita proxy of economic development. Apart from the real exchange rate that is negatively significant to economic growth in Nigeria, other variables like the past value of GDPpc remittance, and the present and past values of gross fixed capital formation. On the other hand, both the past and present values of inflation are not statistically significant to economic development in Nigeria. A 1% change in the past value of GDPpc brings about 48% increase in the present value of GDPpc 1% change in remittance, brings about 2% increase in GDPpc, 1% change in past and present values of gross fixed capital formation brings about 7% and 6% increases in GDPpc respectively, 1% change in household consumption expenditure brings about 2% increase in GDPpc and 1% change in real exchange rate brings about a fall in GDPpc. In Nigeria, remittances are positively correlated with economic growth. The estimation also shows no presence of auto-correlation.

**Table 6.** Breusch Serial Correlation LM Test

F-statistic	1.028661	Prob. F(1, 29)	0.3189
Obs*R-Squared	1.301727	Prob. Chi-Square	0.2539

Since the probability is 0.2539, it does not reject the null hypothesis since it is greater than 5%. Therefore, we say there is no serial correlation.



**Figure 3.** Stability Test

From the graph above, we can see that the cusum lines lie within the 5%, as a result we can say the model is stable.

### 3.2 Discussion

In this study, a substantial positive correlation exists between remittances, GFCF and household consumption expenditure to GDP per capital (economic growth and development) and a negative relationship exists between the real exchange rate and GDP per capital. It is clear from these findings that remittances are critical in the Nigerian economy. Due to their substitution nature, remittances compensate for distorted or underperforming economies. As a result, poor countries like Nigeria, Togo among others display poor credit markets in the global economy, thus subjecting individuals and households to heavenly dependence on remittances from relatives to advance their lives. Remittances are known as the major alternative sources of poverty alleviation in poor economies because they enhance households' well-being through consumption smoothening. Literature has shown that countries like Uganda, Nigeria, Ghana, Bangladesh among other developing countries depend on remittances to lower poverty (Iheke, 2012; Ratha, 2023; Amuedo-Dorantes & Pozo 2023; Oshota & Badejo 2015). Furthermore, studies have indicated that remittance promotes human capital accumulation through promoting healthy life styles as well as eases the credit constraints of unbanked households in rural areas of the poor countries, fosters self-employment through encouraging small-scale businesses and contributes to informal sector development (Ahmad, Francois, Keinsley, & Nti-Addae 2021 & Amuedo-Dorantes & Pozo 2023). In addition, the findings of this study are consistent with those of Islam (2020), who found that remittances are positively correlated with economic growth. This study confirms the finding of Mohammed (2021) which found that human development is positively influenced by remittances in Sub-Saharan Africa, especially in countries with weak institutions, although it has a lesser impact on human development in nations with well-developed institutions.

This study's findings show that remittances negatively impact the real exchange rate and GDP per capita. Possibly, this is due to remittances decreasing labour supply, lowering GDP per capital, and fostering a culture dependency that limits economic growth and promotes inequality (Amuedo-Dorantes & Pozo, 2023). Amuedo-Dorantes emphasized that remittances foster consumption of non-tradable goods, raise inflation, lower exports and damage the country's competitiveness on the global markets. The study differs from Anyanwu, Ananwude, and Okoye (2017), which found that exchange rates and economic growth have a long-run relationship. The exchange rate also impacts real GDP, while the association between inflation and economic growth is insignificant and negative. This means that an inverse relationship exists between this and the rise in prices of goods and services. This study reinforces the finding of Anetor (2019), which shows that inflation is negatively and significantly affecting economic growth on both a short-term and a long-term basis.

## 4. CONCLUSION AND POLICY RECOMMENDATIONS

ARDL was used in this study to examine the impact of remittances on Nigeria's economic development based on GDP per capita. While there is a wealth of literature on the connection between remittances and economic development, there is little information available about the relationship between remittances and GDP per capita, exchange rate, and inflation in the Nigerian context. This study revealed that remittances have a positive significant correlation with GDPpc as an economic growth proxy, exchange rates have a negative significant correlation with economic development, and inflation does not have a significant correlation with economic development in the Nigerian context. The interaction between remittance and

GDP shows that remittance plays a substitution role in affecting the GDP of the household as seen in most African countries with low income per capital. A clear explanation is where a household financial muscle relies on remittances from a friend and relative abroad to fund their children's education and health. Therefore, this study remittance concludes that remittance significantly impact on Nigerian's economic development as it enhances the standard of living of rural dwellers and foster self-employment and human capital accumulation.

Based on the findings of this study, it recommends that:

1. The federal government should create more job in the country in order to control brain drain. This is because higher volume of remittance is associated with high rate of emigrants.
2. The Nigerian government banks should make sure that the money which migrants send to their family arrives to them safely.
3. To encourage more remittances to the Nigerian economy, the Nigerian government should implement policies to improve efficiency, reliability, and reduce the costs of transfers.
4. In order to boost economic growth and development, workers' remittances need to be strategically harnessed by spending the money on locally produced goods rather than imported ones.
5. The study concluded that remittances can boost the country's economic growth; therefore, remittances should be encouraged when it comes to financing investments as an alternative.

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