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# Dynamics of Remittances and Economic Development in Nigeria

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**ABSTRACT**

This study adopts a bird's-eye perspective to examine the dynamics of remittances within the Nigerian migration context. Drawing on multiple theoretical frameworks, it explores the relationship between remittance inflows and economic development using secondary data from the Central Bank of Nigeria and the National Bureau of Statistics for the period 1994–2023. Key variables include workers' remittances per capita, gross capital formation, consumer price index, foreign direct investment, exchange rate, and the human capital development index. Using an error correction mechanism, the study finds a significant positive relationship between remittance inflows and human capital development, suggesting that a 1% increase in remittances may lead to a 44.9% rise in economic development. However, remittances from foreign direct investment ($t = 0.741$, $p = 0.477$), gross capital formation ($t = 0.598$, $p = 0.564$), and consumer price index ($t = 0.214$, $p = 0.836$) show no statistically significant effect on economic development. The study recommends that remittance-receiving countries like Nigeria implement robust macroeconomic policies such as stable exchange rates, improved infrastructure, and market integration to create an enabling environment for sustained growth. By offering empirical insights into how various remittance-related factors impact economic development, this study contributes to the literature and addresses a notable research gap in the Nigerian context.

Keywords: Remittances, Economic Development, Human Capital, Foreign Direct Investment.

## 1. INTRODUCTION

The effect of remittances on economic development is a subject of significant contribution to the literature, industry experts, government agencies, seasoned administrators, professionals, as well as private individuals. For developing nations, the issue of remittances are imperative. As observed by Bekele et al. (2024), remittances are money sent home by foreign migrants to their relatives. Russell (1992) as cited in Asafo Agyei (2021) added that remittances mean the transmission of resources from developed to developing countries. Mostly, some countries see remittances as support that can aid investment activities and propel economic growth and development (Wirajing et al., 2023). This is the perspective of Ratha (2003) as cited in Fromell et al. (2020) that it is the second greatest source of external money for developing countries which comes directly after foreign direct investments.

Development in the recipient's nation has benefited from the remittance flow over the years; hence, Ratha (2005) as cited in Olulu-Briggs & Sunday (2021) claimed that remittances can increase a nation's creditworthiness, economic growth and development via the speeding up of access to global capital markets to secure money to support her development initiatives and infrastructure requirements. Remittances tend to increase macroeconomic stability and lower poverty in emerging countries, according to Shobowale et al. (2024). As a result, remittances contribute to the growth of national savings, which in turn encourages investment and capital formation, due to the abundance of resources available (Olusuyi et al., 2017). It is also possible to view the influx of remittances as a kind of support for a person's business; however, there are opposing views on remittances.

Some academics believe that remittances are detrimental to an economy. According to Iheke (2012) and Kaasschieter (2014), remittances pose a threat to an economy and can result in the 'Dutch Disease.' This view claimed that it has the qualities of worsening a country's financial situation and financial well-being of non-recipient families. In addition, Barguellil & Zaiem (2013) discovered that remittances contribute to the disparity in income amongst a nation's citizens, thus impeding consumer price index. Although remittances is advantageous to countries when used for charitable or investment objectives, they can also have an effect on the exchange rate, which can result in decreased economic revenue and the Dutch illness syndrome (Lopez, Molina & Bussolo, 2007 as cited in Eze (2023)). In other words, as productive activities tend to wane, a rise in remittances will cause currency rate to appreciate even more, which will lead to slower economic development.

Based on empirical evidence, it was discovered that there are few studies on how remittances influence Nigeria's economic development and other Africa countries, and that other studies had used economic growth rate to examine the effect of remittances (Asafo Agyei, 2021; Barguellil & Zaiem, 2013; Iheke, 2012; Olusuyi et al., 2017). This study is a departure from previous studies as this current study adopts a different stance by assessing the influence of dynamics of remittances (proxied by workers' remittances per-capita, foreign direct investments, gross capital formation and consumer price index) on economic development (measured via human capital development index). Also, exchange rate was used as a control variable to capture its true effect on economic development.

## 2. LITERATURE REVIEW

### 2.1. Dynamics of Remittances

Remittances contribute significantly to the local and regional development of sending nations; in fact, their amount exceeds the official development assistance provided to non-member nations by Organization for Economic Cooperation Development(OECD) nations. Notably, emigrants' and their families' private savings are known as remittances (de Haas, 2021). The mobilisation of these financial flows encourages policymakers to create pertinent policies that will enhance transmission channels, lower transaction costs, provide cutting-edge financial products, and direct these funds towards projects and activities that combine profit and security - all while respecting the rights of migrants to allocate these funds as they see fit (Martey & Armah, 2021).

The most imperative variation between remittances and other sources of external funding of developing nations is that remittances are person-to-person transfer of resources. Although remittances generally have an impact on the economic landscapes of developing countries, the extent of that impact is still a matter of debate (Chowdhury, 2016). Firstly, the responses of developing countries to remittances tend to vary across their macro and micro-economy; however, some scholars (Abdul-Mumuni & Quaidoo, 2016; Chowdhury, 2016) largely argued that remittances are a crucial financial resource that can drive economic growth and development within the macro-economy.

Empirically, the World Bank (2006); Asafo Agyei (2021) came to the same conclusion, finding that remittances can have a positive impact on the economic growth and development of developing countries. Remittances, according to Fromell et al. (2020), can nevertheless boost economic development in the worst-case situations where a nation may have a poor financial system since they offer an alternative native method of financing investment and overcoming liquidity constraints. A healthy financial sector can also assist in directing remittances towards investments that may result in macroeconomic expansions (Kaasschieter, 2014). Connell and Conway (2000) as cited in Olulu-Briggs & Sunday (2021) add to the conversation by pointing out that current accounts benefit from remittance inflow. Their primary contention is that remittances increase bank foreign exchange reserves and generate extra savings that support economic development and growth.

Stated differently, remittances made as part of the capital accumulation framework give the banking industry additional assistance in extending credit to investors, small and medium scale enterprises (SMEs), and private sector as a whole (Shobowale et al., 2024). In contrast to these claims, remittances appear to produce what Olusuyi et al. (2017) refer to as inconsistent findings when examined at the micro level, particularly with regard to their effect on inequality. In other words, while income-source decomposition has

received attention, researchers have also focused on the distributional impacts of remittances by comparing income disparity with or without remittances (Mim & Ali, 2012).

### 2.2. Workers' Remittances

Workers' remittances are payments made by migrants to their friends and family back home, either in cash or in kind. Remittances are frequently driven by the migrant's wish to support their friends, family, and/or investments back home (Shafiun N, 2013). In literature, workers' remittance has been viewed in a variety of ways. When defining worker remittances, the World Bank and International Monetary Fund (IMF) divided them into three groups. According to the United Nations Technical Subgroup on the Movement of Persons, remittances are classified into three distinct categories.

First, the transfer of cash or kind from migrants to resident households in their country of origin; second, compensation, wages, salaries, and other remuneration paid in cash or kind to employees who worked in a country other than their legal residence; and third, the transfer of migrant capital in the form of financial assets as they move from one country to another and stay for more than a year (Abdul-Mumuni & Quaidoo, 2016). While capital transfers from resident households to resident households are captured by personal remittances, transfers from any residential sector to non-resident households and non-profit organisations are included in institutional remittances, and the total remittance is a combination of the two (World Bank, 2006; Chowdhury, 2016).

From 1970-1997, workers' remittances increased steadily until reaching a peak of $1,920,000,000, after which they experienced a gradual decline until reaching a level of $1,062,800,049 in 2023. In terms of numbers, workers' remittances increased tremendously until 1977, when they stood at $20,000,000, but then fell sharply to $3,000,000 in 2023 (World Bank, 2023). However, the tale took a new turn in 2024 when worker remittances decreased steadily (Bekele et al., 2024).

A number of causes could be responsible for this new tendency; for instance, Nigerians first sought better opportunities overseas due to the country's high unemployment and insecurity rates; the second is the simplicity and affordability of money transfers brought about by the global banking system; and the third factor is the status of the Nigerian economy, which has led migrants to believe that they may be the Messiah for their friends and family back home. In this study, we investigated the interaction between workers' remittances and economic development in Nigeria.

### 2.3. Foreign Direct Investments (FDI)

Remittances may affect economic development via their impact on foreign investments, which alters the size of the economy. First, it is critical to differentiate between the two (2) categories or trends of capital inflows across nations - Foreign Direct Investments (FDI) and Foreign Portfolio Investments(FPI) when defining FDI. FDI as defined by the World Bank is the net inflows made by an investor to purchase a 10% or longer-term management stake in a business that is based in an economy different from the investor's own (World Bank, 2024). A long-term link between the direct investor and the investee company is implied by the lasting interest, and the requirement of 10% or more means that the direct investor must have a significant amount of control over the business (Awogbemi, 2023); these two characteristics are crucial differentiators of FDI.

FPI is the term for debt and equity capital invested by a company based in one nation into a company based in another, usually with the intention of making capital gains rather than forming a long-term partnership (Awogbemi, 2023). To put it another way, FPI is typically linked to the purchase of shares, bonds, notes, and other money market instruments that are traded on the host nation's stock exchange (Eze, 2023). One important element of capital transfers between nations is foreign direct investment, or FDI. Thrilwall (1994) as cited in Awogbemi (2023) defined FDI as direct investments in machinery, buildings, technology, and equipment owned by a host nation's company.

In order to maximise worldwide profits, FDI entails not just a transfer of money (including the reinvestment of profits), but also a complete package of tangible capital, production methods, managerial and marketing know-how, product advertising, and business practices (Bazie et al., 2024). FDI is the net finance provided by an organization in a developed nation with the intention of acquiring or holding a long-term stake in an organization located in a developing nation (Eniekezimene et al., 2023). According to Isola & Alani (2012), the concept of a lasting interest denotes a long-term relationship in which the investors directly

involved have a significant impact on the management of the company, as demonstrated by their ownership of at least 10% of the company's shares, or their equivalent in voting power or other forms of control.

### 2.4. Gross Capital Formation (GCF)

Research frequently looks at factors that influence capital formation, such as government policies, interest rates, savings, foreign direct investment (FDI), as well as its relationship to variables like gross domestic product (GDP), employment, and sectoral development across various economic contexts. As noted by Irfan, Muhammad, Mansha, Asad and Javed (2021), GCF primarily focuses on its critical role in economic development and growth, exploring how investment in fixed assets, such as machinery, infrastructure, and inventories, contributes to a nation's productive capacity. The total value of "gross fixed capital formation" (new investments in fixed assets), "change in inventories" (net change in the stock of goods held by businesses), and occasionally "acquisitions less disposals of valuables" (net change in the value of valuable assets like precious metals) is calculated across an economy or sector over a specific time period, usually a year, to determine gross capital formation (Awogbemi, 2023).

Additionally, in developing and impoverished nations, GCF boosts sustainable economic development and growth, creates jobs, and lowers poverty (Pasara & Garidzirai, 2020). In light of this, this study examines the link between GCF, and economic development. The study is new in the current literature and new from post-pandemic point of view. Particularly after the lethal crises of the many versions of the Covid-19 pandemic severely damaged the economies, no such research has looked at the relationship between GCF and economic development (using human capital development index measurement).

### 2.5. Consumer Price Index (CPI)

The Consumer Price Index (CPI) is a crucial indicator for monitoring shifts in the average level of prices for consumer goods and services across time. It has a significant impact on several economic operations, such as inflation monitoring, economic policy development, and cost-of-living adjustments (Wirajing et al., 2023). Understanding the changes of CPI is crucial since it influences both macroeconomic stability and individual purchasing power in Africa (Wirajing, et al, 2023). Recent research has emphasised the importance of CPI. According to a Wirajing et al. (2023) living conditions and consumer behaviour are directly impacted by changes in CPI. The authors emphasised that while creating effective economic policies, policymakers must consider CPI patterns in order to guarantee price stability and sustainable growth.

Ayertey Odonkor et al. (2019) report emphasises the significance of CPI in Nigeria. The authors argued that CPI is a crucial instrument for assessing how well monetary and fiscal policy manage inflation and promote economic growth and development. They emphasise how important it is to have accurate CPI data in order to boost the country's economic performance and inform policy choices. Therefore, CPI has a big influence on economic policies and individual purchasing power, and recent research has shown that keeping an eye on CPI changes is essential to maintaining stability and sustainable economic growth and development (de Haas, 2021; Lin et al., 2023)

### 2.6. Economic Development

In human civilisation, development is a relative and multifaceted process. The phrase, according to radical scholars like Walter Rodney, is initially understood at the individual level, implying more ability and skill, independence, creativity, self-discipline, responsibility, and material wellbeing - all of which are more relevant to this study. The second is at the level of social groups, which suggests a growing ability to control the level of output as well as internal and external interactions (Martey & Armah, 2021). It is crucial to remember that any human community has minimal standards that all of its members must adhere to. These include equal opportunity for all members of the public sphere, where competition is based on merit and maintained despite all obstacles, and access to universal high-quality education, availability of clean drinking water, operational medical facilities, reliable electricity, high-quality telecommunication services, etc (De-Haas, 2021).

Due to their close association and symbiotic relationship, economic growth and economic development were previously occasionally used interchangeably depending on the topic of discussion. Scholars have been able to distinguish between the two notions in the literature that is now available. Karagöz (2009) asserts that economic development is a non-quantitative indicator of a developing economy, whereas economic growth is quantitative in nature, measurable, and objective. Iheke (2012) stated that growth and development are

interwoven and at such are considered synonymous by some writers, but they insisted that growth and development go hand in hand, at least in the early stages of growth, where wherever there is growth there is probably development as well.

The experiences of many less developed countries (LCDs) in Africa and Latin America, including India, where there was observable rapid economic growth but a general decline in the quality or standard of life of the citizens, have demonstrated that economic growth and economic development are, nevertheless, quite different and distinct. According to Kindle Berger and Herrick (1958) as cited in Awogbemi (2023), economic development is defined as the transition from a lower to a higher stage of life which implies change. As observed by Peshkin and Cohen (1967) as cited in Barguellil and Zaiem (2013), economic growth was widely regarded as the primary goal of the decolonised governments of Asia and Africa and was synonymous with progress. In order to halt the development crises, African nations like Ghana, Kenya, Mauritius, and Nigeria must maintain its four essential infrastructures (Rufus & Bufumoh, 2017).

The literature indicates that economic development entails improvements in material welfare, particularly for those with the lowest incomes; the elimination of poverty and its correlates of illiteracy, illness, and early death; a change in the composition of inputs and outputs, which typically involves a shift in the underlying structure of production from agricultural to industrial activities; the organisation of the economy so that productive employment is typically the situation of a privileged minority rather than a working-age population; and, consequently, a greater involvement of broad-based groups in decision-making regarding the economic and other directions of their welfare (Fayissa & Nsiah, 2010; Muhammad & Ahmed, 2009).

Glytsos (2005) pointed out that the concept of development has expanded to encompass the social and economic goals and ideals that civilisations aspire to. Accordingly, development is a phenomena that is "preoccupied with the rate of social factors as inputs or prerequisites for economic growth (Catrinescu et al., 2009). It is generally accepted that the underwhelming rate of economic development might be attributed to the neglect of these variables. However, it is also clear that there is no straightforward universal law that can be made about the economic effects of housing, health care, education, and other social factors.

Gapen et al. (2009) bolstered the broader perspective of economic development to include other social inputs by arguing that poverty reduction at the individual level was a crucial indicator of economic development and was not always correlated with a country's GDP growth. They highlighted the need for economic development to address the problems of low food consumption and increased unemployment through a combination of GDP growth and fair income distribution. Awogbemi (2023) puts the concept of development and poverty more clearly when he asserts that the problem of development must be defined as a selective attack on the worst form of poverty.

Based on this paradigm, the World Bank took a more comprehensive stance on economic development, stating that raising living standard is one of the challenges of progress. While income plays a role in improving people's quality of life, other factors that contribute to this include improved education, better health and nutrition, less poverty, a cleaner environment, greater equality of opportunity, more freedom, and a more vibrant cultural life. According to Awogbemi (2023), economic development is a creative process that causes the social system to undergo structural change. Dependency and modernisation are the two (2) fundamental ideas of development.

### 2.7. Exchange Rates

In theory, an exchange rate is the price of one currency stated in terms of another; for Nigeria, this is the quantity of naira needed to purchase one unit of another country's currency (Philip Ifeakachukwu & Ditimi, 2014). In era of trade liberalisation, having an appropriate combination of policies is essential since changes in the currency rate affect the economy. Exchange rate fluctuation is a major endogenous element that affects economic performance because of its effects on macroeconomic variables like outputs, imports, export prices, interest rates, and inflation rates. Udoh & Egwaikhide (2010) assert that improving economic performance necessitates both a sound exchange rate policy and an appropriate exchange rate.

In practice, neither a pure float nor market forces can completely set any currency rate. Another option is the managed float system, where monetary authorities periodically step in to influence the foreign exchange market in order to accomplish strategic objectives (Mordi, 2018). The Central Bank of Nigeria (CBN) has had different roles in overseeing the nation's currency rate over the years. There were several depreciations of the

naira following the implementation of the structural adjustment program (SAP). Achieving a realistic exchange rate was the aim of these measures in order to improve macroeconomic performance and increase the economy's base of productive activity. After SAP was implemented in 1986, the country transitioned from a pegged to a flexible exchange rate system.

The naira has been depreciating in value since 1994, when it was worth N21.886 to the US dollar despite the Nigerian government's best efforts to maintain a relatively stable exchange rate. Due to the global financial crisis of 2008, the naira's ultimate value at the end of 2009 was N150.01 (Awogbmi, 2023). All of these have contributed to a decline in economic development and its related effects. Consequently, the dual currency rates were unified on January 1, 1999, when the official exchange rate was eliminated. Dutch Auction System (DAS) was reinstated in 2002 as a result of the country's external reserves continuing to be depleted and the growing demand pressure in the foreign exchange market. The introduction of wholesale DAS in 2006, which further liberalised the market, was the final step in the pursuit of a fair naira exchange rate (Awogbemi, 2023).

### 2.8. Theoretical Framework

The study was anchored on the pure altruism (PAT), implicit family agreement (IFAT), and portfolio management decision theories. First, the pure altruism concept was propounded by Auguste Comte who coined the term to depict acting or the benefits of others without any self-interest involved, thus representing 'pure altruism'. In recent times, pure altruism as a theory has been used in finance literature and hence linked with migrant remittances. Pure altruism theory (PAT) as opined by Kaasschieter (2014) is grounded on the incentive for migrant remitting money home out of concern for the wellbeing of his family and companions in his or her home country. PAT is founded on three (3) main assumptions; first remittance is a function of the immigrant income; the second assumption is the migrant families and their friends' income in their own country; the higher their income, the less they remit, and vice versa; and the migrant's degree of attachment to the family member comes in third; the more attached they are, the more they remit (Eniekezimene et al., 2023). However, the length of time a migrant has lived overseas is inversely correlated with their level of attachment.

Second, the implicit family agreement theory (IFAT) was proposed by Carol S. Dweck and has recently formed a theoretical base for researchers in finance when describing how migrants and their family can create a contract that will benefit everyone and hence propel economic development and growth. As noted by Lucas and Stark's (1985), as cited in Isola & Alani (2012), migrants and their families at home create an implicit contract that will benefit everyone involved in the migration. Typically, the contract includes both an investment and a payback component can that propel economic growth (Bazie et al., 2024). According to the loan repayment hypothesis, the family pays for both the migrant's education and the expenses associated with moving. After the immigrant has been gainfully settled, the principle and interest will be remitted (Kaasschieter, 2014 as cited by Lin et al. (2023)).

Third, portfolio management decision theory (PMDT) was advocated by Harry Markowitz; PMDT has revolutionized the finance literature, hence it is considered a groundbreaking investment theory that demonstrates that performance of individual stock is not as vital as the performance of an entire portfolio (Awogbemi, 2023). The macroeconomic variables in the migrants' home and host nations that have a major impact on the remittance flow served as the foundation for the portfolio management decision theory (Chani et al., 2021). The following macroeconomic determinants have been highlighted in literature: government policies, political stability, exchange rates, inflation rates, and savings rates. Additionally, Straubhaar (1986) as cited in Ayertey Odonkor et al. (2019), supported this hypothesis with empirical data from his study.

## 3. RESEARCH METHODS

This investigation used ex-post facto and quasi-experimental research designs; ex-post facto research design was used because the study examined events which has occurred such as the dynamics of remittances and their impacts on economic development in Nigeria, whereas quasi-experimental research design was used to investigate the causal effect of dynamics of remittances on economic development. The study's population included all indices of dynamics of remittances (workers' remittances per-capita, foreign direct investments, gross capital formation and consumer price index- independent variable), economic development (human capital development index –dependent variable) and exchange rate (control variable).

The sample size ranged from 1994 to 2023; this period was chosen because it was thought to be ideal for producing robust findings. In order to achieve the research objectives, this study's data collection method is the secondary source of data (time-series data) for the period 1994-2023, which was primarily from the CBN Statistical Bulletin, and National Bureau of Statistics. The estimate tools used include Unit Root Test (URT), Auto-regressive Distributed Lag (ARDL) Bound Co-integration test, and ARDL Co-integrating and Long form. To test these effects, we used the Glytsos (2002) model, as adapted by Malik and Junaid (2009). In this study, we developed a linear simultaneous equation macro -economic model to estimate the effects of remittances on economic development. The model is described as follows.

$$\Delta HDI = \partial_0 + \partial_1 HDI + \partial_2 InWRM_{t-1} + \partial_3 InGCF_{t-1} + \partial_4 InFDI_{t-1} + \partial_5 CPI_{t-1} + \partial_5 EXCHR_{t-1} + \partial_6 EXCHRF_{t-1} + \varepsilon_t \quad ----------1$$

K = lag length for the Unrestricted Error-Correction Model (UECM); Δ = first differencing operator; ε = white noise or disturbance error term; equation 1 is the co-integrating long-run relationship. The short-run dynamic model is specified as follows:

$$\Delta HDI = \sum_{i=1}^{k} \gamma_1 \, i\Delta HDI_{t-1} + \sum_{i=1}^{k} \gamma_2 \, i\Delta InWRM_{t-1} + \sum_{i=1}^{k} \gamma_3 \, i\Delta InGCF_{t-1} + \sum_{i=1}^{k} \gamma_4 \, i\Delta InFDI_{t-1} + \sum_{i=1}^{k} \gamma_5 \, i\Delta CPI_{t-1} + \sum_{i=1}^{k} \gamma_6 \, i\Delta EXCHR_{t-1} + \varepsilon c_t - 2$$

$\varepsilon c_{t-1}$= the error correction term lagged for one period; $\gamma$= the coefficient for measuring speed of adjustment in equation (5%); HDI = Human Capital Development; WRM = Workers Remittances; GCF = Gross Capital Formation; CPI = Consumer Price Index; FDI = Foreign Direct Investment; EXCHR = Exchange Rate

**Table 1. Variable Description and A-prioiri Signs**

| Variable | Measurement | A-priori Sign |
|---|---|---|
| HDI | A composite of life expectancy, education and income | Nil |
| GCF | Gross Fixed Capital Formation plus Changes (Δ) in Inventories plus Acquisitions Minus Disposals of Valuables | + |
| FDI | Flow of investments into a country from foreign entities | + |
| CPI | Weighted average of prices of goods/services in the basket | + |
| WRM | Payments by migrants to friends and family | + |
| EXCHR | Yearly prevailing exchange rates | + |

Source: Researcher's Compilation (2025)

## 4. RESULTS AND DISCUSSION

**Table 2. Summary of Descriptive Statistics**

| Statistics | HDI | InWRM | InFDI | InGCF | CPI | EXCHR |
|---|---|---|---|---|---|---|
| Mean Score | 16.4813 | 4.4937 | 21.9557 | 6.2262 | 16.4366 | 175.133 |
| Median Value | 12.100 | 4.6198 | 7.8300 | 6.4989 | 12.7000 | 141.190 |
| Maximum Value | 76.800 | 5.2768 | 107.22 | 6.9395 | 72.800 | 465.38 |
| Minimum Value | 2.0000 | 3.2477 | -0.1900 | 4.6362 | 5.4000 | 21.890 |
| Standard Deviation | 14.3535 | 0.6163 | 28.4661 | 0.5842 | 14.2167 | 123.94 |
| Observations | 30 | 30 | 30 | 30 | 30 | 30 |

Source: Researcher's Compilation (2025).

The evidence provided in Table 2 shows significant variations in the variables given the large variation between the maximum and minimum values of the series, particularly for foreign direct investment (InFDI) and exchange rate (EXCHR). The results revealed that the study covered a period of 30 years (1994-2023). First, HDI had a mean and standard deviation values of 16.5 and 14.34 respectively suggesting that HDI has recorded a rapid growth over the years given that the standard deviation value is not greater than the mean score, this implies that HDI has been on increase during the period investigated.

HDI recorded minimum and maximum values of 2.0000 and 76.800respectively throughout the periods investigated. Second, workers' remittances (InWRM) reported a mean and standard deviation values of 4.4937 and 0.6163 respectively suggesting that InWRM had recorded a tremendously growth over the years because

the standard deviation value is not greater than the mean score, it implies that past administration has put various strategies in place to checkmate workers' remittance in the country.

Meanwhile, InWRM had minimum and maximum value of 3.2477 and 5.2768 respectively throughout the period investigated. Third, foreign direct investment (InFDI) had mean and standard deviation values of 21.9557 and 28.4661 respectively suggesting that InFDI has recorded a less tremendous growth over the years; this is evidence because the standard deviation value is greater than the mean score. Also, InFDI had a minimum and maximum value of -0.1900 and 107.22 respectively throughout the periods investigated. Fourth, gross domestic formation (InGCF) had mean and standard deviation values of 6.2262 and 0.5842 respectively suggesting that InGCF deviate much away from the mean value. Also, InGCF had a minimum and maximum value of 4.6362 and 6.9395 respectively throughout the periods investigated; this portends that the past government has controlled InGCF in the country, even though it still experience an increase, because the mean score is not less than the standard deviation value.

Fifth, consumer price index (16.4366) had mean and standard deviation values of 16.4366 and 14.2167 respectively suggesting that CPI deviate much away from the mean score. Also, CPI had a minimum and maximum value of 5.4000 and 72.800 respectively during the periods investigated; this portends that the past government has controlled CPI in the country, even though it still experience an increase, because the mean score is not less than the standard deviation value. More so, EXCHR had a mean and standard deviation values of 175.133 and 123.94 respectively suggesting that EXCHR recorded a rapid growth during the periods investigated because the standard deviation value is lower than the mean score; the implication is that the value of the Naira has been depreciating when compared to the United States (US) Dollar. Also, EXCHR had a minimum and maximum value of 21.890 and 465.38 respectively throughout the periods investigated.

**Table 3. Correlation Matrix for the Independent, Control and Dependent Variables**

| Statistics | HDI | InWRM | InFDI | InGCF | CPI | EXCHR |
|---|---|---|---|---|---|---|
| HDI | 1.0000 | | | | | |
| InWRM | 0.2954 | 1.0000 | | | | |
| InFDI | 0.4355 | 0.2757 | 1.0000 | | | |
| InGCF | 0.1451 | 0.6964 | -0.0690 | 1.0000 | | |
| CPI | 0.7164 | 0.2851 | 0.1693 | 0.1631 | 1.0000 | |
| EXCHR | 0.5518 | 0.8171 | 0.4226 | 0.5146 | 0.5342 | 1.0000 |

Source: Researcher's Compilation (2025)

The correlation matrix in Table 3 revealed that all the variables of interest (InWRM, InFDI, InGCF, CPI) and the control variable (EXCHR) exerted positive relationship with HDI in Nigeria. Furthermore, the highest correlation was recorded between CPI (0.7164) and HDI, though is positive. Also, the variables reported slightly low correlation; hence, the Pearson correlation coefficients revealed that multicollinearity may not be anticipated since the correlation coefficients do not exceed 0.80.

**Table 4. Multicollinearity Results for the Independent and Control Variables**

| Variables | VIF | I/VIF |
|---|---|---|
| EXCHR | 4.93 | 0.2028 |
| InWRM | 4.74 | 0.2108 |
| InGCF | 2.27 | 0.4411 |
| CPI | 1.57 | 0.6358 |
| InFDI | 1.44 | 0.6931 |
| Mean VIF | 2.99 | 0.8171 |

Source: Researcher's Compilation (2025)

From the Table 4, the tolerance level (1/VIF) in the regressors(EXCHR, InWRM, InWRM, CPI and InFDI) are not predicted by other predictor variables; this is because the tolerance values are greater than 0.10. Remarkably, the mean VIF of 2.99 is less than the mean VIF benchmark of 10; this suggests an absence of multicollinearity in the empirical model of dynamics of remittances and economic development.

**Table 5. Breusch-Godfrey Serial Correlation Lagrangrian Multiplier Test**

| | | | |
|---|---|---|---|
| F-statistic | 0.8360 | Probability F | 0.3312 |
| Obs. *R-Squared | 3.5031 | Prob. Chi-Square (2) | 0.1450 |

Source: Researcher's Compilation (2025)

Table 5 is the Breusch-Godfrey Serial Correlation Lagrangrian Multiplier (LM) test to ascertain the presence/absence of serial correlation in the model of dynamics of remittances and economic development. The LM result suggests that there is absence of serial correlation in the empirical model because the p-values of F-statistics is insignificant at 5 percent level.

**Table 6. Augmented Dickey-Fuller (ADF) Unit Root Test**

| Parameters | ADF Statistics | Test critical value @ 5% | Prob. | Remark |
|---|---|---|---|---|
| HDI | -4.22264 | -2.94967 | 0.0021 | Stationary |
| InWRM | -4.65375 | -2.94967 | 0.0021 | Stationary |
| InFDI | -3.90194 | -2.95224 | 0.0051 | Stationary |
| InGCF | -6.90723 | -2.94967 | 0.0000 | Stationary |
| CPI | -4.26165 | -2.94967 | 0.0019 | Stationary |
| EXCHR | -2.65572 | -2.94967 | 0.0924 | Non-stationary |
| **ADF at I$^{st}$ Difference** | | | | |
| HDI | -3.1932 | -2.9522 | 0.0292 | Stationary |
| InWRM | -8.7510 | -2.9522 | 0.0000 | Stationary |
| InFDI | -5.3548 | -2.9522 | 0.0001 | Stationary |
| InGCF | -3.2192 | -2.9579 | 0.0280 | Stationary |
| CPI | -6.0230 | -2.9522 | 0.0000 | Stationary |
| EXCHR | -7.1375 | -2.9550 | 0.0000 | Stationary |
| HDI | -3.1932 | -2.9522 | 0.0292 | Stationary |

Source: Researcher's Compilation (2025)

The results in Table 6 show the order of integration (stationarity) of the series employed for the variables. All series were subjected to ADF test and it was found that all series except EXCHR was found to be stationary at levels; however, when subjected at first difference, all the variables including EXCHR attained stationarity. This thus suggests that all the series attained stationarity at level and first differencing. Given that the series were stationary at levels (1(0) and first differencing (1(1)), there is the need to perform the long-term relationship between the variables HDI, InWRM, InFDI, InGCF, CPI and EXCHR using the ARDL bound test. The ARDL bound test was used to examine the co-integration between dynamics of remittances and economic development parameters; the null hypothesis of no long-term relationship is rejected if F-statistics of bound test is greater than lower and upper bound critical value at 5 percent significance level. On the other hand, long-term relationship is accepted if it is lower.

**Table 7. ARDL Bound Test**

| Test Statistic | Value | k |
|---|---|---|
| F-statistic | 2.1304 | 5 |
| Critical Value Bounds | | |
| Significance | I(0) Bound | I(1) Bound |
| 10% | 2.1228 | 3.2342 |
| 5% | 2.4532 | 3.6147 |
| 1% | 3.1541 | 4.4358 |

Source: Researcher's Compilation (2025)

Table 7 is the ARDL bound test; the results show that F-statistic 2.1304 which is above the 5% critical values at I(0) and I(1) boundaries, rejecting the null hypothesis and indicating a long-term relationship between the variables (HDI, InWRM, InFDI, InGCF, CPI and EXCHR)

**Table 8. Error Correction Mechanism (ECM) Results**

(ARDL Co-integrating and Long Run Form)

| Co-integrating Form | | | | |
|---|---|---|---|---|
| **Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** |
| D(HDI(-1)) | 0.449 | 0.291 | -1.541 | 0.155 |
| D(InWRM) | 0.024 | 0.023 | 9.020 | 0.000 |
| D(InFDI) | 0.040 | 0.055 | 0.741 | 0.477 |
| D(InGCF) | 0.999 | 1.671 | 0.598 | 0.564 |
| D(LOGEXCHR) | 0.013 | 0.116 | 0.111 | 0.915 |
| D(CPI) | 0.003 | 0.015 | 0.214 | 0.836 |
| Co-integrating Equation (-1) | 0.110 | 0.048 | 2.302 | 0.044 |
| **Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** |
| LOGInWRM | 0.214 | 0.231 | 8.927 | 0.000 |
| LOGCPI | 0.367 | 0.467 | 0.787 | 0.451 |
| LOInFDI | 0.064 | 1.537 | 0.670 | 0.519 |
| LOGEXCHR | 0.117 | 1.066 | 0.110 | 0.916 |
| LOGInGCF | 0.029 | 0.134 | 0.219 | 0.832 |
| LOGCPI | 0.150 | 0.334 | 0.451 | 0.663 |
| C | 8.730 | 15.085 | 0.579 | 0.576 |

Source: Researcher's Compilation (2025)

The error correction mechanism (ECM) coefficient (co-integrating equation -1) is estimated at 0.214; this implies that the model corrects its previous period disequilibrium at 21.4% yearly. Hence, boosting exchange rate at 21.4% yearly will enhance InWRM, InFDI, InGCF, and CPI over time. Accordingly, four (4) research questions were raised along with four (4) null hypotheses. First, workers' remittance was significant at 1% and positively related to HDI; this implies that HDI increases with increase in inflow of remittances to Nigeria. This result laid credence to the view held by the pure altruism, implicit family agreement, and portfolio management decision theories that remittance inflows are among the main macroeconomic dynamics significantly positively promoting long-run economic development in developing economies; this result conform to the findings of Fayissa and Nsiah (2008); Iheke (2012).

Second, the other variables of the study gross capital formation, foreign direct investments and consumer price index were found to be insignificantly positively in influencing human capital development; the positive influence of these variables on HDI in the sampled period investigated could be partly buttressed by the fact that remittances can be used by recipients for consumptions or investments. All other things remaining equal, whichever use remittances are put, they are capable of inducing an increase in aggregate demand, leading to a rise in HDI; hence our result conforms to a-priori expectation.

## 5. CONCLUSIONS

Based on the findings, the study concludes that workers' remittances significantly and positively influence economic development in Nigeria, particularly through a moderating exchange rate that enhances the attractiveness of currency inflows. In contrast, foreign direct investment, gross capital formation, and the consumer price index show a positive but statistically insignificant impact on economic development.

To support sustainable growth, the study recommends that remittance-receiving countries adopt sound macroeconomic policies, including stable exchange rates, improved infrastructure, and deeper market integration. Additionally, the corporate sector especially financial institutions and the manufacturing industry should work to reduce transaction costs and promote official financial inflows. Strengthening institutional transparency, ensuring good governance, and fostering institutional reliability are also essential to increase the developmental impact of capital formation and stabilize prices, enabling the country to better leverage external financial stimuli.

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