International Journal of Advanced Studies in Economics and Public Sector Management | IJASEPSM
p-ISSN: 2354-421X | e-ISSN: 2354-4228
Volume 13, Number 1 February, 2025

Economic Growth-Remittances Nexus and Poverty Reduction in Selected West African Countries

[1]Samuel, Paabu Adda, [2]Agya, Atabani Adi & [3]Olukoya, Adekanle
[1,2&3]Department of Economics, Faculty of Social Sciences,
Federal University Wukari, Taraba Sate, Nigeria.

Article DOI: 10.48028/iiprds/ijasepsm.v13.i1.11

Abstract

Considering the dominance of remittances as the main source of foreign capital, along with enhanced economic growth in West Africa, it is expected that there will be reduction in poverty which is in consonance with the United Nations first objective of sustainable development goal; however, poverty remain prevalent in West Africa. The aim of this study is to assess the effect of migrants' remittances and economic growth on poverty reduction in some selected West African countries: Nigeria, Ghana and Senegal. Data for this study were obtained from secondary sources. The study covered annual data spanning the period 1990 to 2022, employing a panel autoregressive distributed lag (PARDL) co-integration test. The co-integration relationship shows poverty gap index, remittances, economic growth, inflation rate, unemployment and foreign direct investment were co-integrated. The empirical findings revealed that migrants' remittances and economic growth have significant negative effect on poverty in the long-run, consistent with a priori expectation while inflation revealed an insignificant positive effect on poverty in West Africa in the long-run. Also, unemployment and foreign direct investment were revealed to have negative effect on poverty in the long-run. However, foreign direct investment was not significant. Whereas the short-run result revealed that remittances and economic growth have significant positive effect on poverty. The PMG's speed of adjustment parameter (ECT) is rightly signed and statistically significant at 10% level, reinforcing co-integrating relationship. That is 31% disequilibrium in the short-run is corrected annually in the long-run. Revealed unidirectional causality runs from remittances, GDP per capita, and inflation to poverty, while there appears to be no causal relationship either from unemployment or foreign direct investment to poverty and vice versa. The test of hypotheses results revealed that all the alternative hypotheses were accepted and the null hypotheses rejected. Therefore, the study concluded that remittances and economic growth have decelerating-effects on the level of poverty in West Africa in the long-run. The following recommendations, among others, were made: (a) Governments need to substantially strengthen and synergize remittances and economic growth as poverty alleviating factors in West Africa (b) Remittance recipients need sensitization on the need to channel such funds into productive ventures and policy mandating them to do so be enacted and implemented (c) Economic growth in West African countries should be inclusive driven.

Keywords: *Migrant remittances, Poverty reduction, Economic Growth, Panel ARDL, West Africa*

Corresponding Author: **Samuel, Paabu Adda**

Background to the Study

West African countries have experienced a significant outflow of their populace to advanced economies worldwide, driven by the pursuit of improved employment opportunities and living standards for both emigrants and their families remaining in their countries of origin (United Nations Migration, 2020). The facilitation of this movement can be attributed to the elimination of most obstacles to the unrestricted movement of individuals, which occurred with the advent of the new millennium and the globalization of the global economy. This scenario has significant implications for the economies of developing nations. On one hand, brain drain poses a challenge as skilled individuals migrate from these countries. On the other hand, the emigration of individuals from impoverished nations to more affluent ones results in increased income for both the emigrants and their relatives in their country of origin.

The emigrants have consistently and persistently contributed significant financial resources to the economy of West African countries as a result of their economic endeavors in their newfound countries. Based on the preceding information, it can be observed that remittances have emerged as the dominant form of foreign capital inflow in this region. Additionally, they have played a crucial role in addressing the foreign exchange scarcity and mitigating the imbalance in the balance of payments experienced by these countries in the region. There is a prevailing belief that the influx of remittances to developing nations can contribute to the enhancement of individuals' income levels, thereby leading to an improvement in the overall living conditions of recipient families. This is achieved through the facilitation of both consuming and productive endeavors. Nevertheless, if remittances induce a sense of complacency among beneficiaries toward engaging in productive endeavors, there is a potential for diminished productivity within these nations. Consequently, this could result in a decrease in economic growth and ultimately contribute to an exacerbation of poverty levels. In the field of economics, there exists a widely accepted convention that posits a causal relationship between low income and low levels of saving. This relationship, in turn, is believed to result in diminished levels of investment and productivity. Ultimately, this cyclical pattern culminates in the persistence of high levels of poverty. Despite the substantial inflow of remittances, amounting to US$33.1 billion in 2022 according to the World Bank (2023), which if properly channeled can lead to alleviate poverty to some extent and support the families of emigrants, yet poverty continues to persist as a pervasive issue in the West Africa region. The prevalence of poverty in the region is steadily increasing. According to the United Nations (2022), there was a notable increase of almost 3% in extreme poverty in West Africa during the year 2020. According to the report, there was an increase in the percentage of individuals residing below the poverty line of $1.90 per day, rising from 2.3% in 2020 to 2.9% in 2021. Hence, a preliminary examination of trend analysis revealed a moderately favorable and linear correlation between remittance and poverty in the West African region.

Despite the significant inflow of remittances to Nigeria, Ghana, and Senegal, these West African countries continue to grapple with sluggish economic growth, persistent poverty, and income inequality. Remittances, which account for a substantial share of GDP in these countries, have not translated into sustained economic development and poverty reduction; hence this study seeks to examine economic growth-remittances nexus and poverty reduction

in West Africa, using Nigeria, Ghana and Senegal as a case study. And the period of investigation is delineated from 1990-2022: a period of 33 (thirty-three) years. These countries were selected for being the largest recipients of remittances in the region and for which relevant data on the variables of interest are available. And for the time scope, 1990 marks the beginning of globalization, allowing analysis of remittances' impact during this critical period. The study shall at the end test the hypothesis that economic growth-remittances nexus has no significant effect on poverty reduction in the selected West African countries.

Literature Review

Conceptual Review

This section discusses the concepts of remittances, economic growth, and poverty and related concepts relevant to this study.

Remittances

International remittances are defined as payments made by migrants directly to their families or communities back home, either in cash or in kind, according to the United Nations World Migration Report (2022). A substantial body of literature exists on the topic of remittances, encompassing several aspects including their effect on economic growth and development, the factors driving their occurrence, and the decision-making processes at the household level. The existing body of literature can be broadly categorized into two main strands. While the second strand looks at the microeconomic features of remittances, the first strand focuses on the macroeconomic determinants that affect remittance flows (Kpodar, Mlachila, Quayyum & Vigninou, 2021). Remittances have undergone significant changes, particularly in the context of the COVID-19 epidemic. These changes encompass various aspects, including the adoption of digital payment methods and a decrease in the costs associated with transferring funds from host nations to destination nations. Remittance is a term frequently employed to denote the monetary resources that expatriates transmit to their nation of origin using wire, mail, or online transfer methods. The economic importance of cross-border peer-to-peer fund transfers is significant for numerous developing nations. Remittances have emerged as a significant driver of economic growth in developing nations.

Remittances are more crucial than ever for some of the poorest and most vulnerable people who lack access to social and economic safety nets while the world economy experiences its worst economic downturn. There is a global population of approximately 200 million migrant laborers who engage in conscientious work to improve the well-being of their families and communities in their countries of origin. According to Barne and Pirlea (2019), remittances serve as the primary form of external funding for lower- and middle-income nations. According to IFAD (2023), one in five individuals in Africa sends or receives overseas remittances. The United Nations Economic Commission for Africa (UNECA, 2020), reported that there has been a significant increase in the volume of remittances to the African continent since 2009, roughly doubled in magnitude. However, the significance extends beyond the mere magnitude of monetary resources. Remittances serve as a means of delivering monetary resources to individuals residing in impoverished conditions, thereby affording them the opportunity to allocate funds according to their own prioritized necessities.

Remittances are utilized by a significant number of economically disadvantaged households to fulfill their essential requirements. Research suggests that over 75% of these funds are allocated towards the acquisition of nourishing food as well as financing healthcare, education, and housing expenses. Approximately 50% of the total globally remittances are directed towards rural regions, which are home to approximately 75% of the global population living in poverty and facing food insecurity. Low-income households, especially those led by female individuals, exhibit a higher propensity to allocate remittances towards the acquisition of necessary commodities and services.

According to the United Nations Economic Commission for Africa (UNECA) in 2020, it is projected that the total remittance flows directed towards rural areas may potentially reach a staggering $1 trillion by the year 2025. According to Ratha (2005), the act of migrants sending a portion of their earnings back to their relatives in the form of cash or commodities is commonly referred to as workers' or migrant remittances. In many developing economies, these have become the main source of foreign capital due to their rapid growth in recent years. The transfers of money or items from one individual to another, or household, are called remittances. Targeting the individual requirements of recipients, these funds have a propensity to mitigate poverty.

Remittances represent the financial inflows received by households from foreign economies, primarily resulting from the temporary or permanent migration of individuals to those nations. Remittances encompass both monetary and non-monetary assets that are transmitted through official channels, such as electronic platforms, as well as unofficial channels, such as the physical transfer of money or products over national boundaries. These remittances primarily consist of financial resources and non-monetary assets that are sent or provided by individuals who have relocated to a different country and have established residency there. Additionally, they encompass the net earnings of cross-border workers, seasonal employees, or other individuals engaged in temporary employment inside an economy where they do not hold permanent residency. Remittances sometimes serve as a significant and consistent financial resource for numerous economies, occasionally surpassing official aid or financial inflows derived from foreign direct investment. According to Ratha (2005), remittances might potentially exert a significant influence on poverty alleviation and serve as a source of financial support for the economic development of recipient economies.

Remittances are not a viable alternative to other sources of development funding; yet, they do constitute a crucial cash inflow for numerous poor nations. According to UNCTAD (2018), remittances can manifest in various forms, including financial, in-kind, or social support. These kinds of remittances empower family members to enhance their dietary intake, gain access to education and healthcare services, invest in family and agricultural enterprises, and enhance their overall quality of life.

Economic Growth

The concept of economic growth, as expounded by Gordon (1984) and Todaro (2000), is commonly characterized by an increase in Gross Domestic Product (GDP). Although growth

and development are sometimes used interchangeably, it is feasible to discern a distinction between the two concepts. According to Todaro (2000), economic growth can be defined as the expansion of a nation's aggregate production of goods and services or the augmentation of the quantity of such production within a specified timeframe. The concept of growth is widely recognized as synonymous with economic development, as it is quantified by the yearly percentage increase in the actual production of goods and services. In contrast, economic development is a concept that is characterized by a higher degree of complexity and lacks precise quantification just by monetary measures. There are numerous variables at play, all of which are connected to the existence of humans.

Jhingan (2006) posits that economic development encompasses a more comprehensive concept compared to economic growth. It pertains to a measurable and sustained increase in a nation's per capita production or income, accompanied by advancements in its workforce, consumption, capital, and volume of commerce. It is related to a change in the quality of economic commodities, needs, incentives, institutions, productivity, and knowledge. The increasing trajectory of the entire social structure is evident. This proposition posits that economic growth can occur without concomitant societal development, as evidenced by the persistence of poverty, unemployment, and inequality. Hence, it may be argued that economic development encompasses both growth and transformation, whereas economic growth refers to the increase in a nation's aggregate output within a specific timeframe. However, if all of these advances combined resulted in an improvement in people's quality of life, then economic development would be said to have taken place. This elucidates the perspective held by numerous economists, positing that whereas economic development is primarily concerned with individuals, economic growth primarily pertains to the production and consumption of things. In this research, the term "economic growth" pertains to a rise in either the value of Gross Domestic Product (GDP) or the rate of GDP growth.

Poverty and Poverty Reduction

According to Guobao (2000), the terms "poverty" and "poverty reduction" have become important catchphrases in the global development agenda, both in terms of new international finance instruments and development objectives. Despite the widespread acknowledgment of the causes of poverty, there remains a dearth of a universally agreed-upon definition, and the quest for effective solutions remains imperative. The multitude of perspectives from which the notion of poverty is observed presents a significant obstacle in establishing a precise definition. This phenomenon arises from the subjective nature of individuals' perceptions, as what one individual may perceive as being poor to another individual may not share the same perspective. Furthermore, there is a difficulty in discerning the demarcation between individuals classified as poor and those who do not fall under this category (Obayelu & Uffort, 2007).

According to Bertha (2018), poverty reduction can be defined as the process of eliminating a significant portion of individuals from impoverished living conditions. Poverty reduction, alternatively referred to as poverty alleviation, encompasses a strategic approach aimed at diminishing the prevalence of economic and non-economic poverty within communities, nations, or certain demographic segments (Marco, 2012).

Measurements of Poverty

A poverty measure refers to a summary statistic that provides an assessment of the economic well-being of individuals or households who are classified as poor within a given society. Poverty measurement is conducted for several purposes, including the evaluation of a nation's progress in reducing poverty, the assessment of specific poverty reduction programmes and initiatives, and the construction of a benchmark for evaluating the standard of living. Furthermore, the process of poverty measurement serves the purpose of determining a poverty threshold that effectively differentiates individuals and communities living in poverty from those who are not, as well as facilitating comparisons of poverty levels across various temporal and spatial dimensions, such as individuals, groups, and nations (United Nations, 2001; Ajakaiye & Adeyeye, 2002).

Consequently, the attainment of a universally recognized approach or metric for assessing poverty remains unattainable. In contrast, a range of metrics that encompass both absolute and relative perspectives are employed to elucidate the complex and varied nature of poverty. Ajakaiye and Adeyeye (2002) constructed a set of two relative poverty measures and seven absolute poverty metrics. The indices commonly used to assess human well-being include the human development index (HDI), the physical quality of life index (PQLI), the augmented physical quality of life index (APQLI), measures of poverty such as the poverty gap/income shortfall, headcount ratios/incidence of poverty, and composite poverty measures. The relative poverty indicators employed in the study consisted of average income and the proportion of the population residing below the poverty line. Additional indicators of poverty encompass living standards and poverty line indices. Only two measurements of poverty are delineated below:

(i) Cost of Basic Needs (CBNs) Method

The poverty line is determined by utilizing CBNs, which assess the cost of a basket comprising essential food and non-food items required to meet basic needs (UNCTAD, 2012). While there is a need for additional data on costs and consumption, CBNs remain a more favorable option compared to the energy intake provided by meals.

(ii) International Poverty Line (IPL)

In contrast to country-specific metrics known as CBNs, which rely on country-specific pricing and choices, international poverty lines serve the purpose of facilitating global poverty comparisons. Various international poverty lines have been established, such as the $1/day line, the $2/day line, and the $1.25/day line, which was introduced in 2005. By employing the concept of purchasing power parity (PPP), it is possible to translate the Indian Premier League (IPL) into local currencies. According to UNCTAD (2012), the use of IPL for research purposes at the national or regional levels is not suitable unless adjustments are made to account for purchasing power parity (PPP) exchange rates.

Poverty Incidence

(i) Nigeria

In contemporary times, the number of people whose daily living expenses are less than $1, as determined in the 1990s, $1.25 as determined in 2005, or $1.90 as modified in September

2015, is often the subject of arguments on poverty (UNDP 2016). The conversation on poverty encompasses a wide range of lives and experiences, which are not limited to a certain context and exhibit variations across different nations. While it is widely acknowledged in scholarly literature that there is a prevailing consensus on the decline of global poverty (Fischer, 2018; Minoiu & Dhongde, 2011), it is important to note that this perspective may not accurately reflect the circumstances in all countries. In the context of Nigeria, it can be argued that the prevailing situation is characterized by a divergence from truth since trends are exhibiting a deteriorating trajectory. According to a statement by the National Bureau of Statistics (Dapel, 2018), there was a significant increase in the prevalence of poverty in the nation, which rose from 27.2% to 69.0% throughout 1980 to 2010. The frequency of poverty exhibits a comparable tendency as well. Between the years 2010-11 and 2016, there was an increase in the proportion of the population residing below the poverty criterion based on national income. Specifically, the percentage of individuals falling below this barrier grew from 35% to 39%. According to the World Bank (2017), According to the 2019 Human Development Index Report (UNDP 2019), a significant proportion of individuals, specifically 46%, experienced income poverty, but a larger percentage, namely 57%, experienced multidimensional poverty.

The National Bureau of Statistics (NBS) conducted research titled "2019 Poverty and Inequality in Nigeria," which revealed that around 83 million individuals, or 40% of the total population, reside below the poverty threshold of 137,430 naira ($381.75) annually. The NBS study utilizes data derived from the most recent Nigerian Living Standards Survey, conducted from 2018 to 2019. This survey received support from the Poverty Global Practice division of the World Bank and technical assistance from the Living Standards Measurement Study (LSMS) conducted by the same institution (World Bank, 2020).

According to the National Bureau of Statistics, Sami (2022) has stated that a total of 133 million individuals in Nigeria is experiencing multidimensional poverty. Based on the latest National Multidimensional Poverty Index survey conducted by the National Bureau of Statistics (NBS), it is shown that a significant proportion of the Nigerian population, specifically 63%, experiences poverty due to limited availability of essential resources such as healthcare, education, adequate living conditions, employment opportunities, and personal safety. The Multidimensional Poverty Index (MPI) offers a comprehensive approach to evaluating poverty by acknowledging multiple dimensions of deprivation, encompassing health, education, living conditions, employment, and shocks.

The survey conducted from 2021 to 2022 in Nigeria encompassed a substantial sample size of roughly 56,610 individuals distributed throughout 109 senatorial districts among the country's 36 states. This survey stands as the largest ever conducted in its scope and scale. In contrast to the Global Multidimensional Poverty Index (MPI), which incorporates three dimensions (Health, Education, and Living Standards), the 2022 MPI Survey introduced an additional dimension, namely Work and Shocks. To accurately depict the prevailing reality and key concerns in Nigeria, an additional dimension, along with supplementary elements such as food security, water reliability, underemployment, security shocks, and educational

disparities, were incorporated. The National Bureau of Statistics (NBS) reported a figure of 133 million impoverished individuals in Nigeria, surpassing the World Bank's earlier projection for the country in 2022.

Based on data provided by the World Bank, it is projected that the population of individuals living in poverty in Nigeria will increase to around 95.1 million by the year 2022. According to the World Bank, there has been a lack of progress in poverty reduction since 2015, coinciding with the tenure of Major General Muhammadu Buhari (retd.) as president. The aforementioned projection was incorporated into the designated segment of the report entitled "A Better Future for All Nigerians: 2022 Nigeria Poverty Assessment."

Based on the findings of this study, it is projected that the prevailing COVID-19 circumstances will result in an additional five million individuals being pushed below the poverty line by the year 2022, hence exacerbating Nigeria's already substantial poverty rate. According to projections, there is an anticipated decline in real per capita GDP growth for all sectors in the year 2020. Consequently, it is anticipated that individuals who were previously experiencing poverty will see a significant exacerbation of their economic hardships and those who were just above the poverty threshold before the onset of the COVID-19 pandemic are predicted to face a decline in their financial well-being. If the crisis had not occurred, the counterfactual scenario suggests that the population of those living in poverty would have experienced an increase from 82.9 million in 2018-19 to 85.2 million in 2020, and further to 90.0 million in 2022. This growth may mostly be attributed to natural population expansion. The poverty headcount rate would have exhibited minimal fluctuations.

The projected outcome of the crisis suggests that the poverty headcount rate will rise from 40.1% in 2018-19 to 42.0% in 2020 and further to 42.6% in 2022. This indicates an increase in the number of individuals living in poverty, with an estimated 89.0 million people in poverty in 2020 and 95.1 million in 2022. Based on the temporal disparity observed between the aforementioned scenarios, it is projected that the issue in question will independently increase to 3.8 million individuals living in poverty in Nigeria by the year 2020, followed by an additional 5.1 million individuals by the year 2022. The government's objective of alleviating poverty for 100 million Nigerians within a decade is further impeded by the escalating levels of impoverishment.

The findings of the 2022 Multidimensional Poverty Index study demonstrate significant insights into the current state of poverty. This survey highlights show that:

a) In Nigeria, a significant proportion of the population, specifically 63%, which corresponds to over 133 million individuals, are classified as multi-dimensionally poor.
b) The National Multidimensional Poverty Index (MPI) of Nigeria is calculated to be 0.257, indicating that individuals living in poverty experience slightly over one-quarter of all possible impoverished circumstances.
c) The northern region of the country accommodates approximately 65% of the nation's destitute population, which amounts to over 86 million individuals. In contrast, the

southern region is inhabited by approximately 35% of the wretched population, which is slightly less than 47 million individuals.

d) The prevalence of multidimensional poverty varies significantly across different states in Nigeria, with Ondo having the lowest incidence at 27% and Sokoto having the highest at 91%. This disparity highlights substantial disparities in the levels of poverty among these states.
e) Nigeria exhibits a multidimensional poverty rate above 50%, wherein a significant proportion of the population relies on traditional fuel sources such as dung, wood, or charcoal for cooking purposes, rather than adopting cleaner energy alternatives. Insufficient sanitary conditions, extended periods of waiting for medical attention, limited access to food, and inadequate housing represent other prevalent manifestations of significant hardship.
f) In the majority of states, the incidence of monetary poverty tends to be lower in comparison to the incidence of multidimensional poverty. Based on the national monetary poverty line for the fiscal year 2018–19 and the National Multidimensional Poverty Index (MPI) for the year 2022, it is observed that 40.1% and 63% of the Nigerian population, respectively, experience multidimensional poverty.
g) Multidimensional poverty exhibits a higher prevalence in rural regions, wherein 72% of the population resides in impoverished conditions, in contrast to the comparatively lower rate of 42% observed in metropolitan areas.

The inclusion of the Child MPI, which is presented alongside the National MPI and provides further insights into the multidimensional child poverty situation in Nigeria, is also incorporated. According to the findings presented in this paper, it is asserted that:

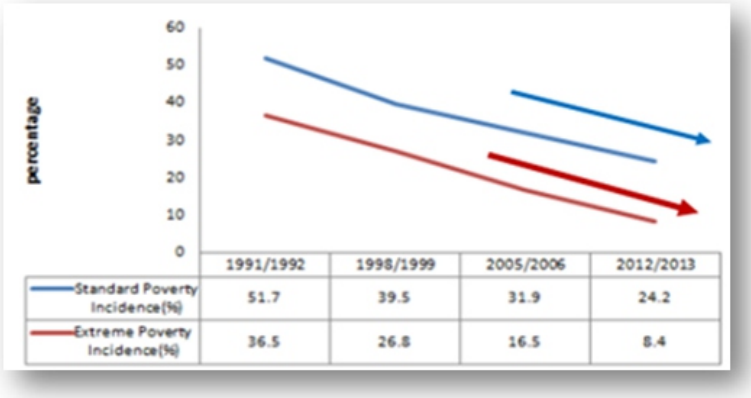
a) 51% of all poor people are children, and 67.5% of children between the ages of 0 and 17 are multi-dimensionally poor, according to the National MPI.
b) Child poverty exhibits a pervasive nature within rural regions, as evidenced by the fact that more than 90% of children residing in rural areas are subjected to impoverished conditions.
c) The indicator pertaining to child engagement reveals the most severe instances of deprivation, as more than half of impoverished children lack the necessary intellectual stimulation crucial for optimal early childhood development.
d) The child Multidimensional Poverty Index (MPI) indicates a lower prevalence of poverty in the South-East and South-West regions, with rates of 74% and 65.1% respectively, compared to the North-East and North-West regions where 90% of children experience poverty. All states exhibit a minimum Child Multidimensional Poverty Index (MPI) incidence of 50%, while Bayelsa, Sokoto, Gombe, and Kebbi demonstrate an incidence of at least 95%.
e) Four million Nigerians, or 2.1% of the country's total population, have a child who is between the ages of fifteen and seventeen who is the first in their family to complete elementary school (NBS, 2022).

(ii) Ghana

The period since the 1990s has witnessed substantial economic growth in Ghana, which has had a notable impact on reducing poverty at the national level, as well as in both urban and

rural areas. Based on the findings of the Ghana Living Standard Survey (GLSS1) conducted during the period of 1991/1992, as cited in Osei (2015), it was determined that the standard poverty incidence at the national level stood at 51.7%, with extreme poverty affecting 36.5% of the population. The Ghana Living Standard Survey conducted for the 1998/1999 period revealed a fall in both standard poverty incidence and extreme poverty incidence. As a result of growth expansion, the standard poverty incidence decreased by 12.2 percentage points to 39.5%, while the extreme poverty incidence decreased by 9.7% to 26.8%. The reduction of poverty incidence has persisted as several households have experienced the positive effects of inclusive economic growth, which has been facilitated by the deliberate actions of the Government to mitigate income disparity. Consequently, there was a decrease in standard poverty levels by 7.6% to reach 31.9%, and a decline in extreme poverty incidence by 10.3% to reach 16.5%, as seen during the 2005/2006 Ghana Living Standard Survey round (refer to Figure 1).

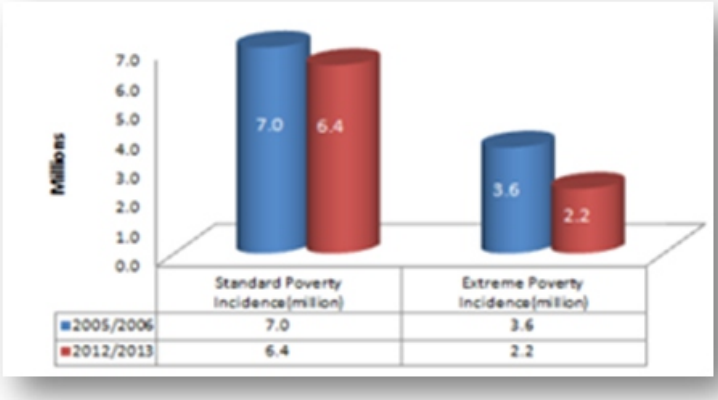
Figure 1: Poverty Incidence



	1991/1992	1998/1999	2005/2006	2012/2013
Standard Poverty Incidence(%)	51.7	39.5	31.9	24.2
Extreme Poverty Incidence(%)	36.5	26.8	16.5	8.4

According to the Ghana Living Standard Survey conducted in 2012/2013, there was a notable decrease in the prevalence of poverty. The survey indicated that the standard poverty incidence decreased by 7.7%, reaching a rate of 24.2%. Additionally, the incidence of extreme poverty had a considerable reduction of 8.1%, resulting in a rate of 8.4%. This data suggests that the population of individuals classified as poor, falling below the poverty line, decreased from 7 million individuals in the 2005/2006 survey round to 6.4 million individuals in the 2012/2013 survey round. This indicates that approximately 600 thousand individuals transitioned out of poverty and are no longer classified as poor between the two survey periods (refer to Figure 1).

Figure 2: Number of Poor People per Population (million)



Moreover, there was a decrease in the population classified as living in extreme poverty, with figures dropping from 3.6 million individuals in the 2005/2006 survey round to 2.2 million individuals in the 2012/2013 survey round. This indicates that approximately 1.4 million people transitioned out of the extreme poverty category between the two survey periods, as depicted in Figure 2. The decrease in poverty rates occurred in conjunction with an enhancement in the quality of life for households residing in different regions of the nation (Osei, 2015).

The publicly accessible survey data utilized for estimating Ghana's Multidimensional Poverty Index (MPI) pertain to the period of 2017/2018. According to the provided estimations, it is determined that 24.6% of Ghana's population, which corresponds to 8,089 thousand individuals in the year 2021, is experiencing multidimensional poverty. Additionally, an extra 20.1% of the population, equivalent to 6,598 thousand persons in 2021, is categorized as being vulnerable to multidimensional poverty. The average deprivation score among individuals living in multidimensional poverty in Ghana is recorded at 45.1%, indicating the extent of deprivations experienced in the country. The MPI value, representing the proportion of the population that experiences multidimensional poverty, adjusted for the severity of deprivations, is 0.111 (UNDP, 2023). The poverty rate had a decrease, dropping from 11% in 2021 to 10% in 2022. Nevertheless, the increasing cost of living and unemployment have had adverse effects on living conditions. The latter percentage experienced an upward trend, rising from 11.9% in 2015 to 13.4% in 2021. Additionally, the predicted young unemployment rate for individuals aged 15-24 was 7.2% in 2021, slightly higher than the 7.3% recorded in 2020 (AfDB, 2023).

(iii) Senegal

The coast of Senegal, which lies in the westernmost region of Africa, is bordered by the Atlantic Ocean. Senegal is commonly referred to as the "Gateway to Africa," a designation that aptly aligns with its strategic geographic location. Senegal, a former French colony, engaged in a protracted struggle for independence until it ultimately achieved complete autonomy in the year 1960. Senegal continues to grapple with a significant proportion of its

populace residing in impoverished conditions, even six decades after attaining independence (Smriti, 2017).

Reasons for Senegal's poverty

i. Senegal has traditionally relied entirely on the peanut as its only source of revenue. In response to the limited economic diversification within the economy, the government has made efforts to expand the range of agricultural revenue. The government has implemented measures aimed at enhancing revenue generation through the cultivation of cotton, garden vegetables, and sugarcane. The government, in response to a drought occurring in the late 1990s, was compelled to expeditiously pursue income diversification from multiple sources. Throughout the 20th century, Senegal experienced a significant decline in its economy. Over the past two decades of the 21st century, the government has been actively endeavoring to diversify its sources of revenue outside the agricultural sector, with particular emphasis on the development of tourism and the extraction of minerals such as phosphate.

ii. The poverty of Senegal can be partially attributed to the predominant focus of the country's economy on agriculture. The unregulated movement to urban areas was a consequence of a population surge that occurred in the late 1970s. The reliability of transportation systems in cities tends to decrease over time. The escalation of urban unemployment and underemployment ensued as a consequence. Approximately 50% of the population in the neighborhood experiences a high prevalence of unemployment. Currently, a significant proportion of the global population, specifically 55%, faces the challenge of meeting their basic needs with an income of less than $1.25 per day, placing them in a state of poverty.

iii. Senegal's economy and the phenomenon of rural-to-urban migration are two factors that are associated with the prevalence of poverty in the country. However, it is important to note that these variables alone do not provide a comprehensive explanation for the underlying causes of Senegal's poverty state.

iv. The population of Senegal is vulnerable to a diverse array of diseases, such as typhoid, malaria, HIV/AIDS, and waterborne illnesses. Individuals experiencing poverty lack access to clean water and adequate sanitation facilities.

v. The inability to afford basic necessities like food and water makes it difficult for the destitute to receive an education. Given Senegal's significantly low literacy rates, those without access to school face considerable difficulties in attaining the financial means necessary to escape the cycle of poverty. The adult literacy rate in Senegal stands at 39%, with a mere 29% of women being literate. Low literacy rates pose significant challenges in terms of securing employment, attaining financial stability, and making meaningful contributions to the domestic economy of a nation.

vi. The partial explanation for this phenomenon can be attributed to its economic history, internal migratory patterns, prevalence of diseases, and low levels of literacy. Upon closer examination of the government's actions, it becomes evident that Senegal's enduring poverty may perhaps be alleviated in due course.

Senegal is currently facing a pressing demand for substantial advancements in achieving the Millennium Development Goals (MDGs). The majority of Senegal's approximate population of 10 million individuals, especially those residing in rural areas, experience poverty, with their income falling at or below the poverty threshold. According to the UN Development Programme's 2003 Human Development Report, the country's overall well-being of its population is positioned at the 156th ranked out of 175 countries worldwide. The economy of Senegal exhibits a significant reliance on the agricultural and fishing sectors, primarily due to the country's low mineral resources. These sectors contribute to approximately 60% or more of the nation's gross domestic product (GDP). Only a limited number of individuals are able to achieve the expected annual per capita income of $476. The economy of Senegal is currently facing challenges stemming from a series of concerns that originated in the 1970s. According to Wilma (2004), a pronounced drought resulted in a substantial shift of the capable rural workforce to urban areas, accompanied by a notable surge in emigration to foreign nations.

The national poverty rate of Senegal in 2011 was recorded at 46.7%. According to KNOEMA (2023), the national poverty rate in Senegal experienced a reduction from 55.2% in 2001 to 46.7% in 2011. This decline can be characterized as moderate for the specified time period. Between the years 2011 and 2018, the National Agency of Statistics and Demography (ANSD) identified an approximate increase of 200,000 individuals living in conditions of poverty. Certain households in Senegal experience more challenging living conditions. Based on the comprehensive survey findings conducted by the ANSD (National Statistical Agency), it can be observed that there has been a notable increase in the population of those living in poverty across the entire country. The population of these persons, which was predicted to be 5,832,008 in 2011, experienced an increase to 6,032,379 by 2018. Based on the findings of the ANSD, it is projected that the poverty rate for the period of 2018-2019 will amount to 37.8%, indicating a reduction of 5% compared to the poverty rate recorded in 2011, which stood at 42.8%. The data indicates a decline in the overall incidence of extreme poverty from 12.2% to 6.8% during the specified period. However, it is noteworthy that the disparity in poverty rates based on geographical location is more pronounced in rural regions, where the prevalence stands at 53.6%, compared to 19.8% in urban areas.

Despite experiencing significant economic gains and maintaining political stability for several years, Senegal continues to face substantial development challenges. According to the World Food Programme (2022), a significant proportion of the population, specifically over one-third, around 75% of households, and around 39% of individuals residing in poverty, as defined by the federal poverty line, exhibit these characteristics.

Theoretical Framework and Methodology

Pure Altruism Hypothesis

The literature has proposed the concept of altruistic behavior as a means to elucidate the motivational factors behind a migrant's choice to remit funds. The concept of altruism, originally introduced by the renowned French philosopher Auguste Comte in 1852, serves as a moral philosophy that he endorsed. The altruism theory posits that the sense of duty among

individual family members has a significant role in their decision to provide financial support to one another, which can be observed in the context of migrant remittances (Becker, 1991; Stark & Lucas, 1988; Stark, 1991; Rapoport & Docquier, 2006). The idea posits that migrants exhibit a willingness to transfer resources to compensate for the income deficit experienced by their family members, with the intention of either utilizing these resources for personal consumption or directing them toward investment activities.

The altruism theory posits that migrants may exhibit a willingness to prioritize the welfare of their relations over their own well-being or personal interests. This behavior is driven by the love and concern they have for the well-being of their relations. Comte posited the notion that individuals possess a moral duty to relinquish self-interest and prioritize the welfare of others. In his work, "Catéchisme Positiviste," Comte posits that the social perspective is incompatible with the concept of rights, as it is rooted in individualistic principles. As individuals, we are inherently burdened with a multitude of obligations spanning various domains, including those owed to our forebears, successors, and contemporaries. Following our initial arrival into the world, these responsibilities undergo a process of augmentation or accrual, as a considerable duration elapses before we are capable of reciprocating any form of assistance. The concept of "living for others," which serves as the ultimate principle of human morality, provides a clear endorsement alone of our innate tendencies towards kindness and goodwill. These inclinations, which are the fundamental origins of both happiness and moral obligation, are granted explicit validation through this formula. Individuals must dedicate themselves to the betterment of humanity, to which we are wholly interconnected.

Pure altruism posits that individuals should exhibit benevolence and willingly relinquish personal interests or resources for the betterment of others, without anticipating any reciprocation. The act of sacrifice may manifest through the allocation of tangible resources, temporal commitment, or exertion of effort. An individual who engages in altruistic giving does not anticipate receiving any form of compensation, whether it is direct or indirect, for their actions. The existing work on altruism in migrant remittance decision theory has primarily been based on utility theory (Becker, 1981; Stark & Lucas, 1985; Stark, 1991; Osili, 2007). This theory posits that migrants engage in remittance activities to maximize their predicted benefit. The categorization of the remittance decision as solely altruistic is subject to scrutiny (Lianos, 1997). While it may result in benefits for others, a more suitable characterization would be moral egoism (Nowell-Smith, 1959; Norman, 1983). An altruistic act is characterized by the absence of any anticipated or reciprocated advantages. According to Leiter (2004), the act of altruism can be perceived as lowering and demeaning to oneself, as it necessitates prioritizing the needs and interests of others over one's own. The author posits that engaging in such conduct impedes an individual's endeavor to cultivate personal growth, achieve exceptional performance, and foster originality. Nevertheless, he expressed a moral need to assist individuals who are less capable than oneself. The aforementioned analysis elucidates that constructing a theory of altruism grounded in the normative utility theory of an individual's pursuit of wealth maximization presents an inherent contradiction. If the proposition of altruism is embraced as a theoretical framework elucidating the phenomenon of remittance behavior among migrants, it inevitably raises an unresolved inquiry on the underlying motivations that drive migrants to engage in altruistic acts.

Adopting this theory and in the quest to achieve the research objectives of this study, the study employed Panel Auto-regressive Distributed Lag (Panel ARDL) Model to capture the combined impact of remittances and economic growth on poverty reduction in the context of West African countries. Diagnostic tests, such as the serial independence test for autocorrelation, normality test, functional misspecification, and cross-sectional dependence were carried out to ensure the robustness of the result.

Theoretical Model

Before formulating the empirical model, this section theoretically illustrates the impact of remittances and economic growth on poverty reduction, we need to provide a theoretical background of the model. First, we start with the utility function of the region consisting of remittance-recipient households and non-remittance-recipient households.

$$U = f(C_R C_N L_R L_N) = C_R C_N - L_R L_N \quad \ldots 1$$

Equation 1 shows the utility (U) function of the region consisting of remittance-recipient households and non-remittance-recipient households. The utility function consists of the consumption of goods and services of the remittance-recipient household (C_R) and non-remittance-recipient household (C_N) subtracting the labour supply of the remittance-recipient household (L_R) and non-remittance-recipient household (L_N), which measures the level of satisfaction in the region. In this function, we assume that the absolute values of the impact of consumption and labour supply of both households on the region's utility are equal. The budget constraints for both households are then written as:

$$PC_R = W_R L_R + \alpha(REM) \quad \ldots 2$$
$$PC_N = W_N L_N + (1 - \alpha)(REM) \quad \ldots 3$$

The income of the remittance-recipient household comes from two sources: first is the wage income, which depends on the wage rate and labour supply of remittance-recipient households and the second source is the inflow of remittances from the household member(s) who work abroad. But for the non-remittance-recipient households there is only one source i.e., the wage income, which depends on the wage rate and labour supply of the non-remittance-recipient households. Each household spends all income on the consumption of goods and services; hence, we assume that households do not save in this model. P represents the general price level of goods and services, W_R denotes the wage rate of the remittance-recipient household, W_N denotes the wage rate of the non-remittance-recipient household, α is the proportion of the remittances to the total budget of the region, and REM denotes the total inflow of remittances to the region. To determine the optimal level of consumption and labour supply for each household, we develop a Lagrange function as follows:

$$\Gamma = (C_R C_N - L_R L_N) - \lambda\{PC_R -, W_R L_R - \alpha(REM)\} \quad \ldots 4$$
$$\Gamma = (C_R C_N - L_R L_N) - \lambda\{PC_N -, W_N L_N - (1 - \alpha)(REM)\} \quad \ldots 5$$

To fulfill the first-order condition with regards to the consumption and labour supply of both households and λ_R and λ_N results in:

$$\frac{\partial \Gamma}{\partial C_R} = C_N - \lambda_R P = 0 \quad \ldots 6$$

$$\frac{\partial \Gamma}{\partial C_N} = C_R - \lambda_N P = 0 \quad \ldots 7$$

$$\frac{\partial \Gamma}{\partial L_R} = -L_N + \lambda_R W_R = 0 \rightarrow \lambda_R = \frac{L_N}{W_R} \quad \ldots 8$$

$$\frac{\partial \Gamma}{\partial L_N} = -L_R + \lambda_N W_N = 0 \rightarrow \lambda_N = \frac{L_R}{W_N} \quad \ldots 9$$

$$\frac{\partial \Gamma}{\partial \lambda_R} = PC_R - W_R L_R - \alpha(REM) = 0 \quad \ldots 10$$

$$\frac{\partial \Gamma}{\partial \lambda_N} = PC_N - W_N L_N - (1-\alpha)(REM) = 0 \quad \ldots 11$$

By substituting λ_R from Equation 8 into Equation 6, we obtained:

$$C_N = \frac{L_N}{W_R} P \quad \ldots 12$$

By substituting λ_N from Equation 9 into Equation 7 we obtained:

$$C_R = \frac{L_R}{W_N} P \quad \ldots 13$$

The labour supply equation for the remittance-recipient household is generated by substituting C_R from Equation 13 into Equation 10 and writing it for L_R results:

$$L_R = \frac{\alpha(REM)}{\left(\frac{P^2}{W_N}\right) - W_R} \quad \ldots 14$$

The labour supply equation for the non-remittance-recipient household is obtained by substituting C_N from Equation 12 into Equation 11 which produces:

$$L_N = \frac{(1-\alpha)(REM)}{\left(\frac{P^2}{W_R}\right) - W_N} \quad \ldots 15$$

The consumption equation for the remittance-recipient household is obtained by substituting L_R from Equation 14 into Equation 13 as follows:

$$C_R = \frac{(\alpha)(REM)}{\left(P - \frac{W_R W_N}{P}\right)} \quad \ldots 16$$

$$where: (P > W_N, P > W_R) \rightarrow P - \frac{W_R W_N}{P} > 0$$

The consumption equation for non-remittance-recipient households is established by substituting L_N from Equation 15 into Equation 12:

$$C_N = \frac{(1-\alpha)(REM)}{\left(P - \frac{W_N W_R}{P}\right)} \quad \ldots 17$$

$$where: (P > W_N, P > W_R) \rightarrow P - \frac{W_R W_N}{P} > 0$$

It is evident from Equation 16 and Equation 17 that, when the remittance inflow to the region increases, the consumption of both households (remittance-recipient and non-remittance-recipient) will also increase. This implies that remittances affect the consumption of remittance-recipient household positively and reduce poverty.

The Generalized PARDL (p, q, q, …., q) Model

The generalized PARDL ($p, q, q, …., q_n$) model is specified as

$$y_{it} = \sum_{j=1}^{p} \delta_{ij}\, y_{it-j} + \sum_{j=0}^{q} \beta'_{ij}\, X_{i\ t-j} + \varphi_i + \varepsilon_{it} \quad \ldots 18$$

Where:

y_{it} = the dependent variables;
$(x'_{it})'$ = a kx1vector that are allowed to be purely *I(0)* or *I(1)* or cointegrated;
δ_{ij} = the coefficient of the lagged dependent variable called scalars;
β_{ij} = the kx1 coefficient vectors;
φ_i = the unit-specific fixed effects;
i = *1, …, N;*
t = *1, 2, …, T;*
p, q = optimal lag orders;
$\varepsilon_{i,t}$ = the error term.

The Re-parameterized ARDL (*p, q, q, …., q*) Model

The most important representation is the re-parameterized ARDL ($p, q, q, …., q_n$) model is specified as:

$$y_{it} = \theta_i\left[y_{it-j} - \lambda'_i X_{it}\right] + \sum_{j=1}^{p-1} \xi_{ij}\, \Delta y_{it-j} + \sum_{j=0}^{q-1} \beta'_{ij}\, \Delta X_{it-j} + \varphi_i + \varepsilon_{it} \quad \ldots 19$$

Notes:

θ_i = -(1-δ_i), is group specific speed of adjustment (expected that $\theta_i < 0$);
λ'_i = vector of long-run relationships;
ECT = $\left[y_{i\ t-j} - \lambda'_i X_{it}\right]$, the error correction term;
ξ_{ij}, β'_{ij} = the short-run dynamic coefficients.

Model Specification

Although several variables have been identified by the literature as determinants of poverty levels, the study's main priority is to investigate the impact of remittance inflow and economic growth on poverty in the selected West African countries. With poverty gap index (PGI) as the dependent variable, other variables such as remittances, GDP per capita, inflation, exchange rate, and foreign direct investment, will be treated as explanatory variables (see Equation 19). We employ Panel Autoregressive Distributed Lag (PARDL) Model to explore the impact of remittances and economic growth on poverty. We therefore express poverty as a function of remittances and economic growth

$$PGI_{it} = f(REM_{it}, GDPC_{it}) \quad \ldots 20$$

Under this model, the functional form with other control variables for the current analysis is given below

$$PGI_{it} = f(REM_{it}, GDPC_{it}, INF_{it}, UNE_{it}, FDIY_{it}) \quad \ldots 21$$

These variables will be converted into natural logarithms in this study in order to capture their elasticity value and relieve them from the heteroscedasticity problem. The econometric form can be written as:

$$PGI_{it} = \beta_{0i} + \beta_{1i} lnREM_{it} + \beta_{2i} lnGDPC_{it} + \beta_{3i} INF_{it} + \beta_{4i} UNE_{it} + \beta_{5i} lnFDIY_{it} + \mu_i + \delta_t + \varepsilon_{it} \quad \ldots 22$$

Where the subscript *i* stands for the country, subscript *t* is the year, μ_i stands for country-specific effects, δ_t stands for time-varying effects common to all the countries, ε_{it} is the idiosyncratic error term, *PGI* is the poverty indicator, and *REM, GDPC, INF, UNE, FDIY* are remittances, gross domestic product, inflation, exchange rate, and foreign direct investment, respectively. Equation (22) is transformed into panel autoregressive distributed lag model as follows:

$$\Delta PGI_{it} = \alpha_{0i} + \delta_{1i} PGI_{it-1} + \delta_{2i} lnREM_{it-1} + \delta_{3i} lnGDPC_{it-1} + \delta_{4i} UNE_{it-1} + \delta_{5i} INF_{it-1} + \delta_{6i} lnFDIY_{it-1} + \sum_{j=1}^{p-1} \beta_{1i} \Delta PGI_{it-j} + \sum_{j=1}^{q-1} \beta_{2i} \Delta lnREM_{it-j} + \sum_{j=1}^{q-1} \beta_{3i} \Delta lnGDPC_{it-j} + \sum_{j=1}^{q-1} \beta_{4i} \Delta INF_{it-j} + \sum_{j=1}^{q-1} \beta_{5i} \Delta UNE_{it-j} + \sum_{j=1}^{q-1} \beta_{6i} \Delta lnFDIY_{it-j} + \varepsilon_{it} \quad \ldots 23$$

Long-run Model

$$PGI_{it} = \delta_{1i} PGI_{it-1} + \delta_{2i} lnREM_{it-1} + \delta_{3i} lnGDPC_{it-1} + \delta_{4i} UNE_{it-1} + \delta_{5i} INF_{it-1} + \delta_{6i} lnFDIY_{it-1} + \varepsilon_{it} \quad \ldots 24$$

Short-run Model

$$\Delta PGI_{it} = \theta_i \left[y_{it-j} - \lambda'_i X_{it} \right] + \sum_{j=1}^{p-1} \beta_{1i} \Delta PGI_{it-j} + \sum_{j=1}^{q-1} \beta_{2i} \Delta lnREM_{it-j} + \sum_{j=1}^{q-1} \beta_{3i} \Delta lnGDPC_{it-j} + \sum_{j=1}^{q-1} \beta_{4i} \Delta INF_{it-j} + \sum_{j=1}^{q-1} \beta_{5i} \Delta UNE_{it-j} + \sum_{j=1}^{q-1} \beta_{6i} \Delta lnFDIY_{it-j} + \varepsilon_{it} \quad \ldots 25$$

We derived the following equation in order to compute the error correction version of Equation (25)

$$\Delta PGI_{it} = \theta_i ECT_{it-1} + \sum_{j=1}^{p-1} \beta_{1i} \Delta PGI_{it-j} + \sum_{j=1}^{q-1} \beta_{2i} \Delta lnREM_{it-j} + \sum_{j=1}^{q-1} \beta_{3i} \Delta lnGDPC_{it-j} + \sum_{j=1}^{q-1} \beta_{4i} \Delta INF_{it-j} + \sum_{j=1}^{q-1} \beta_{5i} \Delta UNE_{it-j} + \sum_{j=1}^{q-1} \beta_{6i} \Delta lnFDIY_{it-j} + \varepsilon_{it} \quad \ldots 26$$

A Priori Expectation

The *A priori* expectations for the explanatory variables in the model are guided by economic theory to ascertain if the parameter estimate conforms to expectations. These are presented as:

$$\beta_0 > 0, \beta_1 > 0, \beta_2 < 0, \beta_3 < 0, \beta_4 > 0, \beta_5 < 0, and\ \beta_6 < 0$$
$$\delta_1 > 0, \delta_2 < 0, \delta_3 < 0, \delta_4 > 0, \delta_5 < 0, and\ \delta_6 < 0$$

We will be using the poverty gap index (PGI) which measures how intense poverty is. The poverty gap measure possesses a distinct benefit in comparison to the headcount ratio. This analysis demonstrates the extent of poverty by approximating the average distance between

individuals living in poverty and the poverty line. The poverty line utilized in this index is set at 1.9 (PPP, current international $) per day, which is regarded as the benchmark for measuring absolute extreme poverty. Remittances, economic growth, and foreign direct investment (FDI) are negatively related to poverty reduction, while exchange rate and inflation rate are positively related. According to the Resource Transfer Hypothesis (Ratha, 2003), remittances increase household income and living standards thereby reducing poverty. Trickle-Down Economics (Kuznets, 1955) suggests economic growth creates jobs and income opportunities thereby reducing poverty. The Investment-Led Growth Hypothesis (Solow, 1956) posits FDI transfers technology and develops human capital, driving economic growth and poverty reduction. Conversely, the Currency Devaluation Hypothesis (Krugman, 1998) indicates exchange rate depreciation increases import costs and prices, exacerbating poverty. The Inflation Tax Hypothesis (Friedman, 1969) shows inflation reduces purchasing power and savings, increasing poverty. These relationships are supported by empirical studies and theoretical frameworks, providing a foundation for understanding the complex interactions between economic factors and poverty reduction.

Data Analysis and Interpretation

Unit Root Test

Table 1 shows the unit root test conducted on the variables in level form. However, the four tests' techniques demonstrated INF is stationary in level form at 1% significance level.

Table 1: Unit Root Test at Level

Variable	LLC	Fisher-ADF	Fisher-PP	IPS W-stat
PGI	-0.311	2.283	1.655	0.983
logREM	-1.330	4.355	8.993	0.313
GDPC	-2.215**	12.792**	34.436***	-1.875**
INF	-2.929***	21.551***	27.931***	-3.209***
UNE	1.186	4.281	2.666	1.105
FDIY	0.932	7.926	7.947	0.932

***Note:** ** and *** indicates statistical significance at 5% and 1%, respectively.*

Source: Author's Computation.

Following the non-stationarity of the PGI, REM, UNE, and FDIY variables in level form, a further test for stationarity was conducted at first difference and the result contained in Table 2. Evidence from the four different unit root tests in Table 2 reveals that the remaining series attained stationarity in first difference at various significance levels. Furthermore, the stationarity of the response variables (PGI) only in first difference, and the mix stationarity status of the regressors further validate the PARDL technique adopted for this study.

Table 2: Unit Root Test at First Difference

Variable	LLC	Fisher-ADF	Fisher-PP	IPS W-stat
PGI	-5.441***	37.637***	71.773***	-5.353***
PHCR	-5.861***	35.815***	68.908***	-5.124***
logREM	-5.110***	45.544***	86.630***	-6.285***
GDPC	-	-	-	-
INF	-	-	-	-
UNE	-1.751**	21.566***	30.994***	-2.988***
logFDIY	-4.151***	38.274***	79.249***	-5.322***

Note: *** and *** indicates statistical significance at 5% and 1%, respectively.*

Source: Author's Computation.

Co-integration Test

Presented in Table 3 is the panel co-integration test output.

Table 3: Panel Co-integration Test

Kao Test	Statistic	Probability
Modified Dickey-Fuller t	-0.936	0.175
Dickey-Fuller t	-1.882	0.030**
Augmented Dickey-Fuller t	-2.484	0.007***
Unadjusted modified Dickey-Fuller t	-4.486	0.000***
Unadjusted Dickey-Fuller t	-3.435	0.000***
Pedroni Test		
Modified Phillips-Perron t	2.181	0.015**
Phillips-Perron t	1.735	0.041**
Augmented Dickey-Fuller t	1.005	0.157
Westerlund Test		
Variance ratio	1.452	0.073*

Note: **, **, and *** indicates statistical significance at 10%, 5%, and 1%, respectively.*

Source: Author's Computation.

Long-run Estimated Output

Contained in Table 4 are the long-run estimates for the PMG and the MG. The PMG outputs showed that remittance has a significant negative long-run effect on poverty. The result demonstrates that a percentage rise in remittance level in the long-run, will lead to a 2.79% decline in the level of poverty in these countries. Furthermore, the output is revealed to be significant at the 1% level. Likewise, GDP per capita exhibits inverse long-run effect with poverty, its coefficient shows that a percentage rise in GDP per capita will decline poverty by 0.65 at the 5% significance level in the three economies. However, inflation was revealed not have any significant long-run effect on poverty, although its coefficient suggests a percentage rise in its value will increase poverty by 0.07%. Similarly, unemployment expressed insignificant adverse effect on poverty; indicating that a percentage increase in the unemployment rate will produce an insignificant 0.30% fall in poverty levels in the long-run. Furthermore, foreign direct investment showed an insignificant negative effect on poverty in the long-run. The result revealed that a percentage increase in FDIY in the long-run will decline poverty levels insignificantly by 0.09% in these economies.

Also captured in Table 4 is the MG long-run estimated outputs which significantly mirrored the PMG results but with minor deviations in the coefficient values and significance levels. The result however revealed that a unit rise in remittance will produce a 6.75% fall in poverty levels in the long-run, significant at the 10% level. Likewise, a unit increase in GDP per capita will yield a significant drop of 1.5% in poverty levels in the long-run at the 5% statistical significance level. Although inflation and unemployment showed adverse long-run effects on poverty, their impact was not significant. While a percentage rise in inflation and unemployment will produce a deceleration of poverty by 0.83% and 0.74%, respectively, these effects were reported to be statistically insignificant. Similarly, a percentage rise in FDIY in the long-run shows poverty also rising by 0.58%, however the effect is statistically insignificant.

Table 4: Long-run Estimates

	PMG estimates			MG estimates		
Variable	**Coefficient**	**Std. Err.**	**z-stat.**	**Coefficient**	**Std. Err.**	**z-stat.**
logREM	-2.792***	0.248	-11.27	-6.745*	3.732	-1.81
GDPC	-0.654**	0.324	-2.02	-1.502**	0.642	-2.34
INF	0.067	0.042	1.60	-0.827	0.856	-0.97
UNE	-0.302	0.233	-1.30	-0.735	2.969	-0.25
FDIY	-0.086	0.195	-0.44	0.582	1.458	0.40

***Note:** *, **, and *** indicates statistical significance at 10%, 5%, and 1%, respectively.*

Source: Author's Computation.

Short-run Estimated Results

Presented in Table 5 are the PMG and MG short-run estimates. Contrary to the long-run PMG output, remittance is shown to have a significant positive effect on poverty level. The result expressed that a percentage increase in remittance will yield a 0.93% increase in poverty levels in the short-run at 10% significance level. Similarly, a percentage increase in GDP per capita will produce a 0.24% rise in poverty at 10% significance level in the short-term. However, short-term inflationary effects are revealed to be insignificant. Table 5 demonstrates that a percentage rise in inflation will produce a statistically insignificant 0.09% decline in poverty level in these economies in the short-run. In contrast, unemployment has a significant positive short-term effect on poverty in these economies. Specifically, a percentage rise in unemployment will yield a 0.02% rise in poverty levels in the short-run, which is statistically significant at 10% levels.

On the other hand, FDIY has an insignificant positive short-term effect on poverty. The result expressed that although a percentage increase in FDIY will produce a 0.02% rise in the level of poverty in these economies, however, the output is revealed to be statistically insignificant. In addition, the PMG's speed of adjustment parameter (ECT) is revealed to be rightly signed and statistically significant at 10% level. The value of the coefficient which is approximately -0.31, indicates that about 31% disequilibrium is being corrected for annually before long-run equilibrium can be achieved in these economies. Thus, it is estimated that about thirty-nine months will be required for adjustment to long-run equilibrium path in the event of short-term distortions. Further revealed in Table 5 is the MG short-run output and contrary to its long-

run estimate, remittance is shown to have a significant positive effect on poverty level. The result expressed that a percentage increase in remittance will yield a 1.17% increase in poverty levels in the short-run at 1% significance level. Likewise, a percentage increase in GDP per capita will produce a 0.35% rise in poverty at 1% significance level in the short-term. However, short-term inflationary effects are revealed to be insignificant. Table 5 demonstrates that a percentage rise in inflation will produce a statistically insignificant 0.02% decline in poverty level in these economies in the short-run. Similarly, UNE and FDIY have insignificant adverse and positive short-term effects, respectively on poverty in these economies. Specifically, a percentage rise in unemployment and FDIY will yield a 0.31% decline and 0.08% rise in poverty levels, respectively in the short-run, which are not statistically significant.

Also, Table 5 showed that the MG's ECT is rightly signed and statistically significant at 10% level. The value of the coefficient which is approximately -0.35, suggests that about 35% short-run disequilibrium is being corrected for annually before long-run equilibrium can be achieved in these economies. Thus, it is estimated that about thirty-three months will be required for adjustment to long-run equilibrium path in the event of short-term disequilibrium.

Table 5: Short-run Estimates

	PMG estimates			MG estimates		
Variable	**Coefficient**	**Std. Err.**	**z-stat.**	**Coefficient**	**Std. Err.**	**z-stat.**
ECT	-0.309*	0.158	-1.96	-0.355*	0.1641	-2.16
ΔlogREM	0.931*	0.492	1.89	1.174***	0.384	3.06
ΔGDPC	0.235*	0.132	1.78	0.348***	0.093	3.74
ΔINF	-0.091	0.073	-1.24	-0.015	0.010	-1.46
ΔUNE	0.016*	0.009	1.74	-0.311	0.549	-0.57
ΔFDIY	0.019	0.265	0.07	0.080	0.346	0.23
C	22.678**	11.407	1.99	38.995***	5.644	6.91

***Note:** *, **, and *** indicates statistical significance at 10%, 5%, and 1%, respectively.*

Source: Author's Computation.

Cross-section Output

Contained in Table 6 are cross-sectional estimates for the three countries. Evidence from the output revealed that for Nigeria, the speed of adjustment is significant and rightly signed. The coefficient has a value of -0.23, indicating that about 23% of short-run distortion is annually being corrected for in the Nigerian economy. Hence, about 51 months may be required for long-run equilibrium path restoration in the country. While, remittance, inflation, unemployment, and FDIY have no significant effects on poverty levels, GDP per capita had a significant positive effect for Nigeria. The result shows that a percentage rise in GDP per capita will produce a 0.43% increase in poverty levels for Nigeria at the 1% significance level. The estimates for Ghana also expressed a significant and rightly signed ECT component. By having a coefficient value of -0.61, Ghana seems to be adjusting faster than Nigeria to long-run equilibrium path from short-term distortions. Specifically, the value suggests that about

61% short-run distortion is annually being corrected, hence, it may require about 18 months for long-run equilibrium path to be restored. In addition, remittance demonstrates a significant positive effect on poverty level. Its coefficient shows that a percentage rise in remittance will generate a 1.9% increase in poverty level at the 1% significance level. Likewise, GDP per capita has an aggravating effect on poverty levels. Evidence from its coefficient indicates that a percentage rise in GDP per capita will accelerate poverty by 29% at 1% significance level for Ghana. Other measures such as inflation, unemployment, and FDIY were shown not to have statistically significant effects on poverty level for Ghana.

Results for Senegal are presented in the fourth column of Table 6, and although its ECT coefficient is rightly signed, the value is statistically insignificant. Thus, indicating that there is no short-run association between the regressor variables and poverty for the country. However, inflation appears the only variable with significant short-run effect on poverty. The result suggests that a percentage rise in inflation will generate a 0.24% decline in poverty, which is significant at 1% level.

Table 6: Short-run cross-section estimates

	Nigeria	Ghana	Senegal
ECT	-0.228***	-0.613***	-0.086
$\Delta logREM$	0.666	1.885***	0.244
$\Delta GDPC$	0.430***	0.291***	-0.016
ΔINF	-0.010	-0.025	-0.236***
ΔUNE	0.030	0.019	-0.001
$\Delta FDIY$	0.538	-0.147	-0.333
C	18.138***	44.309***	5.586

Note: *** indicate significance at 1%.*

Source: Author's Computation.

Implication of the findings

Also, the long-run effect of economic growth on poverty for West African economies has been captured in Table 4 to be negative; hence, it is significantly poverty alleviating in line with the findings of Lawal, Adegun, Aderemi, & Dauda (2022) and Agbasi, Edoko, & Ezeanolue (2018). And as aforesaid, it indicates that as productivity improves in the economy, income levels will also improve, and consequently leading to reduction in poverty levels. In contrast, Table 5 demonstrated that the short-run effect of economic growth is significantly poverty-enhancing. Similarly, Table 6 expressed that economic growth in the short-run, is a significant factor promoting the level of poverty in Nigeria and Ghana; while for Senegal, it will take the long-run for the substantial effect on poverty to be felt since it was insignificant in the short-term.

The short-run effect of economic growth on poverty in West African countries can be linked to factors such as economic inequality, resource dependence, poor investment in human capital, and macroeconomic volatility. Economic inequality is a major challenge in developing economies and specifically nations in West Africa. The widening inequality gap is largely

attributed to unequal access to economic resources such as basic infrastructure, security, jobs, education, etc. Consequently, the rewards for economic growth are only accessed by the few affluent populations which exacerbate poverty levels. Furthermore, the over-reliance on primary commodities by West African countries reduces the trickle-down wealth-effect of economic growth to the people. While most of the populations in West Africa are engaged in the agricultural sector, the outputs are often for subsistence consumption. The few being exported, are mostly sold as primary products, hence, they are less labour-intensive. Since there are less-labour intensive jobs in the sub-region's economy due to the inadequacy of manufacturing industries, unemployment has also continued to rise with the ever-growing population of the sub-region; while wealth is concentrated among the few populations.

Also, public investments in the education and health sectors are very weak. These two components of human capital are critical to reducing poverty in any economy. Thus, their inadequate state further aggravates the economic inequality in West Africa and constrains the poor population from exploiting the potentials growth benefits available in their countries. Poor behaviour of macroeconomic variables such as inflation and exchange rate are other challenges of poverty reduction in spite of economic growth in West Africa. Both variables have the tendency to erode the income benefits derived from economic growth, thus, increasing the number of poor populations in the short-run as was found by Oyegoke & Wasiu (2018).

As aforesaid, Table 4 had expressed a significant adverse effect of remittance on poverty in the long-run; implying that remittance has the capacity to reduce the number of poor individuals in West African economies in the long-run. However, Table 5 showed a significant positive effect of remittance on poverty in the short-run for West Africa. The positive effect of remittance in raising poverty levels in the short-run indicates that increase in remittance inflow to the West African economy can promote a tradition of dependency. Individuals and households who receive such funds may find it de-motivating to contribute their labour into productive activities that can generate stable income for them.

In addition, such recipients may choose to engage in conspicuous consumption in anticipation that the flow will continue rather than investing in future income yielding assets or ventures. Given these conditions in the short-term, poverty level may be promoted in West African economies. However, the cross-sectional estimate presented in Table 6 indicated that in the short-term, remittance have may have the potential to aggravate poverty levels for Nigeria and Senegal. However, the effect was insignificant, indicating that it may take the long-run for the manifestation of the substantial effect of remittance on poverty in both economies to be expressed. Nevertheless, Table 6 showed that remittance can significantly exacerbate poverty for Ghana in the short-run which aligned with the works of Kashif, Evelyn & Kee-Cheok (2018) and Kafayat & Aras (2022).

Conclusion and Recommendations

Based on the empirical findings in this study, it is concluded that remittance and economic growth have a decelerating-effect on the level of poverty in West African countries in the long-

run. However, while remittance has a significant tendency to lower the level of poverty in the long-run, its short-term effect is significantly poverty-enhancing in West African economies due to the culture of dependency and failure to invest their remittance receipts in profitable ventures that can help to reduce poverty. Also, higher economic growth can serve as a significant factor needed for reducing the growing level of poverty in West African countries; since the benefits of higher economic growth can be experienced by even the poor in form of increased income levels in the long-run. In contrast, the benefits of higher economic growth in the short-run can promote poverty levels due to the challenges of economic inequality, resource dependence, poor investment in human capital, and macroeconomic volatility which are common in West African countries. In addition, there is significant evidence of a unidirectional causal effect from remittance and economic growth to poverty reduction for West African economies. Based on the aforesaid conclusions, the following recommendations were derived by the study:

i. Governments of Nigeria, Ghana and Senegal should encourage emigration through various policies and initiatives, including providing financial incentives such as relocation grants, tax breaks, or subsidies for education and training abroad. Simplifying procedures through streamlined passport and visa processes, online application platforms, and diplomatic assistance can also facilitate emigration. Additionally, governments can offer support services like job placement programs, cultural adaptation training, and language courses to prepare citizens for overseas opportunities. Promoting international education and work experience through scholarships, exchange programs, and partnerships with foreign universities and employers can also encourage emigration. Furthermore, governments can relax restrictions on dual citizenship, provide emigration counseling, and establish diaspora networks to maintain connections with citizens abroad. By implementing these measures, governments can empower citizens to explore international opportunities, acquire new skills, and contribute to the global economy.
ii. A campaign to sensitize remittance recipients on the need to channel such funds into productive ventures should be encouraged. Households and individuals who benefitted from such transfers should be made to see the need to re-invest such funds instead of deploying them for ostentatious living that does not alleviate poverty. For this purpose, a policy mandating the investment of a certain percentage of remittance funds by the recipients in the money market, specifically in low risk assets, and for a defined period of time can be enacted and implemented. This policy will ensure that the long-run use of remittance as a tool for poverty alleviation in West African countries is achieved.
iii. Economic growth in these three West African countries should be inclusive driven. Hence, the population strength of these countries should be well utilized in expanding the productive potentials of the individual economies. This measure will then require enormous investment in the human and infrastructural capital in these West African countries. To this end, public and private partnership in capital formation, especially in rural areas where the bulk of the populations in these countries are located is essentially needed for the purpose of spurring growth. Significant investment in human capital is capable of reducing the inequality gap and help in the redistribution

of income through the trickle-down effect of the benefits of economic growth. Thus, making sure that economic growth is poverty-decelerating in the short and long-run in these economies.

iv. Since it has been established that remittance inflows and economic growth have significant effect on the poverty alleviation drive in the selected West African countries, it is imperative that these governments have proper documentation of remittance inflows and ensure good macroeconomic management. This measure will enable efficient tracking of remittance use and the impact of macroeconomic variables such as inflation and exchange rate on the wealth-creating potentials of the citizens, for overall poverty reduction in the three West African economies.

References

African Development Bank (2023). *Ghana economic outlook: Recent macroeconomic and financial developments,* https://www.afdb.org/en/countries/west-africa/ghana/ghana-economic-outlook

African Development Bank (2023). *West Africa Economic Outlook: region's economic growth falls but medium-term forecast suggests return to level above 4%.* https://www.afdb.org/en/news-and-events/

Agbasi, O. E., Edoko, T. D. & Ezeanolue, U. S. (2018). Economic growth and poverty reduction in Nigeria, *Sumerianz Journal of Economics and Finance, 1*(1), 31-36. Website: https://www.sumerianz.com

Ajakaiye, D. O. & Adeyeye, V. A. (2002). Concepts, measurement and causes of poverty, *CBN Economic and Financial Review*, *39*(4), 8-44.

Auguste C. (1852). *Catéchisme positiviste*, Paris: self-published; reprinted, Paris: Garnier Freres, 1966. Translated as: *The Catechism of Positive Religion*, London: Trubner, 1891.

Barne, D. & Pirlea, F. (2019). *Money sent home by workers now largest source of external financing in low- and middle-income countries (excluding China)*, World Bank Blog. Retrieved February 21, 2023, from https://blogs.worldbank.org/opendata/money-sent-home-workers-now-largest-source-external-financing-low-and-middle-income

Becker, G. S. (1981). *A treatise on the family*, Harvard University Press, Cambridge.

Becker, G. S. (1991). *A treatise on the family*, Harvard University Press, Cambridge, MA.

Bertha Z. O. (2018). *Military expenditure, economic growth, and foreign policy implications: The case of Ghana and Nigeria Within the ECOWAS*. Handbook of Research on Military Expenditure on Economic and Political Resources, 22. DOI: 10.4018/978-1-5225-4778-5.ch002

CBN (Central Bank of Nigeria) (2020). *Remittances data*.

Dapel, Z. (2018). *Three decades of poverty mobility in Nigeria: The trapped, the Freed, and the never trapped*. Working Paper 485. Washington, DC: Center for Global Development. 1-12.

Friedman, M. (1969*). The optimum quantity of money and other essays*, Chicago: Aldine.

Gordon, R. J. (1984). *Macroeconomics (3rd ed.),* Little, Brown and Company.

Gujarati, D. N. & Dawn, C. P. (2009). *Basic econometrics (5thed*), The McGraw-Hill companies.

Guobao, W. (2001). *Poverty reduction pattern research- research on PRC's poverty reduction through labour mobility*, International Conference on NGO Poverty Reduction Policy; China Poverty Reduction Research Series: China Economic Press.

International Fund for Agricultural Development (2023). *Improving the management of remittances and their use for development impact in Africa,* Retrieved February 21, 2023, from https://www.ifad.org/en/prime-africa

Jhingan, M. L. (2006). *Economic development*, Vrinda Publications Ltd., New Delhi.

Kafayat, M-J. O., & Aras, O. N. (2022). International workers' remittances and poverty incidence in Nigeria, *Journal of Sustainable Business, Economics and Finance, 1*(1), 23-43. http://doi.org/10.31039/josbef.2022.1.1.7

Kashif, I., Evelyn, S. D. & Kee-Cheok, C. (2018). Do migrant remittances reduce poverty? Micro-Level evidence from Punjab, Pakistan, *Malaysian Journal of Economic Studies, 55*(1), 19-47.

Knoema (2023). *Senegal - poverty headcount ratio at national poverty line,* Retrieved January 12, 2023 from https://knoema.com/atlas/Senegal/Poverty-rate-at-national-poverty-line

Kpodar, K., Mlachila, M., Quayyum, S., & Vigninou, G. (2021). *Defying the odds: Remittances during the COVID-19 pandemic*, Working Paper 21/186, International Monetary Fund.

Krugman, P. (1998). Fire-Sale FDI. University of Princeton, Mimeo.

Kuznets, S. (1955). Economic growth and income inequality, *American Economic Review, 45*(26), 1–28.

Law, R. (1991). *The slave coast of West Africa, 1550-1750*, Oxford University Press, USA.

Lawal, N. A., Adegun, E. A., Aderemi, T. A., Dauda, R. O. S. (2022). Migrant remittances, growth and poverty reduction: ARDL- Bounds Test and granger causality approach, *Izvestiya Journal of Varna University of Economics, 66*(1-2), 74 – 90. DOI: 10.56065/IJUEV2022.66.1-2.74

Lawal, N. A., Adegun, E. A., Aderemi, T. A., Dauda, R.O.S. (2022). Migrant remittances, growth and poverty reduction: ARDL- bounds test and granger causality approach, *Izvestiya Journal of Varna University of Economics, 66*(1-2), 74 – 90. DOI: 10.56065/IJUEV2022.66.1-2.74

Leiter, M. P., & Maslach, C. (2004). *Areas of worklife: A structured approach to organizational predictors of job burnout. In P. Perrewé, & D. C. Ganster (Eds*.), Emotional and Physiological Processes and Positive Intervention Strategies (Vol. 3, pp. 91-134). Oxford: Elsevier. https://doi.org/10.1016/S1479-3555(03)03003-8

Lianos, T. P. (1997). Factors determining migrant remittances: The case of Greece, *International Migration Review, 31*(1), 72-87. https://doi.org/10.1177/019791839703100104 (Original work published 1997)

Marco, T. (2012). *Responsible management education in practice: The principles and processes for educating socially responsible and world engaged leaders,* Handbook of Research on Teaching Ethics in Business and Management Education, 18. DOI: 10.4018/978-1-61350-510-6.ch031

Minoiu, C. & Dhongde, S. (2011). *Global poverty estimates: A sensitivity analysis*, IMF Working Papers 2011/234. International Monetary Fund: Washington, DC.

National Bureau of Statistics (2020). *2019 poverty and inequality in Nigeria: Executive summary*, Retrieved 23/12/2022 from https://www.nigerianstat.gov.ng/download/1092

National Bureau of Statistics (2022). *Nigeria launches its most extensive national measure of multidimensional poverty, Press Release: Abuja.* https://nigerianstat.gov.ng/news/78

Norman, R. J. (1983). *The moral philosophers: an introduction to ethics.* Oxford University Press, New York.

Nowell-Smith, P. H. (1959). *Ethics,* Middlesex: Penguin.

Obayelu, A. E. & Uffort, L. (2007). Comparative Analysis of the Relationship between Poverty and Underground Economy in The Highly developed. Transition and Developing Countries; *MPRA Paper No 2054*

Osei V. (2015). Analysis of Poverty Trends in Ghana, *Journal of Economic and Social Thought, 2*(1). www.kspjournals.org

Osili, U. O. (2007). Remittances and savings from international migration: Theory and evidence using a matched sample, *Journal of Development Economics, 83*(2), 446-465 https://doi.org/10.1016/j.jdeveco.2006.06.003.

Oyegoke, O. E, & Wasiu, A. Y. (2018). Effects of economic growth on poverty reduction in Nigeria, *IOSR Journal of Economics and Finance, 9*(5), 25-29. DOI: 10.9790/5933-0905012529

Rapoport, H. & Docquier, F. (2005). *The economics of migrants' remittances*, Available at SSRN: https://ssrn.com/abstract=690144 or http://dx.doi.org/10.2139/ssrn.690144

Ratha, D. (2003). *Workers' Remittances: An important and stable source of external development finance*, Global Development Finance, World Bank, Washington DC.

Ratha, D. (2005). Remittances: A Lifeline for development, *Finance and Development: A Quarterly Magazine of the IMF, 42*(4). Retrieved January 14, 2023, from https://www.imf.org/external/pubs/ft/fandd/2005/12/basics.htm

Sami, T. (2022). *Nigeria's poverty exceeds World Bank projection, five states lead. Punch: Nigeria Edition.* https://punchng.com/nigerias-poverty-exceeds-world-bank-projection-five-states-lead/

Smriti, B. K. (2017). *Why is Senegal Poor? Borgen Magazine: Senegal edition*, https://www.borgenmagazine.com/why-is-senegal-poor/

Solow, R. M. (1956). A contribution to the theory of economic growth, *Quarterly Journal of Economics*, 70, 65-94. https://doi.org/10.2307/1884513

Solow, R. M. (1956). A Contribution to the Theory of Economic growth, *Quarterly Journal of Economics, 70*(1), 65-94.

Stark, O. & Bloom, D. (1985). *The New Economics of Labor Migration, AEA Papers & Proceedings.* Retrieved 10/01/2023 from http://www.ppge.ufrgs.br/giacomo/arquivos/eco02268/stark-bloom-1985.pdf. Accessed: 2015/07/31.

Stark, O. & Lucas, R. E. B. (1988). Migration, remittances, and the family, *Economic Development and Cultural Change, 36* (4), 465–81.

Stark, O. (1991). The migration of *labour*, Cambridge: Basil Blackwell.

Todaro, M. P. & Smith, S. C. (2015). *Economic development. 12th edition*, Pearson.

UNCTAD (2018). *World investment report*, United Nations Conference on Trade and Development (UNCTAD), Geneva.

UNECA (2020). ONE and ECA Report on Remittances urge governments to help preserving this Lifeline for Africa hindered by the COVID-19. Retrieved January 14,2023, from https://www.uneca.org/storys/one-and-eca-report-remittances-urge-governments-help-preserving-lifeline-africa-hindered

United Nations (2001). *Percent of population living below poverty line*, Retrieved on from http://www.un.org/esa/sustdev/natlinfo/indicators/isdms2001/isdms2001socialA.htm

United Nations Conference on Trade and Development (2012). *Online course on trade and poverty,* UNCTAD Virtual Institute.

United Nations Development Programme (2003). *Human development report 2003: Millennium development goals: A compact among nations to end human poverty*, Oxford University Press.

United Nations Development Programme (2016). *Human development index report*.

United Nations Development Programme (2023). *Unstacking global poverty: Data for high impact action,* Briefing note for countries on the 2023 Multidimensional Poverty Index Ghana. https://hdr.undp.org/sites/default/files/Country-Profiles/MPI/GHA.pdf

United Nations Migration (2020). *World migration report, International Organization for Migration*. Geneva, Switzerland.

Wilma, J. E. R. (2004). *Senegal strives for millennium goals: Reducing poverty requires will, money and community action, Africa Renewal: Senegal Edition.* https://www.un.org/africarenewal/magazine/april-2004/senegal-strives-millennium-goals-0

World Bank (2020). *Nigeria releases new report on poverty and inequality in country,* January 19, 2023, from https://www.worldbank.org/en/programs/lsms/brief/nigeria-releases-new-report-on-poverty-and-inequality-in-country

World Bank. (2017). *End extreme poverty, boost shared prosperity: Report*, Retrieved October 19, 2022 from https://documents.worldbank.org/en/publication/documents-reports/documentdetail/415221513325971681/the-world-bank-annual-report-2017-end-extreme-poverty-boost-shared-prosperity

World Bank (2023). *Metadata glossary: Poverty gap at national poverty lines (%).* https://databank.worldbank.org/metadataglossary/millennium-development-goals/series/SI.POV.NAGP

World Food Programme (2022). *Senegal: Country Brief,* Retrieved October 19, 2022, from https://www.wfp.org/countries/senegal