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The Impact of Human Development and Poverty Reduction on Economic Growth in Selected West African Countries

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Abstract

Human development is viewed as a central goal of public and private institutions because it expands people's access to education, health care, decent work, and safe, inclusive living conditions. The study examines the relationship among human development, poverty reduction, and economic growth interact in selected West African countries between 2017 and 2023. The study employed System GMM approach, the results show that government expenditure on education and government expenditure on health, per capita income, and inflation exert a positive and significant influence on real gross domestic product in the selected West African countries. In contrast, poverty reduction is found to have a negative effect on real gross domestic product in these countries. The study recommends that West African governments should increase funding for schools and health systems, expand facilities, hire qualified staff, supply learning materials, and reinforce primary and secondary healthcare system.

Keywords: *Expenditure on education, Expenditure on health, Per-capita income, poverty, Economic growth, SYS GMM*

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Background to the Study

Human development is widely regarded as the ultimate objective pursued by all organizations, whether governmental or non-governmental, as it seeks to expand people's access to quality education, healthcare services, decent employment opportunities, and a safe and inclusive social environment. According to the United Nations Development Programme (UNDP), the Human Development Index (HDI) serves as a comprehensive indicator for assessing the progress of human development. The HDI is constructed using three core dimensions that capture a country's average achievements in human development: a long and healthy life, measured by life expectancy at birth; education, assessed through expected and mean years of schooling as well as adult literacy rates; and a decent standard of living, measured by per capita income. Due to its multidimensional nature, the HDI has been widely adopted by countries as a benchmark for evaluating the quality of human development.

In 2010, after two decades of application, the UNDP revised the methodology used in calculating the HDI to improve its robustness and comparability (Maqin, Sidharta, & Policy, 2017). Under the revised framework, the 187 countries assessed globally are classified into four categories: very high, high, medium, and low levels of human development. Despite Africa's overall development challenges, Seychelles has attained a very high level of human development, ranking 46th globally and outperforming several relatively wealthier countries in the Middle East and Europe. Algeria, Tunisia, Mauritius, and Libya are categorized within the high human development group, while ten African countries fall within the medium category. Excluding South Sudan, the remaining thirty-seven African countries are classified as having low levels of human development. Nevertheless, several countries within the low human development group including Angola, Burundi, Ethiopia, Mozambique, Rwanda, Sierra Leone, and Zimbabwe have recorded substantial improvements. Although life expectancy and income levels have risen in these countries, progress in human development remains constrained by persistently low educational attainment (Appiah, Amoasi, & Frowne, 2019).

Poverty has become a major subject of concern among academics, non-governmental organizations, and governments across the globe. Several countries, including Nigeria, have adopted various policy measures aimed at reducing poverty within their economies (Haladu & Salisu, 2023). In most developing countries, national social protection programmes have been implemented as key instruments for alleviating poverty and vulnerability (Ofori-Abebrese, Amporfu, & Adu, 2016). Despite these efforts, poverty remains one of the most pressing global challenges. Nigeria in particular, poverty continues to be pervasive and is expanding, notwithstanding numerous national and international initiatives designed to combat it.

The outbreak of the COVID-19 pandemic has further threatened the modest progress achieved over previous decades. The United Nations University World Institute of Development Economics Research (UNU-WIDER) estimates that the pandemic could push

up to 500 million people into poverty worldwide, despite a 26 percent reduction in extreme poverty recorded between 1990 and 2015 (Sumner et al., 2020). Mohseni (2019) notes that Africa continues to grapple with extreme poverty despite its abundant natural resource endowment. According to the Economic Reports on Africa (UNDP, 2019; Ebraham, 2018), poverty in African countries is associated with several interrelated factors, including low income levels, low literacy rates, weak human development outcomes, and low life expectancy. Furthermore, approximately 640 million people in Africa currently lack access to electricity (World Bank, 2021).

Despite significant global economic progress, poverty and inequality remain widespread, with only about 5 percent of global income accruing to the poorest 40 percent of the world's population. Sub-Saharan Africa remains the only region where poverty continues to rise, with a poverty rate estimated at 77 percent. This situation is further exacerbated by Nigeria, the most populous country in West Africa, which accounts for approximately 44 percent of the region's population (Adekoya, 2018). The main objective of this study is to examine the effect of human development, poverty reduction, and economic growth in selected West African countries. The remaining part of the paper is structured as follows: Section Two reviews the relevant literature; Section Three outlines the methodology adopted to achieve the study's objectives; Section Four presents and discusses the empirical findings; and the final section concludes the study.

Literature Review

Conceptual Literature

Human Development

According to Sen, human development cannot be equated merely with increases in gross national product (GNP), rising incomes, industrialization, or technological progress. Rather, he emphasizes that income, resources, wealth, and utilities serve as instruments to achieve human development, rather than as ends in themselves. As Sen (2000) notes, "the usefulness of wealth lies in the things that it allows us to do." From this perspective, human development is understood as the enhancement of people's lives and the expansion of their freedoms, which entails removing significant obstacles to human well-being. Such obstacles include poverty, oppression, limited economic opportunities, and other forms of deprivation. In this framework, the expansion of freedom is both the primary goal and a crucial means of development. Human development is realized when individuals enjoy greater substantive freedoms or capabilities, which Sen (2000) describes as "the individual capabilities to do things that a person has reason to value." The freedoms that individuals enjoy are inevitably shaped and constrained by the social, political, and economic opportunities available to them. Institutions and societal arrangements play a critical role in fostering individual freedoms. Therefore, human development, viewed as the expansion of substantive freedoms, occurs alongside improvements in institutional structures such as markets, public services, judicial systems, political organizations, mass media, and public discourse. In this context, human contributions to production are often interpreted as human capital (Kayode, 2012). Human resources comprise a range of talents, skills, knowledge, and abilities, and uniquely possess

the capacity for learning, adaptation, creativity, and innovation. Harbison (1973) defines human capital formation as "the intentional and ongoing process of acquiring requisite knowledge, skills, and experiences that are applied to produce economic value for driving sustainable national development." Human capital can be accumulated by investing in individuals or groups through social security programs, education, training, and skill development. Schultz, as cited by Adekoya (2017), emphasizes the importance of enhancing the knowledge, skills, and abilities of value creators. Among the strategies for human capital development, Schultz highlights investments in services that improve life expectancy and well-being, on-the-job and off-the-job training, and formal education at all levels, including adult education (Ejere, 2011).

Poverty

According to Ekpe (2011), poverty is defined as the state of lacking sufficient money or material resources, or experiencing overall scarcity. It is a multidimensional concept that encompasses economic, social, and political aspects. Poverty can be either temporary or chronic, often reflecting broader inequalities. The United Nations conceptualizes poverty as "a violation of human dignity, the inability to obtain choices and opportunities," highlighting the lack of fundamental capabilities required to participate fully in society. This includes insufficient resources to support a family, attend school, access healthcare, or secure employment, as well as the absence of land for food production or access to financial services. For individuals, households, and communities, poverty is associated with alienation, vulnerability, insecurity, and marginalization, including limited access to clean water and adequate sanitation. A person or group is considered poor if their well-being is compromised due to insufficient income to meet basic survival needs (World Bank, 2013).

Melio (2015) further identifies poverty as encompassing poor health, low literacy, inadequate access to safe drinking water, insecure living conditions, insufficient security, and limited opportunities for transformative life experiences. In many regions, particularly West Africa, poverty remains widespread, raising significant socio-economic concerns even in countries often perceived as less affected. Gallup World (2013) reports that the ten countries with the highest proportions of people living in extreme poverty is defined as earning less than $1.25 per day are all located in sub-Saharan Africa. Lack of investment is both a cause and a consequence of poverty, as insufficient capital accumulation perpetuates the poverty trap. Promoting capital formation, for example through foreign direct investment, is therefore recommended as a strategy to break this cycle. Christiaensen (2011) emphasizes the central role of agriculture-led growth in poverty reduction, particularly in low-income developing countries. Growth originating from agriculture is often more effective at alleviating poverty than growth from non-agricultural sectors, given that a large share of the poor relies directly or indirectly on agriculture for their livelihoods. His findings challenge earlier development policies that underemphasized agriculture, highlighting it instead as a key driver of inclusive growth. Poverty reduction is found to be more effective when economic transformation occurs through the expansion of rural non-farm activities and secondary towns, rather than through rapid urbanization concentrated in major cities.

Theoretical Framework

The Mankiw-Romer-Weil (MRW) model, developed in 1992, is one of the most influential and widely used frameworks for analyzing human capital. It represents an extension of the Solow-Swan growth model, with the primary innovation being the inclusion of human capital as an additional factor in the production function. Apart from the distinction between physical and human capital, the dynamics of the MRW model closely resemble those of the traditional Solow-Swan model, as both types of capital are modelled in a similar manner. Incorporating human capital into the model significantly improves its alignment with empirical observations, making it a robust foundation for numerous empirical studies on economic growth and the contribution of human capital. Consequently, this study adopts the Mankiw-Romer-Weil model as its theoretical framework, providing a basis for analyzing the role of human capital in economic development.

Empirical Literature

Simeon (2024) investigated the relationship between human capital investment and the Human Development Index (HDI) in Nigeria. Human capital investment was measured using capital and recurrent expenditures on education and health, as well as tertiary enrollment, which were regressed against HDI. The study's results indicated that while some findings aligned with a priori expectations, others did not. Overall, the analysis revealed a positive relationship, suggesting that increased human capital investment can enhance Nigeria's HDI. The study recommends further research to identify and minimize inefficiencies in health and education spending, given the significant role of these sectors in economic development and human development outcomes.

Davis (2024) employed multilevel modeling techniques, including fixed and random effects models, to examine the effects of inequality and poverty on per capita economic growth in West Africa. The empirical findings indicate that economic growth significantly contributes to reducing both income inequality and poverty. Moreover, the results demonstrate that increases in crop production help alleviate poverty and inequality, highlighting the importance of agricultural development as a driver of inclusive growth. The study emphasizes the need for policies and programs that address inequality and poverty to support sustainable economic growth in the region.

Ochi, Saidi, and Labidi (2024) analyzed whether governance quality exhibits nonlinear threshold effects on poverty rates across 57 South Asian and sub-Saharan African countries from 2010 to 2019. Using a dynamic panel threshold model, the study identified optimal levels of governance that trigger reductions in poverty. The findings reveal a nonlinear relationship between poverty and governance quality, indicating that governance significantly reduces extreme poverty once a threshold level of 0.2 is reached. Additionally, the study shows that when the governance index attains threshold levels of 0.62 and 0.70, the poverty headcount ratios at $3.20 and $5.50, respectively, begin to decline, underscoring the critical role of effective governance in poverty reduction.

Haladu and Salisu (2023) examined the long-run asymmetric relationship between stock market development and poverty in Nigeria using annual data from 1985 to 2021. Employing a nonlinear autoregressive distributed lag (NARDL) model, the study found that market capitalization positively influences poverty reduction, whereas government spending has a statistically significant negative effect. The authors concluded that stock market development plays an important role in shaping Nigeria's poverty rate.

Ilyas, Banaras, Javaid, and Rahman (2023) investigated both the short-run and long-run effects of key economic variables on poverty across Sub-Saharan African countries using autoregressive distributed lag (ARDL) co-integration techniques. The results indicated that GDP relative to the poverty headcount ratio and foreign direct investment (FDI) negatively affected poverty in the long run, while FDI had no discernible short-term impact. In the short run, GDP, trade openness, and inflation contributed to poverty reduction. Additionally, higher inflation encouraged investment in the manufacturing sector, ultimately reducing unemployment and poverty. The study recommended increased financial support from investors, policymakers, and governments, highlighting the importance of FDI for job creation and improved standards of living.

Abdulkareem, Jimoh, and Shasi (2023) assessed the roles of poverty reduction and social inclusion in achieving sustainable development in Nigeria from 1970 to 2019, applying a vector error correction model (VECM). Economic factors (per capita GDP and FDI inflow), social factors (life expectancy, school enrollment, poverty, and women's representation in parliament), and environmental factors (CO_2 emissions and natural resource endowment) were considered. Findings revealed that life expectancy, school enrollment, GDP per capita, and FDI inflows positively influenced sustainable development, whereas poverty gaps, women's parliamentary representation, CO_2 emissions, and resource endowment had negative impacts.

Imeokparia et al. (2023) examined the impact of oil exports on poverty reduction in ten of Africa's highest oil-producing countries from 1991 to 2020. Using the Human Development Index (HDI) as a proxy for poverty reduction and applying the panel ARDL approach, the study found that income from oil exports and annual oil production positively influenced human capital development, thereby reducing poverty. While annual oil production had a statistically significant effect, the total revenue from oil exports was not significant, though it still contributed modestly to long-term poverty alleviation. Appiah, Amoasi, and Frowne (2019) analyzed the effect of human development on economic growth in African countries between 1990 and 2015. Using the HDI as the primary independent variable and GDP as the dependent variable, with inflation, capital, investment, and labor as controls, the study found a positive and significant relationship between human development and economic growth.

Adekoya (2018) investigated the relationship between human capital development and poverty alleviation in Nigeria from 1995 to 2017 using Granger causality within a VECM framework. The study revealed that while government spending on health and education,

infant mortality, gross enrollment ratio, and per capita income generally showed no causal relationships, life expectancy, literacy rate, and per capita income exhibited instances of unidirectional causality.

Tsaurai (2018) explored the complementarity between FDI and natural resource availability in reducing poverty across Southern and Western African nations using panel data analysis (fixed effects, random effects, pooled OLS, and dynamic GMM) from 2002 to 2012. Three poverty measures were used: life expectancy at birth, household consumption expenditure as a ratio of GNP, and infant mortality. Overall, FDI combined with resource availability contributed to poverty reduction, suggesting that laws encouraging foreign investment in natural resource extraction could sustainably reduce poverty in the region.

Olofin, Aiyegbusi, and Arawomo (2017) analyzed the effects of FDI and social factors on poverty reduction in West Africa between 1980 and 2015, using OLS, mean group estimators, CCEMG, and average correlation coefficients (ACC). The results indicated that FDI reduced poverty, with significance varying by estimation method. Employment levels reduced poverty, while unemployment increased it. Life expectancy improved FDI's effectiveness in combating poverty.
Chukwubudom (2016) investigated the impact of human capital development on poverty reduction in Nigeria from 1986 to 2012. Using OLS, Augmented Dickey-Fuller, and Johansen co-integration methods, the study found that higher levels of primary, secondary, and tertiary school enrollment, along with per capita income, were positively associated with poverty reduction.

Arimah (2004) used cross-national data to assess whether human development strategies contributed to poverty reduction in Africa. The study found that variations in poverty levels between countries could be explained by human development indicators such as public education spending, primary school enrollment, female student enrollment, health expenditure, and good governance. Other important factors included economic growth, high foreign debt, HIV/AIDS prevalence, and geographic disadvantages such as being landlocked. The study also reported that foreign aid had only a modest effect on poverty alleviation in Africa.

Gap Identified
From the review of existing literature, it is evident that most studies have primarily focused on examining the effects of human development on economic growth or the impact of poverty on economic growth, with the exception of Adekoya (2018). Additionally, only a limited number of studies have been conducted within West African countries. In response to these gaps, the present study investigates the combined effects of human development, poverty reduction, and economic growth in selected West African countries namely Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, The Gambia, Ghana, Guinea, Nigeria, Senegal, and Togo over the period 2017 to 2023. The study employs the System Generalized Method of Moments (SYS-GMM), an approach not previously applied in similar studies for these

countries. The selected countries were chosen based on their relatively high Human Development Index (HDI) rankings and progress in poverty reduction (UNDP, 2024).

Methodology

Model Specification

The model of the study is adopted from the work of Appiah, Amoasi and Frowne (2019) and Adekoya (2018), is shown as

$$GDP = F(HDI, INF, CAP, INVT, LAB, INFL, LIT) \quad (1)$$

The model is modified by using real gross domestic product, HDI is disaggregated into expenditure in education, expenditure in health and per-capita income because these are considered as the main measurement of Human development index (Rani, 2022).

$$RGDP = F(EXPDEDU, EXPDHEL, PCAPIN, PR, INFL) \quad (2)$$

Where $RGDP$ is the real gross domestic product, measured as the economic growth? $EXPDEDU$ is the expenditure on education, $EXPDHEL$ expenditure on health, $PCAPIN$ is the per-capita income, these are the main measurement of Human Development Index (HDI) (Rani, 2022). Therefore, the current study employed expenditure on education, expenditure on health and per-capita income as the measurement of human development index. PR is the poverty reduction, final households' consumption expenditure is used as a proxy of poverty reduction as employed by Abdelhafidh (2013), Leila (2014), Shuaibu et al (2021) and Haladu et al (2023). Although many proxies were used by variant scholars to define poverty but the current study employs final households' consumption expenditure in line with the definition of poverty by the World Bank stating that poverty can be measured in terms of ability to satisfy necessary consumption demanded or Dollar per day or the international extreme poverty line is set at $2.15 per person per day, this means that anyone living on less than $2.15 a day is in extreme poverty (world bank 2024). $INFL$ is the inflation rate measured as consumer price index.

Generalize Method of Moment (GMM)

The Generalized Method of Moments (GMM) estimates parameters by optimizing an objective function that incorporates specified moment restrictions. This ensures that the lagged independent variables are uncorrelated with the error terms. GMM employs either optimal weighting matrices or residuals from an initial step to generate heteroscedasticity-consistent standard errors, typically implemented in a two-step estimation procedure (Blundell & Bond, 1998). To ensure the consistency of GMM estimates, two specification tests are conducted to assess instrument validity. If the null hypothesis of these tests is not rejected, the instruments are considered valid and the model correctly specified. Additionally, while it is acceptable to reject the null hypothesis of no first-order serial correlation, the null of no second-order serial correlation should not be rejected.

The System Generalized Method of Moments (System GMM) is a dynamic panel data estimation technique specifically designed to address endogeneity, unobserved heterogeneity, and the inclusion of lagged dependent variables in panel regressions. Initially proposed by Arellano and Bover (1995) and further developed by Blundell and Bond (1998), System GMM extends the standard Difference GMM estimator introduced by Arellano and Bond (1991). It enhances estimator efficiency by combining moment conditions from both first-differenced and level equations. This dual-equation approach reduces the weak instrument problem often encountered in Difference GMM, particularly when variables exhibit high persistence over time. System GMM has therefore become a fundamental methodology in empirical micro econometrics, providing consistent and efficient estimates in the presence of endogeneity and unobserved heterogeneity.

$$Y_{it} = \alpha Y_{it-1} + \beta X_{it} + \eta_{it} + \mu_{it} \qquad (3)$$

Where Y (explained variable) is a function of its past values. The models added explanatory variables X which assumed to be weakly exogenous and firm-fixed effects. Second, after transforming the model 7 into the first difference, it becomes:

$$\Delta Y_{it} = \lambda \Delta Y_{it-1} + \gamma \Delta X_{it} + \Delta \mu_{it} \qquad (4)$$

The transformation in model 7 into the first difference eliminated the firm-specific effects (η_i). However, there was a new endogeneity problem as a result of the correlation between the lagged explained variable (Y_{it-1}) and the different error term μ_{it}, as well as the possibility that some independent variables were endogenous. As such, these problems were solved via higher-order lags of the explained variable such as Y_{it-2} as instruments for Y_{it-1} and higher-order lags for the explanatory variables such as X_{it-2} as instruments (Arellano and Bond, 1991).

$$RGDP_{it} = \lambda RGDP_{i,t-1} + \beta_0 + \beta_1 EXPDEDU_{it} + \beta_2 EXPDHEL_{it} + \beta_3 PCAPIN_{it} + \beta_4 PR_{it} + \beta_5 INFL_{it} + \phi_i + \alpha_t + \mu_{it} \qquad (5)$$

Empirical Results and Discussion

Descriptive Statistics

Table 1: Descriptive Statistics

Variables	LRGDP	LEXPDEDU	LEXPDHEL	LPCAPIN	LPR	INFL
Mean	10.30036	1.178499	1.560595	5.060879	1.756985	6.913756
Median	10.20642	1.215180	1.095751	5.626097	0.788775	4.286666
Maximum	11.74087	1.364364	6.011697	7.068748	9.764995	38.10697
Minimum	9.168119	0.633753	-0.078134	3.141512	-0.005130	-3.233389
Std. Dev.	0.701881	0.182405	1.545793	1.236085	2.631841	7.648166
Skewness	0.384209	-0.702734	0.371295	-0.285810	0.598507	0.780726
Kurtosis	2.780020	5.191408	6.937243	1.739890	8.129917	7.071010
Jarque-Bera	1.703622	43.73195	101.3174	5.105672	142.2000	78.01885
Probability	0.426642	0.325612	0.145051	0.077861	0.213557	0.821211
Sum	659.2230	75.42396	99.87810	323.8962	112.4471	442.4804
Sum Sq. Dev.	31.03615	2.096101	150.5370	96.25805	436.3751	3685.150
Observations	70	70	70	70	70	70

Source: Researcher computation using Eviews 12.

The table 1 presents descriptive statistics of the variables employed in the analysis. The mean value of real gross domestic product, expenditure on education, expenditure on health, per-capita income, poverty reduction and inflation rate are 10.30036, 1.178499, 1.560595, 5.060879, 1.756985 and 6.913756 and are not far away from their standard deviation. The Skewness of the distribution in the table shows that variable like real gross domestic product, expenditure on health, poverty reduction and inflation rate are skewed to the right while expenditure on education and per-capita income are skewed to the left and less than one, by implication these variables are normally distributed. The Kurtosis shows that real gross domestic product and per-capita income are normally distributed because the values are less than 3 or equal to 3 while expenditure on education, expenditure on health, poverty reduction and inflation rate are not normally distributed. The Jarque-Bera test for normality is also conducted. It shows that all the variables employed are normally distributed as their p-values are greater than 5%.

Cross-sectional Dependence Test

Table 2: Cross Sectional Dependence Test

Test	Statistics	Df	p-value
Breusch-Pagan LM	55.55700	45	0.1346
Pesaran scaled LM	1.112805		0.2658
Pesaran CD	0.649279		0.5162

Source: Researcher computation using Eviews 12.

Table 2 presents the cross-sectional dependence test of the residual, conventionally attention is placed on Pesaran CD test if the time (T) is less than N. Therefore, considering Pesaran CD test P-value (0.5162) we cannot reject the null hypothesis of No cross-section dependence (correlation) in residuals. Therefore, this model has no cross-section dependence in residuals. Hence the study employed first generation Panel unit root test.

Panel Unit Root Test

Table 3: Levin Lin and Chu, Im Pesaran and Shin and ADF Fisher unit root test

	Test at level			**Test at first difference**		
Variables	**LLC PV**	**IPS PV**	**ADF Fisher PV**	**LLC PV**	**IPS PV**	**ADF Fisher PV**
LRGDP	0.8439	0.9977	0.9974	0.0000**	0.0007**	0.0036**
LEXPDEDU	0.0000	0.0062	0.0011	-	-	-
LEXPDHEL	0.0000	0.7948	0.9361	0.0000**	0.0007**	0.0059**
LPCAPIN	0.0000	0.8046	0.9496	0.0000**	0.0076**	0.0057
LPR	0.0000	0.7202	0.8911	0.0000**	0.0073**	0.0049**
INFL	0.0000	0.8125	0.9670	0.0000**	0.0059**	0.0129**

Source: Researcher computation using Eviews 12, the asterisks ** indicate rejection of the null hypothesis at 10% and 5% level respectively.

The table 3 presents the panel unit root test of Levin Lin and Chu (LLC), Im Pesaran and Shin (IPS) and ADF - Fisher, the tests show that real gross domestic product, expenditure on health, per-capita income poverty reduction and inflation rate are integrated of order one while expenditure on education is integrated of order zero. Therefore, the study concludes that there is a mixture of order of integration among the variables of interest.

Panel Cointegration

Table 4: Kao Panel Cointegration Test

ADF t-statistic	**Probability**
-2.008553	0.0223*

Source: Researcher computation using E-views 12.

Table 4 presents the result of Kao residual panel cointegration test. The result confirmed the presence of cointegration amongst the variables in the model as the ADF t-statistics probability value is significant at 1%. Therefore, we reject the null hypothesis of no cointegration and concludes that there is long run relationship among the variables in question, because the p-value is less than 5%.

Generalized Method of Moment (GMM)

Table 5: System Generalized Method of Moment (SYSGMM)

Variables	Coefficient	Standard Error	T-statistics	P-Value
LRGDP(-1)	0.5543612	5.877612	0.94	0.370
LEXPDEDU	0.1109177	1.416168	0.08	0.939
LEXPDHEL	0.1125023	0.5867991	0.19	0.852
LPCAPIN	0.2015503	0.415143	0.49	0.639
LPR	-0.0008063	0.0691294	-0.01	0.991
INFL	0.0037836	0.0059296	0.64	0.539
Arellano-Bond Serial correlation test				
AR(1)				0.851
AR(2)				0.806
Normality test				0.5989
Sargan test				0.431

Source: Researcher computation using Stata 14.

Table 5 depicts the System Generalized Method of Moment (SYSGMM) result of the estimated model in the study, the result shows that the dependent variable (real gross domestic product) at lag 1 has positive but statistically insignificant, this means that the dependent variable depends largely on itself. Expenditure on education shows positive but statistically insignificant effects on the real gross domestic product in the selected West African countries, this implies that an increase in expenditure on education by a single digit will result 11% increase in the real gross domestic product in the selected West African countries. This is in line with appriori expectation which established a positive relationship between expenditure on education and economic growth in the selected West African countries. Expenditure on health shows positive but statistically insignificant effects on the real gross domestic product in the selected West African countries, this simply means that single digit increase in expenditure on health will result 11% increase in real gross domestic product in the selected West African countries all things being equal. Furthermore, Per-capita income indicates positive but statistically insignificant effects on the real gross domestic product in the selected West African countries, meaning that an increase in per-capita income by a single digit will cause 20% increase in the real gross domestic product in the selected West African countries all things being equal. Poverty reduction indicates negative and statistically insignificant effects on the real gross domestic product in the selected West African countries, by implication single digit increase in poverty reduction will cause a decrease in real gross domestic product in the selected West African countries. This is counter with the appriori expectation which established a positive relationship between poverty reduction and

economic growth in the selected West African countries. Inflation rate shows positive but statistically insignificant effects on the real gross domestic product in the selected West African countries. The Arrelano and Bond serial correlation test shows that both AR (1) and AR (2) p-values' are greater 5%, this means that we cannot reject the null hypothesis and conclude that model has no serial correlation problem. In other word the model is free from serial correlation problem. Furthermore, the model passed normality test as the p-value is greater than 5%, the study concludes that the variables in the model are normally distributed. The Sargan test checks the validity of the instruments used in a GMM estimation. It tests the null hypothesis that the instruments are **exogenous**, meaning they are uncorrelated with the error term. This suggest that the instruments are reliable and valid.

Discussion of the Result

The results of the System Generalized Method of Moment (SYSGMM) shows that expenditure on education has a positive but statistically insignificant effects on the real gross domestic product in the selected West African countries, this implies that an increase in expenditure on education by a single digit will result 11% increase in real gross domestic product in the selected West African countries. This is in line with appriori expectation which established a positive relationship between expenditure on education and economic growth in the selected West African countries. The positive finding is similar with the findings of Simeon (2024) and Appiah et al (2019). Furthermore, expenditure on health has a positive but statistically insignificant effects on the real gross domestic product in the selected West African countries, this simply means that single digit increase in expenditure on health will result 11% increase in real gross domestic product in the selected West African countries all things being equal. The positive finding is similar with the findings of Simeon (2024), Appiah et al (2019) and Adekoya (2018). The variable Per-capita income has a positive but statistically insignificant effects on the real gross domestic product in the selected West African countries, meaning that an increase in per-capita income by a single digit will cause 20% increase in real gross domestic product in the selected West African countries all things being equal. The positive finding is similar with the finding of Adekoya (2018). Poverty reduction has a negative and statistically insignificant effects on the real gross domestic product in the selected West African countries, by implication single digit increase in poverty reduction will cause a decrease in real gross domestic product in the selected West African countries. This counter with the appriori expectation which established a positive relationship between poverty reduction and economic growth in the selected West African countries.

Conclusions and Recommendations

The study investigates the effect human development, poverty reduction and economic growth in the Selected West African Countries, such as Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Nigeria, Senegal and Togo from 2017 to 2023. The panel unit root test indicates that real gross domestic product, expenditure on health, per-capita income poverty reduction and inflation rate are integrated of order one while expenditure on education is integrated of order zero. The panel cointegration test confirmed

the presence of cointegration amongst the variables employed. The System Generalized Method of Moment (SYSGMM) result shows that expenditure on education has a positive but statistically insignificant effects on the real gross domestic product in the selected West African countries. Expenditure on health has a positive and statistically significant effects on the real gross domestic product in the selected West African countries. Per-capita income has a positive but statistically insignificant effects on the real gross domestic product in the selected West African countries. Poverty reduction has a negative but statistically insignificant effects on the real gross domestic product in the selected West African countries. Inflation rate shows positive and statistically insignificant effects on the real gross domestic product in the selected West African countries. Therefore, the current study concludes that human development positive effect on economic growth in the Selected West African Countries while poverty reduction has a negative effect on economic growth in the Selected West African Countries, namely Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Nigeria, Senegal and Togo. The study recommends that:

i. West African Countries especially Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Nigeria, Senegal and Togo should invest more in education and health in their region by building more schools and equipped with qualified teachers and materials, advancing primary and secondary health, this will stimulate human development and reduce poverty and finally economic can be achieved via multiplier effect.
ii. West African Countries should promote inclusive growth through job creation in high-value sectors, support for small and medium enterprises, and infrastructure development that stimulates private investment. Such measures help translate income gains into sustained output growth.
iii. West African Countries should prioritize human capital development, skills acquisition, and employment-linked social protection. Well-targeted and productivity-enhancing poverty interventions can simultaneously reduce poverty and stimulate long-run economic growth.

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