**Human Development and Fiscal Decentralization and Poverty in Ten African Countries (2006-2023): An Econometric Case Study**

**Abstract**

Human development plays a vital role in empowering individuals with the necessary skills, education, healthcare, and employment opportunities required to drive sustainable economic growth, reduce poverty, and improve the overall quality of life across African countries. However, many governments across the continent have not fully utilized national resources to foster such development. Moreover, there is limited empirical evidence on the role of fiscal decentralization in enhancing human development in Africa. To address this gap, this study investigates the impact of fiscal decentralization on human development in selected African countries. The analysis is based on panel data covering ten African countries over an 18-year period (2006–2023), sourced from the World Development Indicators (WDI), the International Monetary Fund (IMF) Fiscal Decentralization Database, and the World Governance Index (WGI). The study utilizes both descriptive statistics and inferential regression techniques. Specifically, it applies panel unit root tests, including Levin, Lin, and Chu (LLC, 2002), Im, Pesaran, and Shin (IPS, 2003), as well as the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests categorized as first-generation panel unit root tests. The findings reveal that key indicators of fiscal decentralization significantly influence the Human Development Index (HDI) in the sampled African countries. Based on these results, the study recommends that the governments of these countries adopt and implement sustainable economic policies that prioritize fiscal decentralization as a means of advancing human development across the continent.

**Keywords:** Annual growth rates,Expenditure decentralization, Fiscal decentralization, GDP, Human development, Revenue decentralization, Institutional quality.

1. **Introduction**

Globally, human development is crucial and extends beyond income deficiency to include a lack of resources necessary for sustainable livelihoods. Its effects are widespread, leading to hunger, malnutrition, limited educational and social opportunities, discrimination, exclusion, and a lack of participation in decision-making processes. In 2015, over 736 million people lived below the international poverty line, with about 10% of the global population enduring extreme poverty. Even in pre-pandemic times, many struggled to meet basic needs such as healthcare, education, and access to water and sanitation (Jianing & Yang, 2023). Due to the pandemic, the poverty rate worsened, and it has been argued that women aged 25 to 34 were particularly affected, with 22 million more impoverished women than men in this age group. Additionally, over 160 million children are projected to remain in extreme poverty by 2030. Recent data from 2023 indicates that nearly 700 million people globally subsisted on less than $2.15 per day (Onah, 2023; Hauwah et al., 2023).

Miao and Li (2023), along with Xu and Lin (2022), report that the proportion of the global workforce living in extreme poverty declined from 14.3% in 2010 to 7.1% in 2019, although it increased again in 2020 due to the pandemic. Projections suggest that the goal of eradicating extreme poverty by 2030, in line with the UN SDGs, may not be achieved. Nearly 600 million people are expected to remain in extreme poverty, and one in six children may still reside in such conditions (Halkos & Aslanidis, 2023; Bardhan & Mookherjee, 2024). While the number of children living on less than $2.15 a day declined from 383 million to 333 million between 2013 and 2022, the economic impact of COVID-19-induced poverty resulted in the loss of three years of progress. In 2021, 53% of the global population—approximately 4.1 billion people—lacked access to many forms of social protection (Aduma et al., 2023; Bardhan & Mookherjee, 2024; Hauwah et al., 2023).

Hanif et al. (2020) suggested that fiscal decentralization can boost local economic activities by ensuring efficient resource allocation and investments in critical infrastructure and social services. Mohsen (2022) noted that fiscal decentralization helps reduce economic disparities between regions by directing resources to underdeveloped areas and promoting balanced national development. Additionally, local governments can develop and manage their own revenue sources, reducing dependency on central government transfers and enhancing financial sustainability. This increases the potential for efficient and locally appropriate revenue collection systems, thereby improving overall revenue (Amoaning et al., 2023). Decentralizing fiscal responsibilities can alleviate the administrative and financial burdens on central governments, allowing them to focus on national policy and strategic issues, reducing tensions and conflicts, and contributing to political stability and social cohesion.

In West Africa and other developing regions, studies have shown that certain institutional qualities are prerequisites for successful fiscal decentralization (Anetor, 2020; Amoaning et al., 2023; Akeju & Ojogbede, 2022). These include politically stable environments, effective and autonomous subnational governments, institutional strength at all levels, government accountability, and the ability to generate sufficient local revenue. Meeting these prerequisites ensures efficient decentralized budgetary allocation and tax collection, helping prevent a decline in public service provision (Anetor, 2020). Enhanced public service delivery—achieved through preference matching, allocative efficiency, and greater government accountability—can support domestic resource mobilization (Megbowon et al., 2021; Agyemang-Dual et al., 2018).

Fiscal decentralization through regional integration has also been noted to have the potential to unlock economies of scale and promote collective development in West Africa (Anetor et al., 2020). As fiscal decentralization involves shifting fiscal responsibilities and revenue-generating authority to subnational governments, it aims to strengthen governance, improve service delivery, and foster economic development. It is therefore believed to contribute to broader development goals, including human development in Africa particularly in West Africa (Ugwuoke & Olukayode et al., 2020; Amoaning et al., 2023). This study, therefore, examines the significance of fiscal decentralization initiatives in addressing the complexities of poverty in ten (10) selected African countries between 2006 and 2023.

Despite extensive research on human development, the implications and challenges related to its nexus with fiscal decentralization have received limited attention, resulting in gaps in the literature. There is a lack of sufficient empirical evidence on the effect of fiscal decentralization on human development using the specific variables identified in this study across the ten selected African countries. Inadequate human development practices remain a global concern, with numerous studies attempting to address the complexities and challenges that exacerbate poverty. The insufficient commitment to meeting sustainable development goal targets and the lack of substantial infrastructural investments toward human development in West Africa is alarming.

It is quite disturbing that poverty, inequality, and underdevelopment are on the rise in many developing countries (Zheng et al., 2023; Mutiarani & Siswantoro, 2021). Although the issue of human development in West Africa remains complex and contentious, the limited available literature has not fully explored potential empirical solutions (Alkire et al., 2021; Anetor et al., 2020; Bununu, 2020; Fashanu et al., 2022; Eze & Alugbuo, 2021; Endris & Kassegn, 2022; Mahmoud, 2022).

While only a limited number of studies exist, the literature on the relationship between fiscal decentralization and human development in Africa shows divergent opinions and lacks conclusive evidence. This present study makes a novel contribution by addressing this research gap specifically the scarcity of empirical investigations into the role of fiscal decentralization in shaping human development. By focusing on selected African countries, the study considers human development as a critical component of poverty measurement and provides new insights into how fiscal policy structures impact development on the continent. To pursue this objective, the study proposes the following research hypothesis:

**Hypothesis**: Fiscal decentralization has no significant effect on human development in selected African countries.

The remainder of the study is structured as follows: Section 2 provides the literature review and theoretical framework. Section 3 outlines the methodology. Section 4 presents data analysis, results, and discussion. Section 5 offers the conclusion, implications of findings, suggestions for further studies, and recommendations.

**Literature Review and Theoretical Framework**

**Human Development**

The Human Development Index (HDI) is defined as a composite summary indicator that evaluates a nation's average performance in three fundamental areas of human development: standard of living, knowledge, and health in relation to human development (Gupta et al., 2020). According to Hauwa et al. (2023), human development index measures the extent of poverty level and a nation's average performance in three areas of human development: life expectancy at birth, which indicates how long people live healthy lives; mean and expected years of education, which indicate how much knowledge a person has; and gross national income (GNI) per capita, which indicates how well-off a person is. The human development index establishes "goalposts" of minimum and maximum values for each dimension and then displays the position of each nation with respect to these values and a number between 0 and 1 is used to represent this (Syahrir, 2024). Piwowarski et al. (2022) maintained that the greater a nation's HDI number, the higher its level of human development.

Countries are ranked into four categories of human development using the HDI as a statistical composite index of life expectancy, education (mean years of schooling completed and expected years of schooling upon entering the education system), and per capita income indicators (Onah, 2023; Momoh et al., 2024). Han and Gang (2022) posited that there is a correlation between poverty and human development, hence efforts geared towards improving poverty will impact on the development index of a nation. Jolliffe et al. (2022) noted that a nation with longer lifespans, greater levels of education, and higher gross national income (GNI) per capita all have higher HDI scores. It was created by Pakistani economist Mahbub ul-Haq and subsequently employed by the Human Development Report Office of the United Nations Development Programme (UNDP) to measure a nation's level of progress in human development and development. Rani (2021) reported that the United Nations has been developing and compiling the Human progress Index (HDI) since 1990 as a way to assess the social and economic progress of different nations.

**Fiscal Decentralization**

Fiscal decentralization is defined as the process of transferring powers from the perspective of financial responsibilities and political powers from the central government to lower levels of government (Zheng et al., 2023). Also, fiscal decentralization id the process of redefining the responsibilities and obligations of different governmental levels about the implementation of fiscal policy (Jianing & Yang, 2023). The process in this context entails the allocation of revenue generation and taxing, expenditure and decision-making authority to these subunits’ governments, allowing these subunits government the opportunity to control over their finances and the capability to management public resources within their jurisdictions in such a manner that best meets the needs of their local dwellers. The public finance offers a normative framework stating that fiscal decentralization entails the allocation of the three fiscal functions of the government in respect of redistributing resources, stabilizing the economy, and allocating of national resources among government levels as conventional theories (Bui et al., 2022; Nguyen & Thanh, 2022). Decentralization offers opportunities to enhance resource allocation in the public sector. These theories' central claim is that politicians and governments act as kind welfare maximizers, and that welfare improvements can be achieved.

**Expenditure Decentralization**

Expenditure decentralization is defined as the means by which financial responsibility, especially the constitutional powers authorize a subunit government to spend public funds on various services and infrastructures (Xu & Lin, 2022). It entails the process by which the power to spend money is extended to states and local governments of municipalities as enshrined or authorized by the country’s constitution without undue interference from any of the counterparts of the sub-governments (Alamanda, 2020). According to Obele (2023), the expenditure decentralization share is a key aspect of fiscal decentralization as it considers the authority of expenditure by each of the tiers of government, the federal. States and local government authorities based on the extent of revenue and resources at their disposal. The federal, state and local governments are guided and empowered by the nation’s constitution to management their respective budgets implementations and allocate voted appropriation bills to finance their budgets as presented by each of the presidents, governors and local government chairmen based on appropriation bills passed into law (Fashanu et al., 2022). At the federal level the president presents the appropriation bill to the joint assembly of the senate and house of assembly for passage into law, the state governors present to the state house of assembly for approval while the local government chairmen present to the local government legislature as is the case in Nigeria.

**Revenue Decentralization**

Revenue decentralization is the process of distribution of fiscal accountabilities and tasks in respect of revenue collection from the central governments to lower governments such as states, municipals, regions, or provinces (Gemmel et al., 2013). Bello and Mackson (2023) opined that revenue decentralization is the crucial and complex process that required financial discipline and expertise toward raising sufficient internally generated revenue autonomy of a broader fiscal decentralization, which equally encompasses the decentralization of spending responsibilities and regulatory authorities. According to Oladele et al. (2021), the rationale behind revenue decentralization depends in the understanding that municipalities/local regions are better positioned to understand the taxpayers and the needs of the people at the local communities, where motivation of tax compliance depends on physical presence of the projects carried out with tax revenue. There is a high propensity that taxpayers will comply with tax payment, boosting tax revenue of the sub-governments thereby improving tax revenue, efficiency, accountability and responsibility of the fund managers (local government chairmen (Ologunde et al., 2020).

**Empirical Review**

Apryadi et al. (2024) examined the financial performance of local governments in the districts and cities of South Sumatra Province and its impact on poverty levels, using data from the Ministry of Finance and the Central Bureau of Statistics for the period 2019–2022. They utilized a panel data analysis method, combining cross-sectional and time-series data to gain a comprehensive understanding of the dynamics involved. Their findings reveal that most districts and cities saw a decrease in poverty levels, with the exception of South Ogan Komering Ulu Regency. The fixed effect model’s overall estimation indicated that financial performance did not significantly affect the poverty rate. The overall R square result showed that the independent variables accounted for 14.63% of the variation in poverty figures. Of the six ratios examined, only the effectiveness ratio had a positive and significant impact, with a regression coefficient. This suggests that the financial performance of local governments does not fully determine the dynamics of poverty in South Sumatra Province. The study result is consistent with some other prior studies that have found similar and insignificant effects (Obele & Adebiyi, 2023; Pham et al., 2022). On the contrary, some other studies have equally found significant effects which is not in tandem with the result obtained in this study (Ying et al., 12024; Piwowarski et al., 2022).

Ying et al. (2024) analyzed sustainability and equality related to the environment and public services in China from 2010 to 2020. They found that environmental and public service sustainability indicators improved, and inequality decreased. However, unbalanced regional investment led to increased gaps in education and healthcare between poverty-stricken and non-poverty-stricken areas. The significant effect found in this study is consistent with the findings found in some previous studies that have documented significant effects (Ying et al., 2024; Syahrir, 2024). However, on the contrary, some other studies have found insignificant effect which is inconsistent with the result found in this study (Adediran et al., 2024; Fashanu et al., 2022). Similarly, Javaid et al. (2024) examined the effect of fiscal decentralization on human development in Pakistan using panel data from 1990 to 2020. They found that intergovernmental transfers and provincial government expenditures had a nonlinear relationship with poverty, initially reducing it at a decreasing rate. The significant effect found in this study is consistent with the findings found in some previous studies that have documented significant (Mimoun & Raies, 2022; Attah & Wada, 2023). However, on the contrary, some other studies have found insignificant effect which is inconsistent with the result found in this study (Adediran et al., 2024; Fashanu et al., 2022).

Sima et al. (2023) investigate the relationship between fiscal decentralization and economic growth, specifically focusing on its applicability in both developed and developing countries. Using cross-sectional data from 23 African and 23 OECD countries, the study employs two-stage estimation methods, including Two-Stage Least Squares (2SLS), Generalized Method of Moments (GMM), and Limited Information Maximum Likelihood (LIML), to address concerns related to endogeneity. The inclusion of instruments representing country size, ethno religious diversity, and administrative structure enhances the analysis. The dependent variable is based on average values for the five-year period between 2015 and 2019, while the explanatory variables are derived from data in 2017, representing the midpoint of the 2013–2021 period. The results highlight the effectiveness of the 2SLS method in estimating the relationship between fiscal decentralization, control variables, instrument variables, and per capita GDP. Empirical findings indicate significant positive impacts of both expenditure decentralization and revenue decentralization on per capita GDP, holding true for both developed and developing countries, with a slightly stronger effect observed in the latter. These results underscore the potential benefits of fiscal decentralization across diverse economies and offer valuable insights for policymakers. The significant effect found in this study is consistent with the findings found in some previous studies that have documented significant effects (Takeshima et al., 2021; Oladele et al., 2021). However, on the contrary, some other studies have found insignificant effect which is inconsistent with the result found in this study (Edmore & Odhiambo, 2019).

Wang and Deng (2023) investigated the impact of county fiscal decentralization on natural poverty in China using a BP neural network and a two-way fixed-effect model. They found that increased county-level financial autonomy significantly increased regional natural poverty. This finding remained robust after various tests. The heterogeneity analysis showed that the positive impact of fiscal decentralization on the natural poverty index varied across regions with different poverty formation mechanisms. The significant effect found in this study is consistent with the findings found in some previous studies that have documented significant effects (Akpan & Esu, 2021; Ngong et al., 2021). However, on the contrary, some other studies have found insignificant effect which is inconsistent with the result found in this study (Ganaie et al., 2018; Adediran et al., 2024). In the same manner, Nwambuko et al. (2023) examined human development and SDGs in rural Nigeria, identifying factors like corruption, debt burden, and unemployment as barriers. They proposed a strategic framework for rural human development, including job creation, adequate budget allocation, and infrastructure provision. The significant effect found in this study is consistent with the findings found in some previous studies that have documented significant effects (Ying et al., 2024; Syahrir, 2024). However, on the contrary, some other studies have found insignificant effect which is inconsistent with the result found in this study (Adediran et al., 2024; Fashanu et al., 2022).

Also, Choirul et al (2023) studied various outlays human development strategies in Indonesia's current village fund implementation experience, with a focus on how it has reduced poverty. Regression analysis and planned interviews supplement the field observations of the writers. According to our research, village finances' potential is not being completely utilized. We highlight the fact that officials misjudged the extent to which administrative and technical policy processes play a crucial role in implementing coordinating mechanisms, installing feedback mechanisms, and limiting the capacity of local governments. Simultaneously, we believed that the authorities exaggerated the significance and potency of their own political goals, which support community empowerment and combat corruption. The significant effect found in this study is consistent with the findings found in some previous studies that have documented significant effects (Nwambuko et al., 2023; Udeagha & Breitenbach, 2023). However, on the contrary, some other studies have found an insignificant effect which is inconsistent with the result found in this study (Apryadi et al., 2024; Adediran et al., 2024).

The study conducted by Metasari et al. (2023) attempts to ascertain the effects of economic growth, education, and fiscal decentralization on the proportion of impoverished individuals in the district/city of West Kalimantan Province. Fiscal decentralization is measured by the General Allocation Fund, while education is measured by the Average Years of Schooling. Secondary data from 2010–2022 is used in this study. The application of the General Allocation Fund variable, which represents regional income from central payments, is what makes this study novel. Seldom have past scholars examined the connection between transfer payments and initiatives to reduce poverty in West Kalimantan Province using the General Allocation Fund variable. The General Allocation Fund will be used and allocated with greater care in the future to combat poverty through quantitative research using the Fixed Effect Model (FEM) methodology and panel data regression method. According to the study's findings, the general allocation fund variable significantly and favourably affected the proportion of the population living in poverty. In the District/City of West Kalimantan Province, the variable average duration of schooling has a substantial and negative effect on the number of impoverished people, whereas economic growth has a negligible and positive effect. The study result is consistent with some other prior studies that have found similar an insignificant effect (Fashanu et al., 2022; Digdowiseiso, 2022). However, on the contrary, some other studies have equally found significant effects which are not in tandem with the result obtained in this study (Francisco & Canare, 2018; Umoh & Ekpo, 2023).

1. **Methodology**

This study examined the effect of fiscal decentralization on human development in selected African countries. An *ex-post facto* research design was employed in this study, using longitudinal panel data as it provides valuable insights into how poverty evolves over time and what interventions may have lasting effects. The integration of cross-sectional and time series data (Panel data) improves the quality of the dataset. The theory of fiscal federalism formed the foundation of the study, given its crucial role in linking fiscal decentralization to human development. Moreover, fiscal federalism theory is highly pertinent to poverty alleviation efforts. In a decentralized fiscal system, local governments can prioritize their budgets to address poverty at the community level, tailoring welfare programs and public services to meet the specific needs of their populations.

**Theoretical Framework**

By empowering local authorities, fiscal federalism enables more effective human development strategies that are responsive to the unique circumstances of each region. Consider an economy where there are two tiers of government – federal (hereafter “A)” and state (hereafter “B”) – and two LGAs. within the tiers of government. It is assumed that individuals differ in their inherent labour productivity, captured, and distributed according to the density function. An individual’s wage rate, denoted by is assumed to be linear in the productivity parameter, as an individual of type, working or residing within the federal government gets utility from private consumption, with a specific public good, and disutility from labour supply. The Cobb-Douglas preferences is assumed for easy presentation:

 (3.1)

We denote the State areas with****, i.e., the utility of a type--individual in LGA  of the state is:

 (3.2)

And individual of type, in LGA  in the federal government employment receives after-tax wage income, a federal resource transfer, , used for private consumption:

 (3.3)

Where the federal income tax is rate and consequently stated as:

 (3.4)

We further assume that the LGA wage rate is linear in the LGA development expenditure, , and that the base wage,  is homogenous nationwide, i.e.,

 (3.5)

 (3.6)

**Equilibrium of the Economy**

Maximizing (3.1) subject to (3.3) gives the labour supply function and the corresponding indirect utility:

 (3.7)

 (3.8a)

Where:



**Model Specification**

Stemming from the empirical work of Halkos and Aslanidis (2023), the first model which is based on fiscal decentralization and the human development index in West African countries will be adopted.

The model is specified below.

HDI = (EXDS, REVS, RGDPGR, IQI). (3.1)

In an econometric form, the model is specified in linear form below

: (3.2)

Where: HDI = Human Development Index, EXDS = Expenditure Decentralization Share, REVS = Revenue Decentralization Share, RGDPGR = Annual Growth Rate of Real GDP, IQI = Institutional Quality Index, β0 is the intercepts, β1- β4 are the coefficients of the independent variables, µ is the error term while subscript denotes the cross sectional and time series dimension of panel data.

1. **Data Analysis, Results and Discussion of Findings**

This section presented the data analysis, regression analysis and results, interpretation of the results using descriptive statistics comprising of trend analysis, trend analysis and the Panel Cross-Sectional Dependence Test of the Variables. Furthermore, the panel regression analysis and discussions, conclusion and recommendations were all presented.

**Trends of Human Development Index and Fiscal Decentralization in Africa**

The trends in Figure 1 indicate that the level of expenditure decentralization (EXDS) surpassed revenue decentralization (REVDS) and far above the trajectory of HDI. For country-specific case, EXDS in South Africa surged to 54.39% as the highest among the sampled countries of Cabo Verde, Kenya, Mauritius, Namibia, Nigeria, Rwanda, Senegal, South Africa, Tunisia, and Uganda. This is followed by Nigeria (37.72%), Namibia (36.16%), Rwanda (24.29%), Uganda (24.05%), and Mauritius (5.76%) as the least. For revenue decentralization, the results indicate that Nigeria (37.43%), Rwanda (34.05%), South Africa (24.28%) follow in chronological order based of the magnitude of REVDS in the sampled countries with Tunisia (3.81%) as the least. For human development index (HDI), it is shown in the trends that Mauritius (0.80%, Tunisia (0.73), South Africa (0.72), Cabo Verde (0.66), Namibia (0.61) chronologically recorded above average rates in human capital development, while the least is Senegal (0.51). It is intriguing to note that despite high level of fiscal decentralization in Nigeria, the level of human development that could trigger more reduction in Poverty is low compare to some other countries like Tunisia with low fiscal decentralization, yet recorded improved human capital development.

**Average Trend of Human Development Index**

*Figure 1: Trends of Human Development Index and Fiscal Decentralization in selected African Countries, 2021-2023*

**The Panel Cross-Sectional Dependence Test of the Variables**

In furtherance of the PURTs for the variables where it is found that the variables exhibit mix order of integration, it is imperative to test for the cross-sectional dependence of the series across the sampled countries in Africa.

**Table 1 Cross-Sectional Dependence Test for Variables**

|  |
| --- |
| **H0: There is no cross-sectional dependence** |
| **Variables** | **Breusch-Pagan LM** | **Pesaran scaled LM** | **Bias-corrected scaled LM** | **Pesaran CD** | **Remark** |
| HDI | 624.439\*\*\*(0.000) | 61.078\*\*\*(0.000) | 60.784\*\*\*(0.000) | 24.881\*\*\*(0.000) | H0 rejected |
| EXDS | 175.864\*\*\*(0.000) | 13.794(0.000) | 13.500\*\*\*(0.000) | -0.972(0.331) | H0 rejected by the first three tests, but accepted by Pesaran CD |
| REVDS | 82.436\*\*\*(0.000) | 3.946\*\*\*(0.000) | 3.652\*\*\*(0.000) | -1.969\*\*(0.049) | H0 rejected |
| RGDPGR | 257.730\*\*\*(0.000) | 22.424\*\*\*(0.000) | 22.129\*\*\*(0.000) | 13.782\*\*\*(0.000) | H0 rejected |
| IQI | 260.979\*\*\*(0.000) | 22.766\*\*\*(0.000) | 22.472\*\*\*(0.000) | -1.607(0.108) | H0 rejected by the first three tests, but accepted by Pesaran CD |

 HDI = Human Development Index, EXDS = Expenditure Decentralization Share, REVS = Revenue Decentralization Share, RGDPGR = Annual Growth Rate of Real GDP, IQI = Institutional Quality Index. Note: \*\* and \*\*\* denote that the variables are significant at 5% and 1% level of statistical significance Source: Author’s computation through Eviews10 package

In this case, four tests were performed: The Breusch-Pagan Lagrange Multiplier (LM), the Pesaran Scaled Lagrange Multiplier (LM), the Bias-corrected scaled Lagrange Multiplier (LM), and the Pesaran Cross-sectional Dependence (CD). The result in Table 1 shows that the null hypothesis of no cross‐sectional dependence is rejected for all the variable, except EXDS and IQI where the Pesaran CD test upholds the null hypothesis. Based on the evidence from the other tests, there is a presence of cross-sectional dependence among the variables for the sampled countries. This shows that there are certain levels of dependences among the sampled countries. This further affirms that the selected countries have similar socio-economic and political structures.

**Table 2: Panel Regression: Effect of Fiscal Decentralization on Human Development in Selected African countries**

|  |
| --- |
|  |
| Variables | **Pooled OLS Model** | **Fixed Effect Model** | **Random Effect Model** | **Panel Feasible Generalized Least Squares Model** |
| LOGEXDS | 0.0361\* (0.086) | -0.0408\*\*\* (0.011) | -0.0395\*\*\* (0.012) | 0.0361\* (0.080) |
| LOGREVDS | -0.0972\*\*\* (0.000) | -0.0085 (0.540) | -0.0117 (0.393) | -0.0972\*\*\* (0.000) |
| RGDPGR | -0.0049\*\*\* (0.000) | -0.0019\*\*\* (0.000) | -0.0020\*\*\* (0.000) | -0.0049\*\*\* (0.000) |
| IQI | 0.0319\*\*\* (0.000) | 0.0111\*\* (0.007) | 0.0141\*\*\* (0.000) | 0.0319\*\*\* (0.000) |
| Constant | 0.6871\*\*\* (0.000) | 0.675\*\*\* (0.000) | 0.6773\*\*\* (0.000) | 0.6871\*\*\* (0.000) |
| Observation | 180 | 180 | 180 | 180 |
| Adjusted R-squared | 0.6033 | 0.1658 | 0.5713 |  |
| F-statistic | 69.04\*\*\* (0.000) | 8.25\*\*\* (0.000) |  |
| Wald Chi2 |  |  | 41.05\*\*\* (0.000) | 284.07\*\*\* (0.000) |
| Wald Chi2 test for Heteroscedasticity in Fixed effect | 908.15\*\*\* (0.000) |  |
| Wald Chi2 test for Serial correlation in Fixed effect | 75.199\*\*\* (0.000) |  |
| Hausman test | 2.74 (0.6030) |  |

*Source: Author’s computation (2025). HDI = Human Development Index, EXDS = Expenditure Decentralization Share, REVS = Revenue Decentralization Share, RGDPGR = Annual Growth Rate of Real GDP, IQI = Institutional Quality Index. Note: \*\* and \*\*\* denote that the coefficients of the estimated variables are significant at 5 and 1 percent level of statistical significance.*

Fiscal Decentralization Effects on Human Development

**Estimated equation:** 

**Regression output from the Random Effect:**



**Regression output from the PFGLS:**



The variables in this model remain as previously defined. The a priori expectation in this model is that fiscal decentralization (both revenue and expenditure) is expected to have positive effects on HDI, which would imply reduction in poverty. Real output growth (RGDPGR) and high quality of institutions would also trigger a rising trend in HDI, hence human development. The panel regression result for model is presented in Table 2. Four different estimations have been done for the model: the Pooled Ordinary Least Squares or Panel Least Squares (POLS), the Fixed effect (FE), the Random effect (RE) model, and the Panel Feasible Generalized Least Squares (PFGLS). To make a choice of the best model, the Hausman test was applied and RE was preferred. Thus, the evidence from the Hausman test value of 2.74 with insignificant probability value of 0.603, the null hypothesis that RE is preferred is accepted. This shows that the Fixed Effect is rejected and Random Effect (RE) is considered as the best for the model in this study.

Interpretation from the Random Effect Model: Based on the results from the random effect estimation in column 4 of Table 2, it can be seen that the logarithmic value of expenditure decentralization (LOGEXDS) has a negative significant effect on human development index (HDI). Here, a 1% increase in expenditure decentralization shows a negative effect of about 0.039% on HDI. This result is however contrary to the a priori expectation that EXDS would increase HDI and hence, reduce poverty. This could be due to fiscal indiscipline on the part of fiscal authorities in the sampled countries. The result for the logarithmic value of revenue decentralization (LOGREVDS) shows insignificant negative effect on HDI at an approximate value of -0.012%. The possibility of insignificant effect of revenue decentralization on HDI could be lack of fiscal prudence on the part of the fiscal authorities in the selected African countries. In other words, while the execution of expenditure decentralization shows negative signs of impacts on HDI, revenue decentralization similarly shows a statistical negative sign of effect, though the magnitude of the effect is insignificant.

On the part of control variables, the result of the rate of economic growth (RGDPGR) is similar to the result for expenditure decentralization as it significantly impacts HDI negatively with an appropriate value of 0.002%. On the part of institutional quality however, the result from the RE model shows that a 1% increase or improvement in institutional quality index (IQI) in the selected countries would trigger HDI to increase by 0.014%. That is, IQI shows a positive significant effect on HDI. By implication, quality governance has the possibility of spurring HDI in order to reduce poverty. When human capacity is developed, poverty would reduce by 0.014%.

**Residual Diagnostic Tests for the Random Effect of the Model**

To satisfy the validity of the results from the estimated RE model, the results from the residual diagnostic tests for heteroscedasticity and serial correlation are used. Heteroscedasticity is a fundamental econometric problem and it occurs when the variance of the error terms (or residuals) in a regression model is not constant across all levels of the independent variable(s). It is expected that the error values are constant across the data points of the independent variables. Given that the value of the Breusch-Pagan Wald-Chi-square based test (908.15, PV < 0.05) is significant, it is evidence that the chosen model (RE) that has been interpreted suffers from heteroscedasticity problems. Another residual diagnostic test for serial correlation corroborates with that of heteroscedasticity. That is, serial correlation, which is also known as autocorrelation, occurs when the residuals (errors) in a regression model are correlated across observations. That is, the value of the error term for one observation is influenced by the error terms of previous observations. This violates the assumption of independence among error terms. Based on the value of the Breusch-Godfrey Wald-Chi-square based test (75.199, PV < 0.05), it implies that there is a problem of serial autocorrelations in the estimated model.

Consequent on the realization that the best model (Random Effect) does not pass the criteria of diagnostic check for robustness, further results are generated through the panel version of the Feasible Generalized Least Squares (PFGLS) to overcome the residual problem of heteroscedasticity and serial correlation following the work of Kariya and Kurata (2004). The FGLS is particularly useful in regression analysis when issues like heteroscedasticity (non-constant variance of errors) or autocorrelation (correlation of errors across observations) are present. When these problems occur, the assumptions of the classical least squares are violated. To circumvent these problems, the FGLS model (Column 5) in Table 2, which has the same or similar results like the ones obtained from the pooled ordinary least squares (column 2) are interpreted further.

**Interpretation from the Panel Feasible Generalized Least Squares (PFGLS) for Model**

The results from the FGLS show that the logarithmic value of expenditure decentralization (LOGEXDS) has a positive significant effect on human development index (HDI). That is, a 1% rise in expenditure decentralization shows significantly increased HDI by 0.036%. This evidence correlates perfectly with the a priori expectation that an increased level of EXDS would increase HDI in order to reduce poverty. With this result, it is possible that the adjudication of expenditure decentralization by any fiscally disciplined governments of the selected African countries would positively trigger human development that could warrant reduction in poverty.

The result for the logarithmic value of revenue decentralization (LOGREVDS) shows significant negative effect on HDI at an approximate value of 0.097%. This indicates that the extent of revenue decentralization in the selected countries has not been able to improve the level of HDI, thus, poverty has not been reduced through this strand of fiscal decentralization. In sum, the overall indication from the FGLS is that while expenditure decentralization has been able to decrease poverty significantly through an increase in HDI by 0.036%, revenue decentralization significantly increased poverty as it decreased HDI by 0.097%. The performance of these aspects of fiscal decentralization is contrary to each other. By implication, it is not how revenue is decentralized that matters but how the expenditure is made to be inclusive.

Similar to the result for RGDPGR in the RE model, the effect of the result for economic growth rate as a control variable in the FGLS model is significantly negative. That is, a 1% increase in RGDPGR caused HDI to significantly decrease by 0.004%. This implies that the level of economic growth rate in the sampled countries has not been able to translate to positive impacts on HDI, hence, poverty is increased. Institutional quality, from the FGLS model indicates a significant positive effect of 0.0319% on HDI. That is, a 1% measure of improvement in overall governance would approximately improve HDI and reduce poverty by 0.032%.

The decision to accept or reject the null hypothesis in the model is based on some key coefficient diagnostics of the overall performance of the model. From the RE model, the value of the adjusted coefficient of the determination of the model (Adj. R2) is 0.571 (57.1%) while the one from the FGLS or pooled OLS (column 2) is 0.603 (60.3%). These values measure the overall variations in the dependent variable (HDI) as explained by the independent variables. In addition to this, the value of the joint goodness of fit (F-statistic) of the model from the Pooled OLS is 69.04 (PV<0.05). Based on these values, the null hypothesis that fiscal decentralization has no significant effect on human development index in Selected African Countries is rejected in favour of the alternative hypothesis that fiscal decentralization is a significant determinant of HDI. Thus, it is a viable policy tool for human development.

**Discussion of Findings**

The overall findings from the model, following the decision taken on the associated hypothesis, are that fiscal decentralization has a significant effect on the human development index in the selected African countries. In this case, it is understandable that improvement in HDI has the potential to reduce poverty when human capacity is increased. The finding is in tandem with the theory or theoretical expectation that fiscal decentralization as the theoretical crux of fiscal federalism is capable of enhancing human capacity, which undoubtedly reduces poverty. From an empirical stance, this finding is in line with the findings of Miranda‐Lescano et al. (2023). This author empirically analyzed the impact of central and subnational government spending on human development in a sample of 57 developed and developing countries over the period of 2000 to 2018 using a panel data framework and found that education expenditure enhances the growth of human capital development. Furthermore, the finding of this study on the significant impact of fiscal expenditure decentralization on the human development index corresponds to the findings of Hung and Thanh (2022). These authors examined the relationship between fiscal decentralization, economic growth, and human development for a panel of 18 countries over the period of 2011–2017 using three-stage least squares and generalized method of moments estimator. These authors found the existence of a significant relationship between fiscal decentralization, economic growth, and human development.

The finding of this study on the significant effects of fiscal decentralization on HDI is, however, contrary to the findings by Wasala (2023). This author researched the nexus between fiscal decentralization and human capital development (HCD) in Uva Province of Sri Lanka while using the Auto Regressive Distributed Lag (ARDL) to examine both the short- and long-run impacts of fiscal decentralization on the delivery of local health and education services in Sri Lanka from 1988 to 2018 and found that fiscal decentralization has had either insignificant or unexpected negative short- or long-term effects on HCD.

Evidence from the FGLS reveals that revenue decentralization has a negative significant effect on HDI. This finding is not theoretically plausible as expected in the a priori. This is unlike the expenditure decentralization that showed a significant effect on HDI. This finding is contrary to the finding of Sari et al. (2017). While employing panel data from 33 district municipalities in the North District of Sumatra from 2005 to 2009, these authors found that the fiscal independence level indirectly affects HDI. Similarly, the finding here in this study on the significant negative effect of revenue decentralization on HDI is contrary to the findings by Tümay (2021). While investigating the impact of fiscal decentralization on HDI, this author applied panel data between the period 2000 and 2010 for 49 countries using robust OLS and fixed-effect methods and discovered that the revenue measure of fiscal decentralization has a significant and positive effect on the human development index. For institutional quality as a control variable, the finding of this study shows that the institutional quality index (IQI) is a statistically significant determinant of HDI. This finding is similar to the one obtained by Ouedraogo et al. (2022). These authors examined the relationship between institutional quality and human capital development in Africa using a panel of 49 African countries over the period of 1996 and 2018 using a dynamic model of two-step system GMM and found that improving institutional quality promotes human capital development through an increase in access to primary, secondary, and tertiary education. This is believed to translate to human development.

**5. Conclusion**

This study investigated the level of the effects of fiscal decentralization on human development in selected countries in Africa from 2006 to 2023. The results from the Hausman and Panel Feasible Generalized Least Square (PFGLS) are, however, preferred to the random effect and fixed effect, as its estimates are more robust. The choice of these estimates is hinged upon the nature of the data (T and N < 25); thus, the outcome of the Hausman test criterion is used. This study focused on the potentials of human development from the perspective of human development through the mechanism or medium of fiscal decentralization. While using two indicators of fiscal decentralization as expenditure and revenue decentralization, the human development index was the baseline dependent variable of the study. The estimated results for this study point to the existing relationship between fiscal decentralization and human development poverty while controlling for the rate of economic growth and institutional qualities. The study considered human development HDI as an indicator of multidimensional poverty; mixed results were obtained. While expenditure decentralization reduces poverty by boosting HDI, revenue decentralization may exacerbate poverty. The study found additionally that economic growth alone is insufficient to drive human development to reduce poverty in the absence of equitable policies; however, robust institutional frameworks play a vital role in achieving human development through human capital development.

The result revealed that expenditure decentralization showed a statistically significant negative impact on HDI, indicating that a 1% increase in expenditure decentralization leads to an approximately 0.039% decrease in HDI. This finding is a variant with the a priori expectation that expenditure decentralization would enhance HDI and consequently reduce poverty. A plausible explanation for this counterintuitive finding lies in fiscal indiscipline among fiscal authorities in the studied nations, which might undermine the intended benefits of decentralization. On the other hand, the revenue decentralization showed a statistically insignificant negative effect on HDI and rather contributed to declining HDI that implied increased poverty incidence. Institutional quality outstandingly showed a statistically significant positive influence on HDI, revealing that an improvement in institutional quality can drive human development and reduce poverty. Additional evidence from the robust estimated model using FGLS analysis provided an important insight into the relationship between fiscal decentralization and human development, with a focus on human development.

Furthermore, the results indicated that expenditure decentralization exerts a positive and significant effect on HDI. This aligned closely with theoretical expectations, which suggest that higher levels of expenditure decentralization, if well managed by fiscally disciplined governments, can foster human development and contribute to poverty alleviation. Revenue decentralization, on the contrary, showed a significant negative impact on HDI such that poverty is rather increased. Thus, on HDI as an indicator of poverty in this study, the results collectively demonstrated opposing effects of the two components of fiscal decentralization on HDI. While expenditure decentralization showed evidence of significant poverty-reducing capacity through enhanced human development, revenue decentralization appears to increase poverty levels by adversely affecting HDI. These findings underscore the importance of prioritizing inclusive and effective expenditure over merely decentralizing revenue collection. The findings also showed that good governance or strong institutions fostered human capacity development and alleviated poverty.

**Recommendations**

The findings of this study espoused that expenditure decentralization is more formidable for human development than revenue decentralization. As revenue decentralization appears to aggravate poverty gaps, there is a need for restructuring or redesigning fiscal decentralization policies in such ways that the decentralized revenue’s structure should ensure equitable distribution and effective human development outcomes. The institutional capacity of the governments, especially the fiscal authorities, needs to be strengthened to ensure that local governments can effectively manage decentralized systems. This recommendation is highly essential because the role of institutional quality in enhancing human development cannot be overemphasized. In fact, weak institutions, which are common in Africa, have been responsible for a lack of resource misallocations that have hitherto hindered effective fiscal discipline in the continent. In fact, there is a need for the implementation of governance and transparency mechanisms that can reduce corruption and enhance accountability across all the tiers of the government.

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