# AN ASSESSMENT OF FINANCING SOURCES AND THEIR IMPACT ON SOCIAL DEVELOPMENT IN AFRICA

BY

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# ABSTRACT

This study assessed different types of financing sources and their impact on social development in Africa through a multi-model analysis. The study explored the nuanced relationships between foreign aid and government expenditure on social development while moderating for government effectiveness, using data for 54 African countries from 2013 to 2022. Furthermore, the study examined the impact of country specific aid on social development of African countries that are members of the Organization of Islamic Cooperation (OIC). African countries face diverse challenges in achieving social development, and understanding the dynamics of different types of financing sources and their impact on social development is crucial for formulating effective policies tailored to the unique context of the continent. The study utilized both 2-Step System Generalized Method of Moments (SGMM) and Difference Generalized Method of Moments (DGMM). Model 1 assessed the impact of foreign aid and government expenditure on HDI. The findings revealed that foreign aid and government expenditure negatively impact HDI. Model 2 investigated the moderating effect of government effectiveness on the relationship between foreign aid and HDI. The results showed a negative impact of foreign aid on HDI moderated by government effectiveness. Model 3 explored the moderating effect of government effectiveness on the relationship between government expenditure and HDI. The finding highlighted a negative association between government expenditure and HDI moderated by government effectiveness. Model 4 tested the non-linear relationship between foreign aid and HDI. The result revealed the existence of a non-linear relationship between foreign aid and HDI, suggesting that the impact of aid on HDI depended on a certain threshold. Model 5 examined the impact of country specific aid on HDI across African OIC member countries. The result showed a positive relationship between country specific aid and HDI. Furthermore, the study revealed that while aggregate aid does not positively impact HDI, country specific aid impact HDI positively. The study, therefore, recommended that policymakers should prioritize targeted foreign aid, efficient government expenditure and governance reforms to enhance the effectiveness of foreign aid and government expenditure for sustained social development in Africa.

# ملخص البحث

تقييمت هذه الدراسة أنواع مختلفة من مصادر التمويل وتأثيرها على التنمية الاجتماعية في إفريقيا من خلال تحليل متعدد النماذج. استكشفت الدراسة العلاقات المتشابكة بين المساعدات الخارجية والنفقات الحكومية على التنمية الاجتماعية مع تعديل لكفاءة الحكومة، باستخدام بيانات من 54 دولة إفريقية خلال الفترة من 2013 إلى 2022. علاوة على ذلك، تم فحص تأثير المساعدات المخصصة للدول الأعضاء في منظمة التعاون الإسلامي (OIC)على التنمية الاجتماعية. تواجه الدول الإفريقية تحديات متنوعة لتحقيق التنمية الاجتماعية، وفهم ديناميات مصادر التمويل المختلفة وتأثيرها على التنمية الاجتماعية أمر حاسم لتشكيل سياسات فعالة تتناسب مع السياق الفريد للقارة. استخدمت الدراسة طريقتي التحليل العام بالنظام المعمم (SGMM) والفرق العام بالنظام المعمم .(DGMM). أظهرت النتائج أن المساعدات الخارجية والنفقات الحكومية لهما تأثير سلبي على مؤشر التنمية البشرية (HDI)، مع دور فعّال لكفاءة الحكومة في تعديل هذا التأثير. كما أشارت النتائج إلى وجود علاقة غير خطية بين المساعدات الخارجية ومؤشر التنمية البشرية، مع وجود تأثير إيجابي للمساعدات المخصصة للدول الأعضاء في منظمة التعاون الإسلامي. بناءً على النتائج، أوصت الدراسة بضرورة تركيز صانعي السياسات على المساعدات المستهدفة، وإصلاحات الحوكمة لتحسين فعالية التمويل الحكومي والمساعدات لتحقيق التنمية المستدامة في إفريقيا.

# APPROVAL PAGE

The thesis of Adamu Wudil Ahmed has been approved by the following:

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# DECLARATION

I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted for any other degrees at IIUM or other institutions.

Adamu Wudil Ahmed

Signature…… Date……

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Affirmed by Adamu Wudil Ahmed

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Signature Date

*This thesis is dedicated to my beloved parents for laying the foundation of what I turned out to be in life.*

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| | |
|---|---|
| HDI | Human Development Index |
| AID | Foreign Aid |
| KSA | Kingdom of Saudi Arabia |
| GX | Government Expenditure |
| GDP | Economic Growth |
| GE | Government Effectiveness |
| CC | Control of Corruption |
| FDI | Foreign Direct Investment |
| PS | Population size |
| GMM | Generalized Method of Moments |
| SGMM | System Generalized Method of Moments |
| DGMM | Difference Generalized Method of Moments |
| OLS | Ordinary Least Square |
| REM | Random Effect Model |
| FEM | Fixed Effect Model |
| NGOs | Non-Governmental Organizations |
| AfDB | African Development Bank |
| USAID | United States Agency for International Development |
| OECD | Organization for Economic Co-operation and Development |
| ODA | Official Development Assistance |
| IsDB | Islamic Development Bank |
| UNDP | United Nation Development Programme |
| WHO | World Health Organization |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| LDCs | Least developed countries |
| H0 | Null Hypothesis |
| LOCF | Last Observation Carried Forward |

| | |
|---|---|
| SDGs | Sustainable Development Goals |
| IISD | International Institute for Sustainable Development |
| ESG | Environmental, Social, And Governance |
| UN | United Nation |
| GNI | Gross National Income |
| HDRO | Human Development Report Office |
| HDR | Human Development Report |
| PPP | Purchasing Power Parity |
| SSA | Sub-Saharan Africa |
| 2SLS-IV | Two-Stage Least Squares Instrumental Variable |
| ARDL | Autoregressive Distributed Lag |
| ADF | Augmented Dickey-Fuller |
| ASEAN | Association of Southeast Asian Nations |
| SME | Small and Medium Enterprises |
| UAE | United Arab Emirate |
| LLF | Lives and Livelihoods Fund |
| WDI | World Development Indicators |
| WGI | World Governance Indicators |
| DAC | Development Assistance Committee |
| TSLS | Two-stage least squares |
| R(2) | Arellano and Bond Autocorrelation Test |
| SPI | Social Progress Index |

# CHAPTER ONE

# INTRODUCTION

## 1.1 BACKGROUND

Social development is a critical challenge for many African countries, as it encompasses various interconnected issues, such as reducing poverty, countries cannot adequately address poverty without also improving people's well-being in a comprehensive way, including through more equitable access to health, education, and basic infrastructure and services, including digital (World Bank, 2024). Being socioeconomically disadvantaged impacts access to quality education and health, limits economic activity and diminishes sustainability. These challenges persist and limit the potential of people and nations to advance and transform to a better society with enhanced standard of living. Sustainable advancement requires empowered well-educated people who contribute to economic growth and have access to quality healthcare who can contribute to greater development and sustainability (Cerf, 2023). In most African countries, the low levels of income lower the effectiveness of the improvements of income and inequality in poverty reduction (Fosu, 2014). According to Bartniczak and Raszkowski (2018), sustainable development, including social inclusion, is particularly important to African countries. With the global goals of sustainable development, it has become necessary for developing countries, in particular African nations, to channel their energies into the mobilization of domestically increased revenues (Folarin & Raifu, 2022). Poverty, high-income inequality, and uneven financial stability are some challenges that have faced African countries for long (Khan et al., 2021).

Some of the key Social Development Goals (SDG) targets address societal issues, that include education, economic and health lags, particularly in low- and middle-income and African countries (Cerf, 2023). The continent has high levels of poverty, inequality, and lack of access to basic services like health and education (UNDP, 2020). All these challenges escalated with the COVID-19 pandemic and necessitated the need for structural responses to issues related to financing social development (World Bank, 2020). Moreover, Africa has still maintained the highest

rate of child mortality in the world, with one out of thirteen African children estimated not to live up to their fifth birthday (WHO, 2021). Furthermore, the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2020) noted that over ninety million African children of primary age were out of school in 2019, while over 40 million African adolescents of secondary school age could not access education, a situation reflecting major barriers to education. This challenges not only perpetuate cycles of poverty and inequality but also impede economic growth, as Cerra, et al. (2021) noted, most plausible mechanisms of poverty and inequality reduce growth, at least in the long run.

In trying to address these challenges over the past decades, African countries have utilized different types of financing sources for social development. The most prevalent include foreign aid and government expenditure. Foreign aid has been the major source of financing for social development in African countries and contributed to improving social mobility in African countries (Compaoré, et al. 2022). Foreign aid refers to the flow of financial assistance from foreign governments, international organizations, and non-governmental organizations. Foreign aid had been very instrumental in financing social development in Africa, with over a trillion US dollars channeled into the region in the last five decades (Moyo, 2010). These funds have been instrumental in supporting a variety of developmental programmes, including infrastructure development, healthcare, education and poverty reduction initiatives. In fiscal year 2021 alone, the flow of foreign aid to African countries amount to over $60 billion in lifesaving, multi-sector humanitarian assistance to the people of Africa (World Bank, 2021).

Figure 1.1 shows the foreign aid flow into African countries over the study period with the vertical axis showing the aid flow and the horizontal axis showing countries. The top recipient countries are Ethiopia ($3,761,830,078.13), Congo Republic ($3,341,090,087.89), and Nigeria ($3,177,620,117.19), while some countries received smaller amount such as Seychelles ($50,000), Equatorial Guinea ($12,100,000.38), Mauritius ($302,470,001.22). However, countries like Ghana ($1,159,239,990.23), Senegal ($1,305,609,985.35), and Uganda ($2,380,310,058.59) received a moderate amount. This underscores the important role that foreign aid plays in addressing some of the most significant social development challenges facing the

region. However, this different amount of foreign aid received by different countries under consideration may not show a direct relationship with social development, as such exploring non-linearity in the relationship will give more contextual understanding of the relationship.

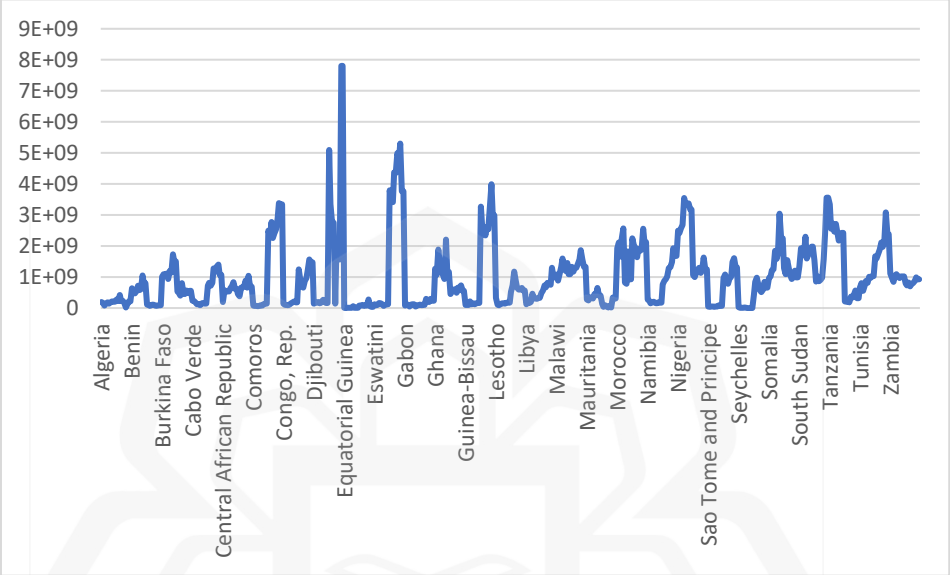


Figure 1.1. Foreign Aid Flow to African Countries
Source: Author's Illustrations using data from World Development Indicators (2021)

Although foreign aid has been helpful in making a few countries achieve tremendous progress, it turned out to create dependency and lowered the recipient country's incentive to develop its economy and despite the higher flow of foreign into African countries, it has not helped Africa (Sraieb, 2016 and Moyo, 2010). This is particularly so where governments are ineffective and corrupt, leading to a lack of sustainability in most development programmes (Dahmardeh & Tabar, 2013). In addition, foreign aid has been seen to be prone to political and economic dictates that may often contradict what is perceived to be urgent by the recipient country, thus creating inefficiency in the implementation of programmes.

The literature on the nexus between foreign aid and social development revealed a complex association with inconsistent or conflicting results observed in prior studies (Mahembe & Odhiambo, 2021; Akobeng, 2020; Farah et al., 2018; Lohani, 2004).

Further investigation should therefore be made to understand the actual impact of foreign aid on social development in Africa, including non-linearity and the uniqueness of country specific or disaggregated aid on social development. This exploration into the sub-components of foreign aid is very important in understanding fully the relationship between foreign aid and social development in Africa, as studies like Asiama and Quartey (2009) showed that aggregate bilateral aid does not show any significant effect on human development indicators and other welfare variables. However, disaggregated aid in the form of sector specific and programme aid do show a significant effect on the HDI. Asongu (2012) argued that the effectiveness of aid in economic prosperity and per capita economic growth is non-linear. Furthermore, Tyson and Ford (2022) argued that the U.S. foreign aid for health sectors significantly impacted HDI in less developed countries (LDCs). This suggests that while foreign aid can contribute to social development, its impact is contingent on various factors.

The effectiveness of foreign aid on social development outcomes is the characteristics of the provided aid itself, such as aid from education sector versus the rest of the economy (Compaoré et al. 2022). Basically, all foreign aids are not equal in terms of their impact, different kinds provide different impact on development indicators (Minasyan et al. 2016; Findley et al. 2010; & Mavrotas 2005). In the context of this study, Kingdom of Saudi Arabia's (KSA) aid is considered as the country specific aid, disaggregated aid or bilateral aid to countries in Africa that are OIC members. This is because KSA is one of the major donors of foreign aid in the world, especially to these countries in Africa that are members of OIC. The sectors targeted by the KSA's aid, the form in which it is delivered (e.g., financial, technical or humanitarian Assistance), and the strategic priorities may all have a bearing on the extent to which the aid impact social development in African OIC member countries.

Government expenditure is another key financing source for social development in African countries. Governments allocate funds from their national expenditure to address social challenges. According to the International Monetary Fund (2018), sound fiscal policies and efficient management of budgets are essential in promoting social development. This requires the governments to give priority to social sectors like education and healthcare, allot enough resources to those sectors, and ensure efficient use of the funds. For instance, government expenditure on social services in Ghana saw

increase from 4.2% of GDP in 2000 to 8.7% in 2012. This contributed to remarkable progress in poverty reduction and healthcare improvement (Osei-Bonsu & Agyemang, 2019).

Figure 1.2 shows government expenditure as percentage of GDP across African countries over the study period with the vertical axis showing the government expenditure as percentage of GDP and the horizontal axis showing countries. The government expenditure depicts a moderate trend over the years. Some countries maintain their expenditure relatively steady, while others spend more year on year. Countries like Lesotho, Ghana, and Namibia record higher values of government expenditure above 120 compared to the average, while countries with low government expenditure such as Gabon, Libya, and Angola, below 100. However, countries like South Africa, Kenya, and Morocco, show a steady trend in their respective government expenditure values over the years. The trends peak in expenditure around 2015 to 2016, and slightly decline thereafter. Moreover, with the emergence of COVID-19 in 2020, some countries increased their spending due to the stimulus measures. This appears to have a different impact on expenditure within the countries.

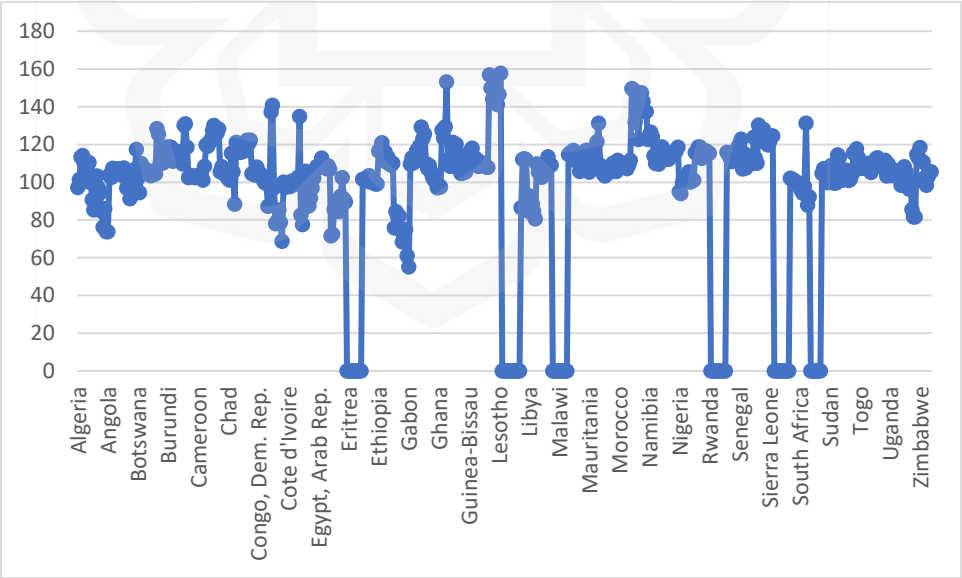


Figure 1.2. Government Expenditure in African Countries
Source: Author's Illustrations using data from World Development Indicators (2021).

However, government inefficiencies, misallocation of funds, and corruption are some of the challenges government expenditure encounters, often hindering effective social development spending (Geda, 2015). Misallocation of funds results in inefficiency in programmes being implemented, with some resources being directed towards projects that populations do not need. Inadequate fiscal space and poor revenue collection at domestic levels compromise the effectiveness of government expenditure towards addressing social development challenges.

## 1.2 STATEMENT OF THE PROBLEM

Financing remains a challenge to social development in Africa because the continent still faces unabated obstacles and broad disparities in social development. The continent has high levels of poverty, inequality, and lack of access to basic services like health and education (UNDP, 2020). Moreover, Africa has still maintained the highest rate of child mortality, out of school children and poverty rate compared to other regions in the world.

African countries have relied on numerous financing sources for social development but the predominant are foreign aid and government expenditure. However, how far these sources of finance have been effective towards the advancement of social development in Africa is a matter of continuous debate. Although foreign aid has been flowing into African countries over the years through various interventions such as financial, technical and humanitarian aids from various institutions and countries, the amount received by this countries differ significantly and it effectiveness towards addressing social development challenges has not yield the expected result as majority of the people in Africa are still grapple with poverty, inadequate education and healthcare accessibility, inequality, and underdeveloped social infrastructure. Foreign aid in Africa that is intended to enhance social development, has turned out to create dependency, undermine government effectiveness and lowered the recipient country's incentive to develop its economy.

Government expenditure on the other hand, encounters challenges such as misallocation of funds, corruption, inadequate fiscal space and poor revenue collection at domestic levels that compromise the effectiveness of government expenditure

towards addressing social development challenges in Africa despite huge spending year on year. This results in inefficiency in programmes being implemented, with some resources being directed towards projects that populations do not need. Government expenditure in Africa is on average less efficient in the provision of health and education services than the countries in Asia and the Western Hemisphere, with those in Asia appearing as most efficient (Gupta, 2004).

The two most prominent sources of financing for social development challenges in African countries are foreign aid and government expenditure. With substantial financial support from foreign aid and committed public spending by African governments, their role has been ever-increasing in enhancing poverty reduction, education, and healthcare. Against this backdrop, the present study provides a better understanding of the impact of foreign aid and government expenditure in addressing social development challenges across African countries.

## 1.3 RESEARCH QUESTIONS

This study aims to address the following research questions:

1. What is the impact of foreign aid and government expenditure on HDI across African countries?
2. Does government effectiveness affect the impact of foreign aid utilization across African countries?
3. To what extent does government effectiveness affect the impact of government expenditure across African countries?
4. Is there empirical evidence supporting a non-linear relationship between foreign aid and HDI across African countries?
5. What is the impact of country specific aid on HDI in African OIC member countries?

## 1.4 RESEARCH OBJECTIVES

The corresponding research objectives are:

1. To assess the impact of foreign aid and government expenditure on HDI across African countries.
2. To investigate whether government effectiveness affect the impact of foreign aid utilization across African countries.
3. To explore whether government effectiveness affect the impact of government expenditure across African countries.
4. To empirically test the presence of a non-linear relationship between foreign aid and HDI across African countries.
5. To examine the impact of country specific aid on HDI in African OIC member countries.

## 1.5 RESEARCH HYPOTHESES

1. $H_0$: There is no significant impact of foreign aid and government expenditure on HDI across African countries.
2. $H_0$: Government effectiveness does not have a significant effect on the impact of foreign aid utilization across African countries.
3. $H_0$: Government effectiveness does not have a significant effect on the impact of government expenditure across African countries.
4. $H_0$: There is no existence of a non-linear relationship between foreign aid and HDI across African countries.
5. $H_0$: Country specific aid does not have a significant impact on HDI in African OIC member countries.

## 1.6 SIGNIFICANCE OF THE STUDY

This study is important in understanding the dynamics of aggregate and disaggregate aid in form of country specific aid on social development across African countries. It examined different types of financing sources and their impact on social development,

notably foreign aid, government expenditure, and country specific aid along with key determinants such as economic growth, government effectiveness, corruption, foreign direct investment, and population size on human development index (HDI). By doing so, it provides a comprehensive insight for policymakers on the effectiveness of different types of financing sources in achieving sustained social development in Africa. Policymakers can use the findings to come up with more targeted foreign aid, efficient government expenditure and governance reforms to enhance the effectiveness of aid and government expenditure for sustained social development in Africa.

The study gives nuanced insights, particularly underlining the non-linear nature of the relationship between foreign aid and HDI. While aggregate aid may not consistently positively impact HDI, the study reveals a positive correlation with country-specific aid, emphasizing the importance of tailoring aid strategies to specific contexts. Such a departure from the conventional view offers valuable guidance to policymakers, researchers, and international organizations engaged in fostering sustainable development in Africa. The moderating role of government effectiveness in the relationship between different sources of financing and HDI underlines the critical reforms expected to take place at all levels of governance. Based on these findings, policymakers can adopt measures that enhance the effectiveness of governance to ensure that aid and government expenditure translate into positive social development outcomes.

The research methodology, employing various models and statistical techniques, such as Pooled Ordinary Least Square, Fixed Effect, and Generalized Method of Moments, adds to the reliability of conclusions made. As such, this methodological diversity allows a robust exploration of how complex interactions between sources of financing, other determinants, and social development interplay.

Briefly, this study significantly deepens the understanding of social development in Africa by unwrapping the nuanced relationships between the various financing sources and key determinants of social development. The study bridges the gap of continuing ineffective aid practices, aid dependency, and failing to address government inefficiencies. Ultimately, the study not only contributes to the existing knowledge but also helps to shape policies that lead to more equitable and sustainable social development outcomes.

## 1.7 SCOPE OF THE STUDY

This study focuses on understanding how foreign aid and government expenditure impact social development in all the 54 countries in Africa from 2013 to 2022. In doing so, the study puts into consideration major determinants of social development, namely economic growth, government effectiveness, corruption, foreign direct investment, and population size.

The period is selected since the study utilized GMM econometrics estimation techniques which require the cross-section to be greater than the time frame i.e. N>T. The study is limited by the fact that there is no consideration of structural breaks in the series. Also, the study does not consider external factors such as global economic shocks from the outside.

The study used all the 54 countries in Africa because the countries witness a substantial financial support from foreign aid and committed public spending by their governments to enhance social development indicators such as poverty reduction, access to education, and healthcare. Countries details considered in the study are shown in Table 1.1.

Table 1.1. Countries of the Study

| Income Categories | Countries | GNI Per Capita |
|---|---|---|
| Low-income | South Sudan, Burkina Faso, Liberia, Sudan, Burundi, Madagascar, Central African Republic, Malawi, Togo, Chad, Mali, Uganda, Congo, Dem. Rep, Mozambique, Eritrea, Niger, Ethiopia, Rwanda, Gambia, The Sierra Leone, Guinea-Bissau, Somalia. | $1,135 OR LESS |
| Lower-Middle Income | Angola, São Tomé and Principe, Beni, Kenya, Senegal, Cabo Verde, Tanzania, Cameroon, Lesotho, Comoros, Mauritania, Tunisia, Congo, Rep., Côte d'Ivoire, Djibouti, Morocco, Egypt, | $1,136 TO $4,465 |

| Income Categories | Countries | GNI Per Capita |
|---|---|---|
| | Arab Rep., Eswatini, Zambia, Ghana, Zimbabwe, Guinea, Nigeria. | |
| Upper-Middle Income | Gabon, South Africa, Botswana, Mauritius, Equatorial Guinea, Namibia. | $4,466 TO $13,845 |
| High-Income | Seychelles. | $13,846 OR MORE |

Source: World Bank (2023).

## 1.8 ORGANIZATION OF THE STUDY

This Thesis is organized into five chapters. Chapter One provides a general background to the study and contains the problem statement, research questions, research objectives, research hypotheses, significance of the study, as well as scope of the study. Chapter Two reviews the literature comprehensively from conceptual definitions, theoretical perspectives and empirical studies related to the research topic. Chapter Three presents the methodology of the study, which outlines the conceptual framework, model specification, variables of the studies, source and methods of data collection, estimation technique and diagnostic tests. Chapter Four discusses the findings of the study, which are presented in a clear and concise manner. Lastly, Chapter Five summarizes the key findings with actionable policy implications, presents conclusions based on the results, provides recommendations as well as limitations and suggestions for future study.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 INTRODUCTION

This entire chapter is dedicated to a detailed review of the most relevant existent literature under three broad subsections, namely conceptual, theoretical, and empirical literature. This is followed by a summary of the research gaps to be addressed in this study. The conceptual framework subsection makes clarification for the key concepts and definitions most fundamental to the understanding of the topic at hand. The subsection reviews quite a few scholarly works providing conceptual frameworks on foreign aid, government expenditure, and social development. The objective is to have a clear view of the meanings and connotations of the major terminologies and concepts used in this study.

The subsection on theoretical literature goes further to explore the theoretical perspectives on foreign aid, government expenditure, social development, and other major determinants. This has involved a review of a myriad of theories that various scholars have employed for evaluating relationships. The theoretical backgrounds reflect the fundamental bases on which the study was founded, which further helps to understand the different perspectives and arguments in the literature.

Furthermore, the empirical literature subsection examines empirical studies and research findings that have explored the relationship between foreign aid, government expenditure, and social development with other key determinants. This is done through a critical assessment of methodologies, data sources, and analytical techniques applied in such studies and subsequently, the literature gaps are summarized before the conclusion of the chapter, offering a way forward that paves the way for the justification of how the methodology adopted for this study was arrived at, in Chapter Three.

## 2.2 CONCEPTUAL LITERATURE

Two concepts are identified in this study namely, financing sources and social development. These concepts are integral to the study's objective of assessing different types of financing sources and their impact on social development in Africa.

### 2.2.1 Concept of Financing Sources

Finance sources refer to all the various means of financing through which any government, particularly in developing countries, derives financing for social development. These sources include external debt, domestic debt, foreign aid, tax revenue, and foreign direct investment (Tawiah & Soobaroyen, 2022). Foreign aid is an important source in many countries, which provides useful complementary financing against low savings, narrow export earnings, and thin tax bases in most developing countries, especially in Sub-Saharan Africa (Odusanya et al., 2011). The dynamics between foreign aid, taxes, spending, and borrowing form the basis for understanding the interplay of financing sources in government expenditure (Diaz-Sanchez et al., 2022). Additionally, highlighting the fact that inflows from foreign financial assistance have contributed significantly to filling fiscal gaps, above all, in developing countries (Murshed, 2019). Most of the research relates the effect of foreign aid on government spending, revenue, and domestic borrowing to understand the specific roles and impacts of the aid inflows, including grants and foreign lending (Martins, 2009). More importantly, research has been conducted on the relationship between foreign aid, domestic savings, and domestic capital in the presence of ODA and FDI to understand how they might impact economic growth and imports (Sabra, 2016). Other factors that influence domestic revenue mobilization and development finance include broadening the tax base and the tax-exempt status of ODA (Caldeira et al. 2019). In this study, two financing sources are considered namely, foreign aid and government expenditure as the diverse financial mechanisms utilized by governments in financing social development, particularly, in developing countries like in Africa.

#### *2.2.1.1 Foreign Aid*

Foreign aid is seen as one of the most appropriate ways social development programmes in developing countries could be operationalized. It is certain that foreign aid, otherwise referred to as development assistance, is financial, technical, humanitarian, or other support emanating from developed countries, international organizations, and non-governmental organizations to developing countries with the aim of promoting economic, social, or political development (UNDP, 2020). According to (UNDP, 2020), aid may involve grants, concessional loans, or technical assistance, and food aid, which is at least oriented towards mitigating poverty, enhancing the cause of sustainable development, promoting access to basic services, and other related socioeconomic issues in recipient countries.

Foreign aid assumes prominence in social development, mainly because of a focus on low- and middle-income countries in which domestic resources are inadequate to support that kind of investment which would be required to fund social development programmes. It is a vital source of finance in filling this gap, thus enabling the execution of initiatives meant to promote social well-being and progress (World Bank, 2021). It helps reduce poverty, improves health, provides access to education and skill development, promotes gender equality and infrastructure, agriculture, and rural development, and contributes to fostering sustainable economic growth in the recipient country by providing financial means, technical expertise, and humanitarian aid. Through targeted interventions and partnerships, foreign aid helps in creating opportunities, improves living conditions, and empowers communities, with the goal of achieving inclusive and sustainable social development (United Nations, 2015).

Furthermore, foreign aid is defined by the World Bank (2020) as the transfer of resources, including financial, technical, and humanitarian assistance, from a donor country to a recipient country with the purpose of fostering development, reducing poverty, and advancing the economic, social, and political goals of the recipient country. Foreign aid is given in several forms, including the financial, technical, and humanitarian types. Oluitan and Dada (2020) emphasize that foreign aid can take on a physical dimension in form, such as capital goods, agricultural commodities, technical assistance and human resources. Each has its own purpose and emphasis.

Furthermore, foreign aid can be divided into bilateral, where assistance goes directly from one country to another, and multilateral, in which assistance is channeled through international organizations. Bilateral aid can provide the possibility of direct partnering by the donor countries with the recipient countries in terms of support, taking into consideration particular needs and priorities. Bilateral assistance may serve strategic interests such as promotion of political alliances and boosting trade relations (Efobi et al., 2015). On the other hand, multilateral aid is collective decision-making and coordination of these donor countries working through international organizations to have a greater effect of overcoming global challenges and promoting

#### *2.2.1.2 Government Expenditure*

Government expenditure is broadly categorized into spending, through which investment, fiscal policy, and provision of public goods are channeled. Changes in government expenditure and taxes have dynamic effects on output and investment spending, as demonstrated by Blanchard and Perotti (2002). There have also been studies on the effects of fiscal policy shocks, including deficit spending, on economic variables (Mountford & Uhlig, 2009). Another interest in the analysis of the effects of fiscal policy in Organization for Economic Co-operation and Development (OECD) countries as identified earlier is estimation of tax and government spending multipliers (Perotti, 2004). According to Sandford (1984), government expenditure is defined as spending by central and local governments, the national insurance fund, and public corporations. Danladi et al. (2015) note that expenditure is one of the major factors of economic growth, and report that the recurrent component accounts for the greatest influence. However, Gwartney (1983) holds that government regulatory activities are also important in their own right, and Khan (2019) emphasizes the need for a close monitoring and check on such expenditure to avoid negative consequences.

The interrelationship between government spending types, such as pure public goods and merit public good provision, has been reviewed under Classification of Functions of Government (COFOG), demonstrating the complementarity of various government expenditure types (Obeng, 2022). Government expenditure also plays a role in the stabilization of its revenues, with examples being the creation of Rainy Day

Funds (RDFs) to avoid strong volatility in government expenditures (Wei & Denison, 2019). Also, fiscal synchronization associated with the relationship of government expenditure to tax revenues for the United States of America has been discussed (Kirikkaleli & Ozbeser, 2023). With regard to the role of government expenditure on economic growth, their interest is in knowing just its different kinds, and how far it can affect consumption (Mo, 2007). Moreover, the effectiveness of government expenditure as a channel towards economic growth has been examined, and Wagner's law represents an important attempt to analytically assess the impact of government expenditure on economic growth (Al-Tamimi, 2020). From a general perspective, government expenditure entails many broad issues regarding its effects on economic variables, public goods provision, fiscal policy, and the role it plays in economic growth and governance.

More importantly, the structure of government expenditure has a strong effect on economic growth, distribution of income, and the general welfare of the people (Barro, 1979). It therefore remains one of the major instruments of fiscal policy and is mostly utilized in stabilizing the economy when recessionary trends or expansion set in (Wei & Denison, 2019). Government expenditure has the potential to indicate government priorities and objectives toward meeting societal needs and creating development, whereby funds are allocated to different sectors (Sousa et al., 2022). Expenditure also influences governance aspects, public service delivery, and poverty reduction (Turley et al., 2018). Knowing the determinants and dynamics of government expenditure is important to enable policymakers and researchers to judge its effectiveness in achieving desired outcomes and addressing societal challenges (Devarajan et al., 1996). Conceptually, therefore, expenditure has been defined as allocation of funds by a government to various activities such as the provision of public goods, fiscal policy, and investment.

Based on the foregoing, foreign aid and government expenditure are pivotal sources of financing for addressing social development challenges in African countries. The substantial financial, technical and humanitarian support from foreign aid and the commitment to government expenditure by African governments have been growing to enhance social development.

### 2.2.2 Concept of Social Development

Social development is the process of uplifting human well-being and the quality of life. It fosters changed structures of society, economy, and politics (UNDP, 2021). It encompasses activities that reduce social inequalities and poverty, exclusion, offering opportunities for people and societies to develop to their best potential in education, health, accommodation, work, and social security. Social development cannot simply be based on providing essential services but should create an enabling environment that fosters individual and community empowerment and involvement (UNDP, 2021). The guiding themes of most social development programmes are often equity, social justice, and human rights. They work on increasing inclusiveness and involvement of excluded and vulnerable groups while addressing the root causes of problems. Social development has changed with time, depending on the relationship that has changed with the political and economic environment. While in the 1950s and 1960s, social development was defined by many as modernization of the industrializing cultures, it began to deal with such issues as reducing poverty and meeting basic human needs in the 1970s and 1980s (Rogers, 1995).

Social development has increasingly taken the position of a long-term growth driver in the world. The SDGs of the United Nations include several social developments aims, such as ensuring access to education and healthcare, reducing inequality and promoting gender equality (United Nation, 2015). Therefore, social development is a wide and comprehensive concept that emphasizes improvement in the well-being of people through transformations in social, economic, and political spheres. It emphasizes the necessity of resolving socioeconomic inequities to enable all individuals and communities to reach their greatest potential (UNDP, 2021).

To measure social development, Human Development Index (HDI) is widely used. Developed by the United Nations Development Programme (UNDP), the intent of the HDI was to assess country development through the lens of human capability development and potential, as an alternative to the reliance on economic growth. The HDI has served as a proxy for the determination of quality of life, which is measured in terms of life expectancy at birth, educational attainment in terms of number of years of school, and the gross national income (GNI) per capita as a reflection of the standard of living (Tan, 2021).

### *2.2.2.1 Human Development Index (HDI)*

Figure 2.1 shows the three components of HDI, which gives information on what makes up the HDI. HDI is a composite index for general achievement in three dimensions that are essential to human development, such as living a long and healthy life, knowledge acquisition, and a decent standard of living (UNDP, 2020a). HDI is computed as the geometric mean of standardized indices for each dimension. These indices are health, assessed based on life expectancy at birth; education, measured by the average years of schooling for adults and the expected years for school-going children; and standard of living, measured by gross national income per capita. The logarithm of income is used in HDI calculation, which accounts for the decreasing importance of income as GNI increases. The scores from these three HDI dimensions are combined into one index by a geometric means (UNDP, 2020b).

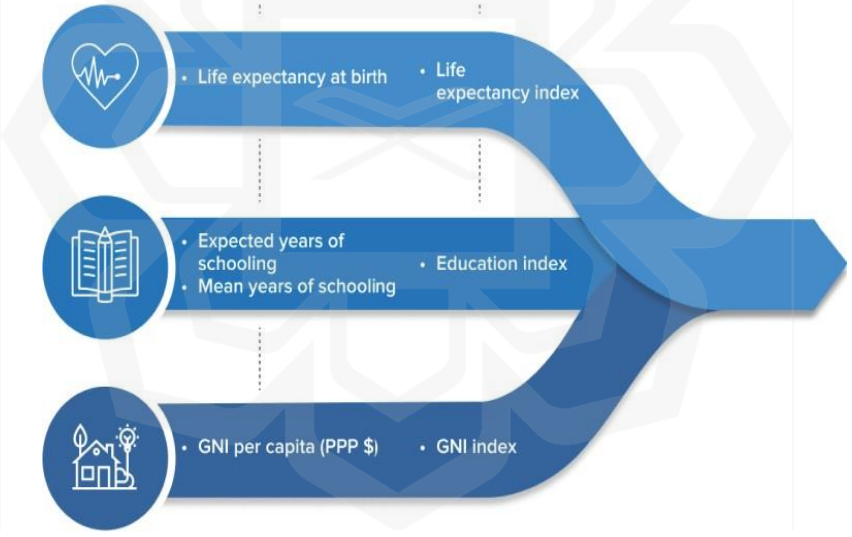


Figure 2.1. Human Development Index
Sources: UNDP (2020).

HDI can be used to question national policy choices, including how two countries at very similar levels of GNI per capita end up with quite different human development outcomes which can stimulate debate about what policy priorities governments serve (UNDP, 2020a). However, it should be kept in mind that HDI

simplifies and captures part of human development. It is such a strong tool in the context of the present study for measuring social development. Its multidimensionality corresponds very strongly with the central dimensions of social development in Africa, namely health, education, and standard of living. By using HDI as a proxy for social development, this study effectively measures how financing sources impact social development in an African context. Such an approach deepens the analysis and gives extremely useful insights into the quest for social development that is sustainable.

After an exhaustive exposition of the conceptual literature of the study, the theoretical literature and framework contextualizes and operationalizes the study in greater depth.

## 2.3 THEORETICAL LITERATURE

The theoretical literature for this study tries to outline how to gain a comprehensive understanding of social development and the forces behind its attainment in the African continent. Among these forces are financing sources, such as foreign aid, government expenditure and the moderating effect of government effectiveness in promoting social development across the continent.

The theoretical literature further expounds on the issues related to non-linear relationships and looks at how country-specific aid (the KSA aid) has a unique effect on African countries belonging to the Organization of Islamic Cooperation (OIC). This study applied theories which include Modernization Theory, Dependency Theory, Institutional Theory, Human Development Theory, Two Gap Model, Threshold Theory, Aid Effectiveness Theory and Disaggregated Aid Effectiveness Theory.

These theoretical literatures contribute to the conceptual underpinning for the understanding of the numerous relationships between foreign aid, government expenditure, economic growth, government effectiveness, control of corruption, foreign direct investment, population size, and social development in Africa.

### 2.3.1 Modernization Theory

According to Rostow (1960), modernization theory uses economic progress as a means of promoting social development. That is, low-income countries can become more developed by embracing some of the economic and social practices of the high-income countries. In the context of long-term financing of social development, modernization theory asserts that economic growth and development are critical in generating the resources required to finance social development programmes and activities. In this view, low-income nations can generate finance for their long-term social development by having policies and practices that support economic growth and development. The policies may include infrastructural system investments, education, healthcare, and initiatives that attract foreign investors and facilitate commerce, among others (Rostow, 1960).

On the contrary, critics reason that economic growth achieved today, based on a simple modernization theory, could not suffice to ensure long-term funding for social progress. According to Escobar (1995), economic growth and development have to go with social development policies and initiatives aimed at ensuring that gains from progress are shared by all members of the society, such as expenditures in education and health and social safety nets. Complementing this view, Asongu and Odhiambo (2019) stated that the different strands of foreign aid to Africa have all been relevant for promoting inclusive human development, hence establishing that foreign aid can only form part of a broader scheme to enhance the inclusiveness of social development in tandem with a complementary economic growth strategy.

### 2.3.2 Dependency Theory

Dependency theory postulates that low-income nations have resultant underdevelopment caused by historical and continuous reliance on high-income countries for their resources and development. It also postulates that low-income countries face a disadvantaged position in the global perspective of economies, adding that this relation has acted as an obstacle to the realization of development in such nations because of the bonds formed with the high-income nations (Frank, 1966). In the

realm of long-term social development finance, the theory suggests that low-income countries are in a situation where they cannot easily get social development financing due to the economic dependence and political reliance on high-income countries. This kind of dependency can be reflected in foreign aid and loans whose terms are sometimes contrary to the social development objectives of the concerned low-income countries (Horn, 2008). This may make it hard for such countries to finance and implement their own social development projects.

To overcome these, the proponents of dependency theory recommend that poor countries should consider policies that reduce their dependence on rich countries and at the same time foster more equitable international economic relations. This may include strategies for regional economic integration, reduction of trade deficits, and more militant initiatives for taking control of their natural resources and assisting domestic industries (Amin, 1976). Several critics of dependency theory have argued that the approach is unrealistically complex and does not allow the agency of low-income countries to decide how to pursue their own development priorities (Rostow, 1960). They also argue that dependency theory does not provide clear guidelines on how to overcome the barriers it identifies and can result in pessimism about the development prospects for low-income nations.

### 2.3.3 Institutional Theory

The institutional theory is based on the fact that the success of development projects is pegged on to the strength of the institutions in a particular country (North, 1990). Institutions refer to formal and informal rules, conventions and values which affect the behaviour and the relationships or governing relationship between persons and organizations (Scott 2014). It is based on this idea that sustainable social development finance requires establishment of effective and efficient institutions capable of providing the needed governance, regulation and monitoring to promote accountability, transparency and confidence (Najam, 2002). Furthermore, effective and efficient institutions are prominent to sustainable social development finance. The institutional theory emphasizes the necessity of establishing institutions that can support the efficient implementation of finance sources in the context of sustainable financing for social

development by way of ensuring that foreign aid is allocated and utilized well, government expenditure is transparent and accountable, and private sector investments are subject to adequate regulation and oversight.

Empirical studies have verified the significance of institutions in backing sustainable development. Hodge and Greve (2007) observed that the effectiveness of host nations' institutions determines how effectively foreign aid can promote social development. Likewise, Brixiová et al. (2015) established that institutional quality is a critical determinant of the effectiveness of government spending on social development in sub-Saharan Africa. Consequently, institutional theory gives insights into the role played by institutions in encouraging long-term financing for social development in Africa. Thus, this theory points out to policy makers and practitioners why institutional development should be given priority as a key aspect to every developmental initiative through highlighting effective governance and regulation.

### 2.3.4 Human Development Theory

Human Development Theory argues that social development goes beyond economic advances (Sen, 1999). Broadly, it also refers to the enlargement of individual's capabilities and opportunities such as education, healthcare access and political engagement. This view justifies investment in human capital and enabling environment that helps in empowering people towards fulfilling their potentials in life.

Investments in education, healthcare, and other social services are crucial for sustainable development in low- and middle-income countries when seen from the perspective of long-term social development financing (Olievska et al. 2020). These investments are necessary to improve people's welfare, foster long-term economic and social development and promote community involvement (Drobny, 1977). They contribute to human capital, better labour productivity and more inclusive communities and, hence, the theory underscores the importance of participatory approaches to development. It stresses the need for individuals and communities to be able to actively shape their own economic and society paths. To realize this, there is a need for policies and programmes that enhance political participation, encourage community engagement, and ensure social accountability (UNDP, 2020). Additionally, Fukuda-

Parr and Kumar (2018) have considered how sustainability considerations can be integrated into policymaking and planning processes at various levels, ranging from local to global. They pointed out that governance, institutions, and participation play a role in shaping outcomes of sustainable human development, emphasizing the requirement for multi-dimensional and interdisciplinary approaches to address complex sustainability challenges.

### 2.3.5 Threshold Theory

Threshold Theory provides a comprehensive understand of non-linear dynamics behavior in some variables, particularly, in terms of the relationship between foreign aid and social development. This theory suggests that there exists a threshold of aid beyond which the effect of social development may not only diminish but turn negative. Asongu (2012) provided empirical evidence of a critical threshold of aid that impacts human development in Africa. Again, scholars such as Burnside and Dollar (2000) dealt with the issue of effectiveness of aid under different conditions of policy boundaries. They focused on the relationship between foreign aid, economic policy, and growth in per capita GDP. Their results showed that aid had a positive effect on growth in developing countries with good fiscal, monetary, and trade policies, but had little effect in the presence of bad policies. Good policies are those which are themselves important for growth and development. Furthermore, the quality of policy had a small impact on the allocation of aid, and aid would be more effective if it were more systematically conditioned on good policy.

Furthermore, Threshold Theory holds that the effect of some variables may reverse at a certain threshold point. In the context of foreign aid and social development, it is hypothesized that there may be a threshold point of foreign aid on social development. A country must attain some level of development above which foreign aid can be beneficial to the development outcome and above some level of aid. The positive effects may predominate if development is at the required level, but below that level the effects may be negative or not very much felt.

### 2.3.6 Aid Effectiveness Theory

Many scholars have used the theory of aid effectiveness Knack (2001) and Djankov et al. (2005) have argued that good governance is central to determining the effectiveness of foreign aid intervention. According to Knack (2001), higher levels of aid have been found to erode the quality of governance and thus support the need for donors to develop less costly and less intrusive ways for disseminating state-of-the-art knowledge on public sector reform in developing countries. The concept of good governance, therefore, impacts not only on the efficiency but also the relevance and sustainability of foreign aid. Thus, this theory holds that if proper governance is absent, then it will defeat the very purpose of aid to achieve developmental goals. To elaborate on this point of view, Carlitz and Ziaja (2023) have asserted that only those aid programmes which harmonize with recipient countries' national development objectives will be effective but harmful if they target policy outcomes directly.

The effectiveness of foreign aid in African contexts depends on the extent to which the institutions of the recipient country are robust and efficient. For development aid to translate into tangible progress in human development indicators, institutions must be as robust and efficient as possible. This point was made by Selaya and Sunesen (2012), who argued that aid raises the marginal productivity of capital when used to finance complementary inputs like public infrastructure and human capital investments, but that when it comes in the form of pure physical capital transfers, aid may crowd out private investments. Moreover, Asongu and Odhiambo (2019) emphasized that the real meaning of aid itself can find its fullest expression only in the social infrastructural-aiding programmes, some of which also tend to help promote the inclusive human development of Africa.

### 2.3.7 Disaggregated Aid Effectiveness Theory

Disaggregated Aid Effectiveness Theory argues that what matters for effect of foreign aid on development outcomes is the characteristics of the provided aid itself, which encompasses source, form, and sectors. Basically, the theory argues that all aids are not equal; different kinds probably bring different effects on development indicators

(Minasyan et al. 2016; Findley et al. 2010; & Mavrotas 2005). Equally, the focus of the theory goes beyond the aggregate measures of aid effectiveness; it also considers the disaggregated or specific components of aid to understand its impact on diverging developmental indicators and country-specific context. Kargbo and Sen (2014) argued that disaggregated aid in the form of grants shows strong evidence of poverty reduction in the country. Likewise, Maruta (2023) supports a disaggregated analysis in aid effectiveness on the ground of multidimensionality of the purposes. The importance of aid-disaggregation hypothesis to aid effectiveness in the context of India and Cote d'Ivoire respectively has been analyzed by the study of Mavrotas (2002) and Mavrotas and Ouattara (2006).

Furthermore, literature indicates that disaggregated aid dataset is fundamental to the understanding of the unique impact of aid on several development indicators. These include the long-run macroeconomic effects of disaggregated aid in particular countries, as demonstrated by Gebregziabher (2013). Additionally, Ouattara and Strobl (2008) explored the nexus on the impact of aid disaggregation on growth. The study revealed that the theory of disaggregated aid effectiveness allows the analysis of disaggregated aid at sectoral level, which is essential to appreciate its effectiveness within country contexts and on varied development indicators.

## 2.4 THEORETICAL FRAMEWORK

The Two-Gap Model is used as the theoretical framework in this study. Chenery and Strout (1966) developed the Two-Gap Model, which is the backbone for comprehending economic obstacles of low-income nations, especially those within the African context analyzed in this study. This model indicates the presence of two major issues in low-income countries, the saving gap and foreign exchange gap which are impediments to economic development. A savings gap arises when internal savings fall short of investment requirements to drive economic growth, while a foreign exchange gap arises as a result of inadequate foreign currency reserves necessary to meet import obligations. The model has key implications for Africa's economic conduct by aiding the understanding of how countries obtain resources from both within and outside

(domestic and foreign debt) for financing various governmental programmes and projects.

Given the structure of the Two Gap Model, foreign aid becomes an easy way to solve foreign exchange shortages. In terms of savings gap, foreign aid can supplement domestic savings and carry out the requisite investment in infrastructure, education, and healthcare. The model also provides a theoretical rationale in which to ground understanding of the strategic role of aid in bridging the savings gap (Chenery & Strout, 1966). Foreign aid also plays a big role in bridging the foreign exchange gap. Countries whose balance of payments is codified will keep on importing items without too much depletion of foreign exchange reserves. Within the two-gap model, foreign aid and foreign exchange gap become a balance that is challenged by foreign aid systems and needs.

In the African context, the two-gap model has become an instrument for interpreting long-lasting economic constraints. In this regard, scholars like Easterly (2005) have insisted that the material and economic environment of African societies requires different kinds of development literature to serve them. This means that the Two Gap Model under study provides the theoretical framework for measuring not only the effects of foreign aid on economic development but, most importantly, on key social indicators in Africa. Other scholars such as Yontcheva and Masud (2005) and Asongu (2012) provided several good insights into the aid-development indicator nexus. Their works, within the context of the Two Gap Model, have revealed different perspectives on the benefits and challenges of aids in African countries.

Two Gap Model, especially savings and foreign exchange gaps components, is a good theoretical framework to investigate the social development challenges affecting African countries. This theory thus underpins the study. The Two-Gap Model is most appropriate theoretical framework for this study, because it deals with the problems of different financing, particularly the savings and foreign exchange gaps that foreign aid attempts to fill the gap in developing countries such as African countries.

## 2.5 EMPIRICAL LITERATURE

This section comprehensively reviews the literature related to financing sources for social development and other key determinants of social development. This review provides studies conducted at the regional, and country levels (single-country and multi-country). The review assesses the influence of five independent variables in promoting social development, which include foreign aid, government expenditure, economic growth, government effectiveness, control of corruption, foreign direct investment, and population size. The literature is analyzed to understand how each of these variables relates to the dependent variable of social development.

### 2.5.1 Foreign Aid and Social Development

Basically, foreign aid has a complex and context-dependent relationship with development outcomes. Studies, such as Mahembe and Odhiambo (2021), have indicated that foreign aid significantly and positively affects poverty reduction in sub-Saharan Africa, especially through multilateral aids and grants. In the same view, Kaifeng (2020) explored the relationship between foreign aid, institutional democracy, and poverty in Sub-Saharan Africa. The study employed two-stage least square instrumental variable estimator to examine the relationship between foreign aid and poverty reduction in sub-Saharan African countries. The results indicated that foreign aid contributed to reducing poverty, specifically multilateral sources, and grants.

Hana (2015) assessed the contribution of foreign aid to poverty reduction in Ethiopia. The author applied the multivariate cointegration analysis in the time series data obtained from Ethiopia for the period 1975-2010. The empirical results showed that there was a significant effect of foreign aid on poverty reduction. Precisely, foreign aid was seen to reduce infant mortality and increase household consumption expenditure, and hence showing its positive impact on poverty reduction. Alvi and Senbeta (2012) focused on the role of foreign aid in reducing poverty. The results indicated that foreign aid had a very high impact on reduction of poverty when considered against the control of average income. Furthermore, the result showed that foreign aid decreased poverty, as measured by a variety of indicators, which included the rate of poverty, the poverty gap index, and squared poverty gap index. These

findings indicate a key role that foreign aid plays in poverty alleviation. Again, Kim and Lin (2015) have pointed out the positive outcomes of targeted foreign aid on health status in African countries, particularly in health infrastructure and health service provision.

However, the effectiveness of aid on the recipient country depends on different factors such as institutional quality, stage of development, democracy, and the particular sectors targeted. Maruta et al. (2020) focused on the influence of institutional quality and sectoral foreign aid on economic growth in 74 developing nations in South America, Asia, and Africa for the period spanning 1980-2016. The results obtained showed that foreign aid targeted at or allocated to the educational sector created the most significant socio-economic welfare across the countries that received the aid. However, the impact varied in various geographical regions and was context dependent. In Asia, South America and Africa, the effectiveness of such aid was in agriculture, health, and education. As such, with a higher quality of institution, there was heterogeneity in the marginal effects of healthcare, education and agricultural aid across these countries. Farah et al. (2018) assessed the impact of foreign aid on the socio-economic development of Ethiopia. The impact of foreign aid was examined against various socio-economic indicators like GDP growth, FDI, unemployment rate, democracy, and corruption levels. According to the results, GDP was not significantly affected by foreign aid in Ethiopia. However, it significantly affected FDI and unemployment rate. More importantly, foreign aid was negatively related to democracy and corruption levels in the country. Thus, in spite of huge inflows of foreign aid, there have existed high levels of corruption and authoritarianism in the country, which have retarded the progress of the nation towards socio-economic development. Murshed and Khanaum (2014) examined the impact of foreign aid on the economic growth of its recipient countries. The study revealed that foreign aid positively influenced social development. The study further emphasized how foreign aid could help in ascertaining a nation's social progress.

Other studies have pointed out that approximately aid is unproductive in the recipient countries. For example, Signor and Vandernoot (2021) have focused on the interconnection between HDI, private funding, and foreign aid. They examined whether foreign aid and private funding improved HDI in developing nations. The study

described factors, including aid allocation preferences, recipient country's policies, institutional background, and economic environment as key variables that informed aid impacts. According to the authors, failure to meet these conditions may lead to a poverty trap in the recipient country. In addition, the study suggested that HDI was mainly influenced by internal factors. Therefore, foreign aid and private funding do not have a significant role in enhancing the HDI.

Akinbode and Bolarinwa (2020) examined the impact of foreign aid on human development in SSA countries, using the System GMM method. The study used data from 47 countries in SSA within the period between 2000 and 2016. Among other things, it found that foreign aid made no significant difference in human development in SSA. The study further found out that corruption was negatively related to HDI, meaning the higher the levels of corruption, the lower the progress of human development. On the other hand, trade openness favoured human development. Therefore, countries that have high openness to trade have experienced an upsurge in HDI. Similarly, Ekanayake et al. (2010) examined the impact of foreign aid on economic growth among developing countries. The study used annual data for a group of 85 developing countries covering Asia, Africa, Latin America, and the Caribbean for the period 1980-2007. The results from the study showed the effects of foreign aid on economic growth in developing countries were mixed.

In this regard, Kumler (2007) focused on the relationship between foreign aid and human development in developing countries using data of 87 countries for the period of 1980 to 2000. Here, 2SLS estimation was employed to examine the effect of foreign aid on HDI. The results obtained from the study indicated that higher levels of foreign aid were associated with lower levels of HDI after controlling GDP and pro-poor public expenditure. This finding gives the implication that foreign aid, as noble as it may be, actually does not help in fostering human development in developing countries. Another finding from the study was that macroeconomic policies had no significant effects on the level of HDI in developing countries.

Masud and Yontcheva (2005) examined whether foreign aid is effective in reducing poverty by estimating its impact on human development indicators, incorporating Bilateral aid and NGO aid flows in the data set of the study. The main finding from that study was that NGO aid had a positive role in terms of reducing infant

mortality and performed relatively better than bilateral aid. However, the influence on illiteracy reduction was not significant. Also, Lohani (2004) examined the relationship between foreign aid and development with a specific focus on whether foreign aid has a positive influence on HDI. HDI is a composite index that includes indices for knowledge, health and standard of living hence giving the overall view of development. The study tested the hypothesis that foreign aid has a positive impact on HDI, using normal least square regression. The regression analysis showed a negative correlation between HDI and foreign aid. This means that the degree of development, as determined by HDI, declined as the foreign aid increased.

In contrast, other research emphasizes how aid furthers social infrastructure, human development, and economic growth (Gillanders, 2016; Kim & Lin, 2015; Asongu & Nwachukwu, 2017). Abouraia (2014) assessed the influence of foreign aid on the Philippines' economic growth. The Philippines is a developing nation that relies on foreign aid to spur its economic growth. The result showed that foreign aid considerably influenced the Philippines' GDP growth rate. For Sahoo and Sethi (2013), foreign aid, on the other hand, also exerted an influential contribution or impact on economic growth and development in India but had biases more on growth. However, some studies have cautioned on the effectiveness of foreign aid and stressed domestic factors, including corruption and openness to trade (Akinbode & Bolarinwa, 2020). It is postulated that foreign aid, as indicated by Deniz and Haidar (2019), and Wrangberg (2018) cannot independently be relied on to spur economic growth or alleviate poverty because the effectiveness of foreign aid can be reduced by other challenges like corruption and socio-economic conditions. In the same vein, Martínez (2015) examined the effectiveness of foreign aid in promoting economic growth in low and medium development countries. The study focused on 104 countries and examined the impact of foreign aid on their respective GDP growth rates and control for geography and conflict along with dummy variables in a geometric lag model. The findings revealed that foreign aid had a positive impact on the economic growth of the recipient nations. However, the effect was somewhat modest. The study acknowledged that other factors, such as armed conflict and geography, were major factors that influenced the relationship between foreign aid and economic growth to have negative effects.

Apparently, the reviewed literature justifies the specified objectives of this study, which is to assess the impact of foreign aid and government expenditure on HDI across African countries. The findings from the extant literature underline the complex nature of the relationship between foreign aid and development outcomes, with some studies having positive, negative and insignificant relationships. Moreover, the inflow of aid to African countries varies across the countries, some having large, moderate and low aid flow which may have varying impact. As such suggest testing for nonlinearity in the relationship between foreign aid and social development such as the study by Asongu (2012) argued that the effectiveness of aid in economic prosperity and per capita economic growth is non-linear, and high-growth countries are intended to benefit more. However, the AID-HDI nexus was negative, signifying that aid does not always transform into improved human development. On the other hand, probing into whether governance effectiveness affects foreign aid's effectiveness across African countries further enhances the study's investigation and contextualizes the understanding about respective variables' relations and degrees of effectiveness. Moreover, aggregate bilateral aid, according to Asiama and Quartey (2009), has no significant effect on human development indicators and other welfare variables; while disaggregated aid in terms of sector specific and programme aid show an impact on HDI. Furthermore, Tyson and Ford (2022) argued that US foreign aid for health sectors had the most significant impact on HDI in LDCs. The study, therefore, supports the research objective of examining the impact of country specific aid on HDI in African OIC member countries.

### 2.5.2 Government Expenditure and Social Development

The impact of government expenditure on social development, economic growth, and infrastructure development is discussed in the following literature review. Lysiak et al. (2021) emphasized that budget policy should be a promoter of progressive social development and give the way to increase budgetary efficiency. In a study by Tatuev et al. (2018), they found positive impacts of budget expenditures on public health and education. Dahmardeh and Tabar (2013) examined the effectiveness of the government expenditure and reduction of poverty in the Sistan and Baluchestan provinces of Iran. They considered the impact of poverty reduction through budget expenditure in the

period of 1978-2008 using a sample of 420 household income and distribution. The method employed was the autoregressive distributed lag estimation technique, which gauged the effect of the government's expenditure on the reduction of poverty. The results revealed a positive impact of constructive expenditures in reducing poverty.

Nemec et al. (2017) analyzed the role of public spending on HDI and inferred that the spending in productive sectors, namely education, health and social services, positively impacted socio-economic development. In addition, Sasmal and Sasmal (2016) demonstrated that infrastructure development Government spending led to economic expansion and reduction of poverty. In a study by Abreu and Gomes (2016), the researchers analyzed the connection between open budget institutional changes and social development. They noted that the combination of transparency, participation, and accountability in open budgeting gave rise to high social development. They also noted that open budgets and social development were more likely to thrive in democratic regimes.

In a similar vein, Fan and Rao (2003) discovered that though government spending on health and agriculture was considered productive for the growth of Africa, investment in the Asian economy sprouted in investments in the military, education, and agriculture. They emphasized that agricultural spending was very germane to alleviating poverty in rural areas. Lindauer and Velenchik (1992) assessed the patterns of government spending in developing countries based on three of the biggest concerns: a comparative analysis with spending in industrialized nations, the determinants steering the expansion of spending in governments of developing countries and the repercussions on economic growth. The analysis revealed that the ratio of government expenditure to GDP in low- and middle-income countries was, on average, lower than in the developed market economies. This percentage, however, increased over time, with a few exceptions. Moreover, growth in government spending was attributed to factors such as ideology, demographics, positive income elasticity for public goods and increasing relative cost of public goods compared to private goods and influence of development theory and practice. As for the government spending with growth, the results did not suggest a robust correlation. The findings emphasized the growing significance of the government spending in developing countries and the causes of growth in government spending.

By contrast, Lee (1992) discussed the interlinkages among poverty, development, and budget systems in developing countries. The study suggested that uncertainty, instability, and uncontrollability in budgetary processes were the main hindrances to achieving economic growth and social equity in such countries. The study made several suggestions on the restructuring of budget systems with the implementation of action plans in a systematic manner. Careful design and execution of such plans could help in overcoming these challenges of budgeting and thus provide a conducive environment for poverty reduction, and development. Overall, the flaws of the budget systems were emphasized as requiring improvement for stimulation of economic growth and equity in developing-country economies. It also emphasized the need for proactive measures and systematic action plans to annul the barriers of uncertainty, instability, and uncontrollability in budgeting.

Furthermore, the literature reviewed illustrates that government expenditure and budget policy influence social development, economic growth, and infrastructure development. These findings provide a strong foundation toward understanding the relationship between government expenditure and social development. However, there is limited focus on the African context, which is part of the objectives of this study. Although some literature has tried to estimate the effect of government expenditure on social development, few studies have attempted to do this in the context of Africa and further explore whether the quality of governance matters in order to make government expenditure effective across African countries.

### 2.5.3 Economic Growth and Social Development

Studies have provided insights into the relationship between economic growth, indicated by GDP, and social development. According to Newman et al. (1989), there is a positive relationship between social development and GDP, thus supporting the "trickle-up" hypothesis. Abdul Rehman et al. (2020) found a positive and significant relationship between GDP with variables like domestic credit, education expenditures, and health expenditures in developing countries. Parwez (2016) conducted a comparative study of Gujarat and Kerala developmental experiences and found that economic development has not been necessarily accompanied adequately by social

development in Gujarat. However, Kerala has performed positively in terms of social indicators, but the economy has been in disarray, as it is ranked among the bottom half of the country. Both Rahman et al., (2020) and Hoa et al., (2020) found a positive relationship between HDI and economic growth in 25 developed and 25 developing countries and samples in 30 countries respectively.

In contrary, Islam and Clarke (2002) advocated for adjusted GDP with an added component of the cost-benefit analysis to indicate the level of social welfare. Other studies show varying views of the association of economic growth and social development. Rangarajan (2013) made a case that the two were independent concepts but could be aligned through the concept of inclusive growth. Colombatto (1991) argued that economic growth did not rely on social development as claimed by some studies because there was a weak support in the data and that the theoretical framework was too fragile to justify a satisfactory economic interpretation of the estimates. In the same vein, Sekhar (2005) mentioned that the essence of developing social capabilities was more crucial for successful economic reforms. Paul and Adoji (2022) stated that Social Progress Index (SPI) was to be adopted as a better measure of sustainable economic growth, insisting that national well-being cannot easily be captured by GDP. Brinkman and Brinkman (2011) criticized the the view that GDP is an exclusive signifier of human well-being and progress, emphasizing the need to consider social and cultural variables.

These studies have portrayed a relationship between economic growth and social development in which the social aspects can have impacts on the GDP of a nation. However, they also acknowledged that GDP was not quite able to represent the complexities associated with social development and welfare. It is, therefore, of importance to analyze and discuss the relationship that exists between economic growth and social development in Africa due to different contextual issues faced by Africa related to social development, which advances further the relevancy of the study.

### 2.5.4 Governance Quality and Social Development

Literature generally supports the positive relationship between governance quality and social development. Gumede (2022) focused investigated the connection between the South African government and socioeconomic development from 1996–2020 using

Autoregressive Distributed Lag model to determine how government influenced socioeconomic development. The results confirmed that government significantly contributed to the economy, while economic growth did not lead to socio-economic development, but government spending did. The study also found that the insignificance of a country's institutions and education expenditure contributed to its social-economic development. The improved quality of its institutions correlated positively with higher levels of HDI while increase in its socio-economic development correlated positively with its expenditures on education. Tkach and Tkach, (2021) examined the level of support for governments and leaders as a factor for poorly inefficient governance with focus on assessing its challenges to democratic governance systems. The research examined the role that government efficiency, economic growth, quality of medical care, and crime prevention in a society play in its attitude toward democracy. The study found that government efficiency and education expenditures correlated with life satisfaction and GDP per capita. It concluded that these parameters were supporters of democratic development.

Terziev (2019) contributed to the criteria and indicators of measuring social efficiency, designating the perspective of social governance as a system method. He covered some basic ideas resulting from Bulgarian and other foreign economic science findings on the specifics of social efficiency in activities of institutional governance, including state power bodies. The comprehensive and interdisciplinary approach was adopted in the study with the integration of sociological, theoretical, management, and socio-economic aspects. The system analysis perspective was stressed in comprehending social governance. This was depicted as regulating the relationship between the subject and object of management to influence the social system purposefully. This was done to align the functioning and development of it with the socially significant objectives. The research contributed to the deeper understanding of social governance and its contribution to socially meaningful goals through the examination of social policy development and efficiency measurement. Choi and Park (2019) used sample countries with low and lower-middle incomes in a study undertaken in 2019 to establish the efficiency of governmental excellence for social progress, establishing distinctive benefits previously offered by e-government. In this regard, the study took into account the development of e-government as one of the dimensions for governmental capacity to examine how efficiently the governmental capacity of each

country enhanced the performance in social progress. The efficiency was measured through data envelopment analysis, and this result was combined with the income levels for clustering analysis in order to identify characteristics and typologies across countries. The results gave a deep insight into how each country performed in governmental excellence toward social progress, thereby underlining the shortcomings and potential benchmarking targets for countries at a comparable economic level. For such countries, benefits of e-government offered an opportunity to break away from their "trap of weak institutions" and provide impetus to growth.

Similarly, Arora et al. (2018) tested the link between institutional quality, government effectiveness in the delivery of public goods, perceptions of taxation and economic growth. The result showed that better institutional quality enhanced optimistic perceptions regarding public service quality, and mitigated concerns about taxes as stumbling blocks in economic growth. The study highlighted that level of the quality of institutions determined how better government delivered public goods and how stakeholders viewed taxation in influencing economic growth.

Best and Burke (2017) examined the determinant of changes in electrification levels within developing nations under the assumption that without access to electricity one cannot modernize living standards. Using cross-sectional data at the national level up to 2012 for 135 low- and middle-income countries, they performed a cross-sectional regression analysis. Their results showed that government effectiveness was the most influential governance factor that boosted transition towards increased electrification in developing countries. Thus, the role of governance was well established in influencing development outcomes. Therefore, the study concluded that donors seeking to make more effective contributions towards electrification would achieve their aim if they focused more on countries with better governance. Moreira (2017) approached organizational and governance issues in government effectiveness within the setting of public education provision in Brazil. A number of issues regarding government effectiveness in the delivery of education and the resulting consequences of this on the achievement of students were covered. As a result, it was shown that recognizing and rewarding high achieving students improved performance and ensured the growth of a high performance attitude amongst other students as well. Moreover, the findings confirmed that transitions resulted in multiple discontinuities for schools through high

teacher turnover and resigning headmasters and discontinuation of school programmes, thus negatively affecting learning quality. The analysis also showed how corruption inversely related to the quality of public education, indicating the decaying effects of mismanagement and resource scum from corruption on educational outcomes. It highlighted organizational and governance limitations that were instrumental in hindering the effectiveness of governments in the delivery of education. This is in terms of performance recognition, the overall minimization of political control over bureaucracies, and handling corruption matters to improve the quality of public education.

Guney (2017) focused on the relationship between governance and sustainable development, underlining the role of governance in achieving the goal of sustainability. The study highlighted that the goal of sustainable development is to demonstrate ways of reducing the adverse impacts of current resource use. The study emphasized the necessity of effective governance in planning toward sustainable development. The study also found that governance had a positive and significant effect on sustainable development within both developed and developing countries.

Abramov et al. (2017) drew attention to the fact that, in democratic countries, there was a lack of criteria and parameters for evaluating the efficiency of public administration. According to them, effective public management is an indispensable condition for state development and achievement of social progress in the modern world. The study argued that modern society was becoming more and more complex and diverse, and new challenges were emerging in the form of global threats, migration crises, etc. All these factors required government systems to be responsive, adaptive, and able to forecast and meet societal needs. This showed the necessity of theoretical reflection and practical implementation in the methodologies of assessment and indicator systems within Russian public administration. Furthermore, Sagarik (2017) examined the nexus among the size of government, government effectiveness, and socioeconomic development in the ASEAN member countries for the period spanning from 2000 to 2015. In the study, the size of government was proxy by public expenditure, which normally was utilized by governments in achieving their goals of socioeconomic development. The study recognized the fact that factors like institutional capacity might influence how efficiently public expenditure was transformed into

socioeconomic development outcomes. The results suggested that ASEAN countries that had limited public expenditure growth performed no better than those with a relatively bigger size of government. Hence, this research challenged the view that a bigger size of government is necessarily related to better socio-economic development in ASEAN. In that respect, Terziev (2019) insisted on the role of effectiveness in social governance. The author argued that a holistic approach was required to ascertain the influence of effectiveness on social governance since it would regulate the relations between the subject and object of management in achieving socially significant goals. This means that effective government action would be quite important in achieving positive social outcomes.

However, variations in findings may be as a result of different aspects of social development and different methodologies. Moreover, other factors, such as financial resources, corruption control and country-specific circumstances, can also influence social development. Ahmed (2022) examined the link between the socioeconomic development of eight South Asian nations and the effectiveness of their governments using balanced panel data spanning the years 1999 to 2018. The findings of the study revealed that HDI, considered as a measure of social development, was not influenced by government performance. Lee and Im (2015) examined the impact of Official Development Assistance (ODA) on government effectiveness in developing countries, with a focus on the mediating effect of corruption. The analysis utilized data from 82 developing countries over the period of 2004-2013. The results showed that reliance on ODA in government spending lowered government effectiveness. This is to say that ODA disbursements from donors deteriorate the control of corruption and in turn lower the government effectiveness. In order to make aid effective in fostering growth and development, therefore, governments of developing countries have to focus on increasing their government effectiveness.

The reviewed studies highlight the significant role that governance quality plays in promoting social development in different contexts. This is in line with the objective of this study, which aims to examine how government effectiveness moderates the relationship between foreign aid, government expenditure and social development across African countries.

### 2.5.5 Foreign Direct Investment and Social Development

The existing literature on FDI details its relation to social development. According to Das (2020), the increase in inward FDI led to improvements in life expectancy, but deepened trends of unemployment and income inequality. King and Varadi (2002) provided support for the positive impact of FDI on the Hungarian economy but warned that market concentration may hamper its future growth. According to Liu et al. (2014), the effects of FDI on human and physical capital accumulation, domestic investment, government revenue, and the level of technological advancement in China's region may be both positive and negative. Boateng et al. (2017) found that, in sub-Saharan Africa, financial development complemented FDI inflows in enhancing domestic investment. Lehnert et al. (2013) pointed out that FDI had a positive effect on the welfare and knowledge infrastructure of host countries, while national governance mediated both. However, Herman et al. (2004) argued that FDI can have many negative consequences, including job loss, human rights abuses, and environmental degradation. Khalid and Marasco (2019) took this step further by postulating that the FDI effect on growth depends on the channel of integration used. Thus, the respective integration variables play a more significant role for high-income countries. The referred studies indicated that the relationship between foreign direct investment and social development was inherently complex and context dependent. It is also for this reason that there is a great need to examine this relationship within the varied contexts of African countries.

### 2.5.6 Population Size and Social Development

The relation of population size to social development is well documented in literature. A number of articles pointed to the adverse consequences of rapid population growth on economic, social, and environmental aspects (Clausen, 1985; Peterson, 2017). These studies placed greater emphasis on the need for population policies, which include fertility reduction programmes and female education to help minimize the negative effects of population growth (Okpala, 1990). Hidayati (2020) explored the relationship between population and development. In the view of this author, a large population but with adequate quality can act as a stimulus towards economic growth. Hence, population growth should match economic growth at the present state. According to the

research, citizens should be the prime priorities of development, and building of human resources should be a priority work over the infrastructure development. The study argued that a long run change was impacted by population dynamics. The study recognized population factor as one of the important factors in the context of development.

Lebowitz (2015) focused on the correlation of population with development, resources, and health. According to him, the social, which later had an effect on political development in both the industrialized and developing nations, was directly driven by the size, distribution, and characteristics. Further, he emphasized how medicine influenced population growth and how population growth influenced health. It established that population growth had the ability to render a demographic influence on the general health of a society, acknowledging that population growth and health conditions were interdependent. The study also highlighted that there was a mutual and direct influence of the economy and population on social and natural resources, the standard of living, and quality of life. In like manner, Ezeh et al. (2012) examined world population trends with policy alternatives. The authors reported that rapid population growth in the world's poorest countries threatened well-being, while very low fertility rates increasingly imperiled the future welfare of many developed countries. The authors mapped global population trends of growth from 2005 to 2010 and distinguished four distinct patterns. The poorest countries, mostly located in sub-Saharan Africa, recorded a strong growth rate of over 2 percent per year. The large countries like India and Indonesia, the North African region, and western Latin America showed a trend of moderate annual growth of 1-2%. Advanced and large middle-income economies like China and Brazil had low or no population growth of 0-1% per annum. Eastern Europe, Japan, and a few western European countries were marked by population decline. The study pointed out countries with high growth rates were bound to face negative social, economic, and environmental pressures. However, low or negative population growth in countries led to rapid ageing of the population, unsustainable burdens on public pension and health care systems, and slow economic growth.

Evans and Kelley (2008) investigated the interplay of population size with attendant economic development and attitudes towards inequality in 30 nations from

Europe, North America, and East Asia. The authors collected data from 19,568 respondents for an explanation on the impact of population size on social life and preferences for income inequality. The result showed that, to a larger degree, the tendency to prefer more inequality in earnings was more common among the citizens of large societies than among the citizens of small societies. Even after allowing for a degree of economic development, larger societies showed a greater preference for high income inequality. The results were consistent with Durkheim's contentions regarding a shift from "mechanical" to "organic" solidarity in transition from small and less interdependent to larger and more interdependent societies. Among the factors promoting preferences for inequality in large societies are those favouring larger rewards for education and occupational success. The study indicated that citizens of large countries tended to approve more extensive income differentials as a reflection of the differentiated and complex nature of their societies. The study pointed out that, in most societies, the actual level of income inequality was near or slightly above the ideal level preferred by citizens. Yin (1987) studied the relationship between socioeconomic development, urban population size, and structure. The study emphasized a requirement for good administration and management of cities' populations to ensure an adequate rate of development. Thus, rapid and uncontrolled urbanization may create a lot of social and economic problems due to infrastructural deficiencies or housing shortages, joblessness, among others.

Indicatively, reviewed studies underscored the importance of efficiently managing and regulating the growth of urban populations to achieve sustainable development. Swift and unmanaged urbanization can result in a range of social and economic issues, such as insufficient infrastructure, housing deficits, unemployment and social disparities. This corroborates the significance of the current study which aims to investigate this relationship within the African context. Africa faces numerous challenges in the realm of social development, particularly when grappling with the rapid growth of its population.

## 2.6 LITERATURE GAP

Precisely, the current study navigates through the landscape of social development financing across African countries by filling critical gaps in the existing literature that provide nuanced understandings of the interplay among foreign aid, country specific aid (KSA aid), human development index across African countries. These gaps are eruditely presented below:

i. There are limited studies that examine whether the quality of governance influences the effectiveness of foreign aid and government expenditure in promoting social development across African countries for example, Asongu (2012) found that institutional benefits of foreign aid are contingent on existing institutional levels in Africa while Egenti et al. (2019) argue that some foreign aids weaken the quality of governance. The present study addressed this gap by assessing the impact of quality of governance on the effectiveness of foreign aid and government expenditure across African countries.

ii. Studies from the literature showed mixed results on the effects of foreign aid on social development, which can occur due to a non-linear relationship between foreign aid and social development, as a result of the stage of economic development of the countries under investigation. This issue of non-linearity in the relationship is not accounted for by the previous studies, only Asongu (2012) found a non-linear relationship between the effectiveness of aid in economic prosperity and per capita economic growth. To address this, the present study tested whether there is a non-linear relationship between foreign aid and social development across African countries.

iii. Despite the Branbor's et al. (2005) caution on the possibility of under-specifying a model when using multiplicative interaction models, which results to the possibility of omitting one of the constitutive variables, there is a gap in the literature in the application of their checklist from empirical studies. Specifically, only a few studies adhered to the checklist provided by Branbor et al. (2005) and only 10% as highlighted by them sufficiently used all the constitutive variables when analyzing interactions between

variables. This study attempts to address this gap by reestablishing the interaction between government effectiveness with foreign aid and government expenditure, based on the guidelines outlined by Branbor et al. (2005).

iv. Although the broader relationship between foreign aid and social development outcomes has been highlighted extensively in the literature, the examination of the nuanced impact of the country specific aid on HDI in African countries that are members of OIC has been neglected. Many of the studies in this area tend to use aggregate aid data, overlooking the potential variations and effectiveness associated with different categories of aid. Thus, the current study fills this cap by examining the impact of country specific aid on HDI within African countries that are members of OIC. By disaggregating aid data to country specific, the study provides a better understanding of how country specific aid in distinction from aggregate aid promotes social development in these countries. This adds to the broader literature on aid effectiveness and provides valuable insights for policymakers, as well as researchers engaged with the specific dynamics of KSA aid to the OIC member countries in Africa.

v. Previous studies on financing social development have often relied on 2SLS-IV regression and classic fixed and random effect models. However, these methods typically assume that time-invariant cross-unit heterogeneity is uniform across all cases. This assumption can be problematic, as it fails to account for the endogeneity of crucial explanatory variables, potentially leading to misleading parameter estimates. Furthermore, some studies have used the GMM, but frequently employed the DGMM, which has faced criticism for the possibility of yielding downwardly biased results. The 2-Step SGMM and DGMM are both used in this study to address these limitations. This approach effectively mitigates issues related to endogeneity, downward bias, serial correlation and heteroscedasticity in panel data analysis. By doing so, it provides robust and reliable parameter estimates, enhancing the accuracy and the nuanced quality of assessing the impact of different types of financing sources on social development in Africa.

## 2.7 CONCLUDING REMARK

The chapter made a conceptual, theoretical, and empirical survey of literature on financing sources for social development. The first part of the conceptual literature established the need for financing for social development and identified various sources of financing that included foreign aid and government expenditures. Second, the theoretical literature elucidated the different factors that influenced the effectiveness of the financing sources within various contexts. The third insight drawn from the empirical literature reviewed was that sources of financing for social development were context dependent. Studies into foreign aid, economic growth, FDI, and social development return very mixed results.

Literature on government expenditure and social development revealed that, in most cases, government spending had a positive relation with the social developmental outcome. The role of government effectiveness was consistently positive for promoting social development, and the importance of population size in promoting social development was mixed.

Finally, this chapter helps in comprehending the financing sources for social development in general and, specifically across African countries. It showed that there was enough ground for empirical analysis and discussion in the subsequent chapters after presenting the methodology that is used in this study in the next chapter.

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 INTRODUCTION

Having presented the problem of the study and identified respective gaps in Chapters One and Two respectively, the present chapter undertakes a thorough exposition of the methodology employed to attain the respective objectives of the study. The methodology is therefore designed based on the identified research problem in Chapter One and the conceptual, theoretical, and empirical literature on different types of financing sources for social development reviewed in Chapter Two. While drawing insights from previous studies, this research introduces modifications and improvements, shaped by the specific research objectives, in a way that meaningfully contributes to extant knowledge. In that sense, therefore, this study is novel, consequently adding to the extant body of knowledge.

This chapter has been divided into various subsections. The first section is a more detailed exposition of the research design; the second section contains the sources and methods of data collection; and the third focuses on the variables of the study. The fourth subsection comprises model specifications, and the fifth subsection deals with estimation techniques. Diagnostic tests come last in the sequence of subsections. All these subsections systematize the methodology applied in this study to assure a thorough analysis of the data.

## 3.2 CONCEPTUAL FRAMEWORK

The conceptual framework provides a structured guide to comprehensively explore the complex relationships between financial sources, governance factors, implementation processes, and the outcomes in social development. The framework is thus conceived to help analyze how foreign aid, government expenditure, and other key determinant variables impact this multifaceted domain known as social development. There are five

key areas to the conceptual framework, namely Input, Intermediate Mechanisms, Transmission Mechanisms, Outcomes, and Feedback Loops, all of which provide good understanding of the complex pathways in the relationships.

### 3.2.1 Input: Foreign Aid and Government Expenditure

In the context of this study, input refers to the critical factors affecting social development. The inputs used in the study to determine their effect on the social development outcomes of African countries are foreign aid and government expenditure. Foreign aid is defined as financial, technical, or material support from developed countries, international or non-governmental organizations to a country to develop its economic, social or political development (UNDP). It is a very significant external source of finance available for social development projects in most African countries. Aid can affect resource allocation, and it is used for any kind of development project.

According to Sandford (1984), government expenditure is defined as spending by central and local governments, the national insurance fund, and public corporations. Spending by the government on crucial services may substantially influence the development processes of social development initiatives.

### 3.2.2 Intermediate Mechanisms

Intermediate Mechanisms are mechanisms that help mediate the relationships between inputs and the outcomes from this study. Government effectiveness refers to how efficient and competent government institutions are in using funds allocated for social development programmes. It is about efficient and proficient management of funds set apart for social development programmes by government institutions. Kim (2002) expounded on the effective inclusion of human resources management strategies for result-oriented and performance-based government services such as job satisfaction, team empowerment, participative management, and strategic planning.

Additionally, pragmatic policy performance, social stability, and the degree of social and economic development significantly affect governmental trust (Han & Yan,

2019). Government effectiveness requires effectiveness of government institutions that will ensure optimal use of resources, leading to execution of development programmes as planned. Weak or inefficient government institutions result in mismanagement of funds and poor implementation of social development projects. Moreover, corruption has a significant impact on successful implementation of social development initiatives. It has been found to hamper economic growth, investment, and government performance in several countries (Amoh et al. 2020: Alfada, 2019; Houqe & Monem, 2016). It distorts public expenditure away from growth-enhancing areas, such as health and education, toward projects that normally have low productivity enhancement (Blackburn et al., 2006). Moreover, development is impeded due to diversion of resources and economic growth is retarded, while service delivery affected (Ghimire, 2022; Hassan, 2022).

### 3.2.3 Transmission Mechanisms

Transmission Mechanisms describe how inputs are translated into outputs. This involves programme implementation, service delivery and monitoring and evaluation, assessing the outputs or outcomes and impacts of social development programmes. Programme implementation commences after resource allocation, and social development initiatives are formally launched. Effective implementation of programmes ensues by project management processes and coordinating activities that ensure programmes run according to plan. Effective programme implementation is important in translating allocated resources into tangible social development. A good number of factors contribute to successful programme implementation, including stakeholder participation, project management tactics, and the use of social media and technology.

Khang and Moe (2008) examined the success criteria and factors for international development projects, with a life-cycle-based framework to provide guidelines about where to direct more attention and scarce development resources toward successful completion of projects. Furthermore, Camargo et al. (2017) gave a framework for understanding stakeholders' participation in any socially oriented initiatives and humanitarian projects calling for expanding awareness about

stakeholders' satisfaction during the execution of social responsibility and humanitarian project management.

Service Delivery begins after programme implementation, when the actual delivery of services to the population occurs. It is a stage of delivering healthcare, education, and other services, including infrastructure, to the citizens. Therefore, the quality, accessibility, and reach of these services become key factors that determine social development outcomes. According to Peters et al. (2008), integrating vulnerable populations to assert their views on formulation and implementation of strategies aimed at improving their healthcare remains a challenge. In the same vein, van Eijk et al. (2006) also noted that women in rural settings deliver with a low use of professional delivery services, with a good number delivering unassisted. Sharma et al. (2014) also indicated the ineffectiveness of service delivery as a result of limited information as determinants of service utilization, especially in rural Nepal.

Monitoring and Evaluation involves outcome and impact assessment of social development programmes. Through monitoring and evaluation, an assessment can be made as to whether the objectives stated in the programmes are met or relate to the socially stated goals of development. This feedback loop will adjust the resource allocation and the way forward to implement the programme. The process of monitoring and evaluating social development programmes is important in the assessment exercise of their outcomes and impacts. Different studies give insights into the aspects of monitoring and evaluation. For instance, Lindsey (2005) documented the call for formal studies on the effect of study abroad programmes on social work students' values development, which dictates the need for evaluation in educational initiatives. In addition, Cunha and Benneworth (2019) mentioned that outcomes of social innovation are context-dependent and, therefore, a process procedure for their measuring process to identify their impact should be adopted.

### 3.2.4 Outcomes

Outcomes refer to the results of the process, which are categorized into immediate social development outcomes and long-term effects.

Social Development Outcomes are broad indicators, which include reducing poverty, improvement of health and education, better infrastructure, and improved welfare conditions. In essence, social development outcomes tie back to concrete improvements reaped from several initiatives. Nchofoung et al. (2022) highlighted the linear and non-linear effects of infrastructures on inclusive human development in Africa, reiterating how infrastructures reduce poverty and explaining the forecast error in poverty reduction. Equally, Ogun (2010) reviewed how infrastructure impacts urban growth in Nigeria and found that social infrastructure explained a larger proportion of the forecast error of the poverty indicators than physical infrastructure.

Long-Term Effects, other than the immediate effects of social development, take into consideration the lasting impacts of development efforts. This would mean things like economic growth and human capital development, which enlarge the societal scale of progress at large. It is crucial to assess not only immediate results but also the sustainability and long-term benefits of development initiatives. Aucamp and Lombard (2017) explored how social impact assessment can potentially contribute towards social development outcomes within an emerging economy, emphasizing the role of social development in reducing poverty and inequality.

### 3.2.5 Feedback Loops

Feedback Loops are dynamic processes that consider how the system responds to certain conditions. Aid Dependency, Corruption and External Conditions are the three identified loops.

Aid Dependency is the feedback loop resulting from the potential of foreign aid to create dependency within recipient countries. If countries become too dependent on aid, they lose the will to develop themselves economically. According to Knack (2001), aid dependency may undermine institutional quality by weakening accountability, encouraging rent-seeking and corruption, fomenting conflict over control of the aid funds, siphoning off scarce talent from the bureaucracy, and alleviating pressures for reform of inefficient policies and institutions. This can result in unsustainability of development efforts and even hinder long-term social development.

Corruption can have a very adverse impact on the effectiveness of foreign aid and government expenditure. Corruption within a system significantly hinders the effectiveness of foreign aid and government expenditure, leading to the misallocation of funds and embezzlement (Quibria, 2017). Reducing corruption is essential for maximizing the impact of development resources.

External Economic and Political Conditions, in the long run, the efficiency and effectiveness of foreign aid and government expenditure can be influenced by external economic and political conditions. These external conditions include those factors which may alter the availability of resources for the recipient country and the conditions that prevail during their provision such as changes in the global economy or shifts in political alliances. Dreher (2010) showed the extent to which political motivations are relevant to the effectiveness of aid.

Figure 2.2 presents the conceptual framework used in the study. It shows how foreign aid and government expenditure interact with government effectiveness, corruption, resource allocation, programme implementation, service delivery, and monitoring and evaluation to influence the social development outcomes and long-term effects.

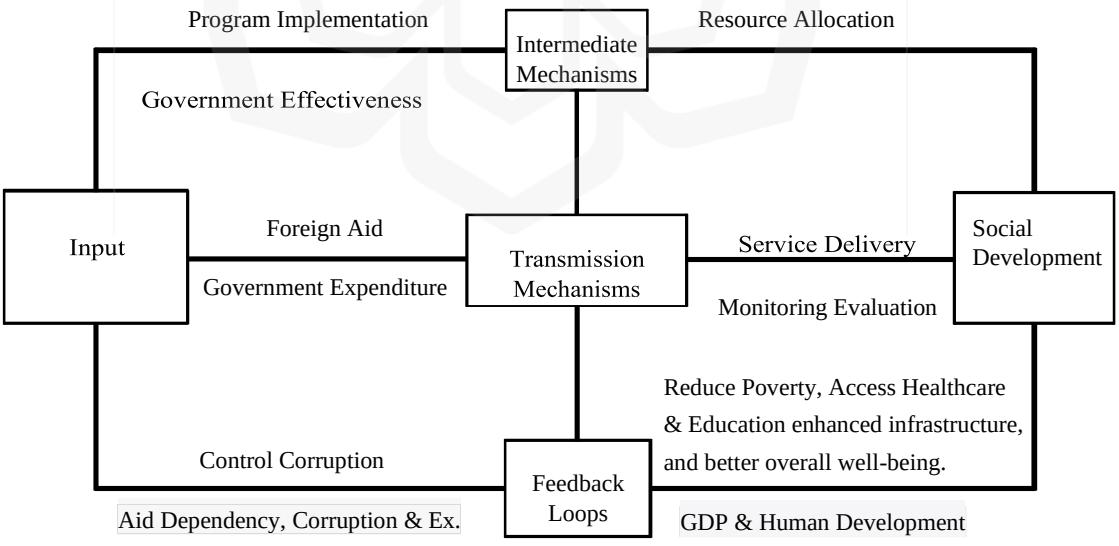


Figure 3.1. Transmission Mechanisms
Source: Author's Illustrations.

## 3.3 MODEL SPECIFICATION

The model is grounded in Two Gap Mode detailed in Chapter Two. It assures the comprehensiveness of the framework for analyzing the nuanced complexities of social development financing across countries in Africa. The empirical model used in the study for estimating the relationship between different finance sources and social development in Africa is based on the above theory and prior empirical studies, such as Yontcheva and Masud (2005), Asongu (2012), Alemu and Lee (2015), Chakraborty and Mallick (2017) and Tyson and Ford (2022). The following is the empirical model:

$$HDI_{it} = f\left(Aid_{it}, GX_{it}, SA_{it}, GDP_{it}, GE_{it}, CC_{it}, FDI_{it}, PS_{it}\right) \quad 3.1$$

Where $HDI_{it}$ refers to Human Development Index, $Aid_{it}$ refers to Foreign Aid, $GX_{it}$ refers to Government Expenditure, $SA_{it}$ refers to the Kingdom of Saudi Arabia aid, $GDP_{it}$ refers to Economic Growth, $GE_{it}$ refers to Government Effectiveness, $CC_{it}$ refers to Control of Corruption, $FDI_{it}$ refers to Foreign Direct Investment, and $PS_{it}$ refers to Population Size of country i at time t.

This enables us to further specify the econometric model:

$$HDI_{it} = \beta_0 + \beta_1 Aid_{it} + \beta_2 GX_{it} + \beta_3 SA_{it} + \beta_4 GDP_{it} + \beta_5 GE_{it} + \beta_6 CC_{it} + \beta_7 FDI_{it} + \beta_8 PS_{it} + \mu_{it} \quad 3.2$$

$\beta_0$, $\beta_1$, $\beta_2$, $\beta_3$, $\beta_4$, $\beta_5$, $\beta_6$, $\beta_7$ and $\beta_8$ are the coefficients of Foreign Aid, Government Expenditure, Kingdom of Saudi Arabia's aid, Economic Growth, Government Effectiveness, Control of Corruption, Foreign Direct Investment and Population Size, respectively. The error term $\mu_{it}$ is used to account for unobservable social development-affecting elements exogenous to the model. It is assumed that the error term has a normal distribution with a mean of zero and constant variance.

## 3.4 VARIABLES OF THE STUDY

Each variable is discussed in detail in the following sections. In this particular study, four types of variables were employed, namely dependent variable, independent variables, the moderating variable and the control variables.

### 3.4.1 Dependent Variable

The dependent variable in this study is social development, for which Human Development Index (HDI) is used as a proxy. HDI is a composite index meant to measure human development based on three important dimensions: health, education, and standard of living. It is generally a broad overview of how far a population has achieved an ideal vision of being well and healthy with respect to life expectancy, education levels, and economic prosperity. HDI is an indicator widely used in measuring and comparing human development results across varied regions and countries (UNDP, 2020a). The data was sourced from the Human Development Reports of UNDP.

The UNDP makes available the data through its Human Development Report on HDI and its components. Table 3.1 presents HDI and its components, which are composite measures of average achievement in the three basic dimensions of human development. The three dimensions are a long and healthy life dimension, as measured by life expectancy at birth; knowledge, as expressed by expected years of schooling and mean years of schooling; and a decent standard of living, as captured by GNI per capita. Life expectancy at birth refers to the number of years that a baby born at that exact moment is expected to live if the mortality rates prevailing at the time, it was born remain constant. Expected years of schooling are those that will be completed by a child entering school age, assuming that prevailing patterns in enrollment by age do not change during the child's life. Mean years of schooling refers to a calculation of the average education years for people aged 25 years and above. Gross National Income (GNI) per capita indicates individual incomes in an economy, adjusted for international comparison by using the 2017 purchasing power parity, in US Dollars. Subtraction of HDI rank from GNI per capita rank gives the difference in ranking under GNI per capita and HDI ranking with a negative value indicating better rank by GNI. Lastly, HDI rank for 2020 means the ranking according to HDI values along with the latest revised data of 2022.

Notably, the case of Mauritius has an HDI value of 0.802, which places it within the Very High Human Development category. Some of these positive indicators exhibited in the country include life expectancy at birth of 73.6 years, with 15.2 years of expected schooling and 10.4 years for mean schooling. Seychelles has an HDI of

0.785, also falling into the High Human Development category, portraying very respectable figures in life expectancy of 71.3 years and in mean schooling of 10.3 years. Algeria and Egypt record values higher than 0.73 for HDI, driven by strong performance in variables like HDI, notably life expectancy and expected schooling. In contrast, South Sudan has a rather low rating in HDI at 0.385, driven by challenging life expectancy of 55.0 years and mean schooling of 5.5 years.

Table 3.1. Human Development Index and its Components

| | | Human Development Index (HDI) | Life Expectancy at Birth | Expected years of schooling | Mean years of schooling | Gross national income (GNI) per capita | GNI per capita rank minus HDI rank | HDI rank |
|---|---|---|---|---|---|---|---|---|
| HDI rank | Country | Value | (years) | (years) | (years) | (2017 PPP $) | | |
| | Year | 2021 | 2021 | 2021 | 2021 | 2021 | 2021 | 2020 |
| | VERY HIGH HUMAN DEVELOPMENT | | | | | | | |
| 63 | Mauritius | 0.802 | 73.6 | 15.2 | 10.4 | 22,025 | -1 | 62 |
| | HIGH HUMAN DEVELOPMENT | | | | | | | |
| 72 | Seychelles | 0.785 | 71.3 | 13.9 | 10.3 | 25,831 | -17 | 69 |
| 91 | Algeria | 0.745 | 76.4 | 14.6 | 8.1 | 10,800 | 13 | 96 |
| 97 | Egypt | 0.731 | 70.2 | 13.8 | 9.6 | 11,732 | 4 | 97 |
| 97 | Tunisia | 0.731 | 73.8 | 15.4 | 7.4 | 10,258 | 10 | 94 |
| 104 | Libya | 0.718 | 71.9 | 12.9 | 7.6 | 15,336 | -27 | 117 |
| 109 | South Africa | 0.713 | 62.3 | 13.6 | 11.4 | 12,948 | -17 | 102 |
| 112 | Gabon | 0.706 | 65.8 | 13.0 | 9.4 | 13,367 | -25 | 113 |
| | MEDIUM HUMAN DEVELOPMENT | | | | | | | |
| 117 | Botswana | 0.693 | 61.1 | 12.3 | 10.3 | 16,198 | -43 | 110 |
| 123 | Morocco | 0.683 | 74.0 | 14.2 | 5.9 | 7,303 | 1 | 122 |
| 128 | Cabo Verde | 0.662 | 74.1 | 12.6 | 6.3 | 6,230 | 2 | 127 |
| 133 | Ghana | 0.632 | 63.8 | 12.0 | 8.3 | 5,745 | -2 | 135 |
| 138 | Sao Tome and Principe | 0.618 | 67.6 | 13.4 | 6.2 | 4,021 | 13 | 139 |
| 139 | Namibia | 0.615 | 59.3 | 11.9 | 7.2 | 8,634 | -23 | 134 |
| 144 | Eswatini (Kingdom of) | 0.597 | 57.1 | 13.7 | 5.6 | 7,679 | -21 | 141 |
| 145 | Equatorial Guinea | 0.596 | 60.6 | 9.7 | 5.9 | 12,074 | -47 | 147 |
| 146 | Zimbabwe | 0.593 | 59.3 | 12.1 | 8.7 | 3,810 | 9 | 145 |
| 148 | Angola | 0.586 | 61.6 | 12.2 | 5.4 | 5,466 | -14 | 149 |
| 151 | Cameroon | 0.576 | 60.3 | 13.1 | 6.2 | 3,621 | 6 | 150 |
| 152 | Kenya | 0.575 | 61.4 | 10.7 | 6.7 | 4,474 | -6 | 150 |

| | | Human Development Index (HDI) | Life Expectancy at Birth | Expected years of schooling | Mean years of schooling | Gross national income (GNI) per capita | GNI per capita rank minus HDI rank | HDI rank |
|---|---|---|---|---|---|---|---|---|
| 153 | Congo | 0.571 | 63.5 | 12.3 | 6.2 | 2,889 | 11 | 153 |
| 154 | Zambia | 0.565 | 61.2 | 10.9 | 7.2 | 3,218 | 7 | 154 |
| 156 | Comoros | 0.558 | 63.4 | 11.9 | 5.1 | 3,142 | 6 | 156 |
| 158 | Mauritania | 0.556 | 64.4 | 9.4 | 4.9 | 5,075 | -20 | 158 |
| 159 | Côte d'Ivoire | 0.550 | 58.6 | 10.7 | 5.2 | 5,217 | -22 | 159 |
| | LOW HUMAN DEVELOPMENT | | | | | | | |
| 160 | Tanzania (United Republic) | 0.549 | 66.2 | 9.2 | 6.4 | 2,664 | 7 | 160 |
| 162 | Togo | 0.539 | 61.6 | 13.0 | 5.0 | 2,167 | 12 | 163 |
| 163 | Nigeria | 0.535 | 52.7 | 10.1 | 7.2 | 4,790 | -22 | 163 |
| 165 | Rwanda | 0.534 | 66.1 | 11.2 | 4.4 | 2,210 | 6 | 165 |
| 166 | Benin | 0.525 | 59.8 | 10.8 | 4.3 | 3,409 | -7 | 166 |
| 166 | Uganda | 0.525 | 62.7 | 10.1 | 5.7 | 2,181 | 6 | 166 |
| 168 | Lesotho | 0.514 | 53.1 | 12.0 | 6.0 | 2,700 | -2 | 168 |
| 169 | Malawi | 0.512 | 62.9 | 12.7 | 4.5 | 1,466 | 13 | 169 |
| 170 | Senegal | 0.511 | 67.1 | 9.0 | 2.9 | 3,344 | -10 | 170 |
| 171 | Djibouti | 0.509 | 62.3 | 7.4 | 4.1 | 5,025 | -32 | 171 |
| 172 | Sudan | 0.508 | 65.3 | 7.9 | 3.8 | 3,575 | -14 | 171 |
| 173 | Madagascar | 0.501 | 64.5 | 10.1 | 5.1 | 1,484 | 8 | 173 |
| 174 | Gambia | 0.500 | 62.1 | 9.4 | 4.6 | 2,172 | -1 | 173 |
| 175 | Ethiopia | 0.498 | 65.0 | 9.7 | 3.2 | 2,361 | -5 | 175 |
| 176 | Eritrea | 0.492 | 66.5 | 8.1 | 4.9 | 1,729 | 3 | 176 |
| 177 | Guinea-Bissau | 0.483 | 59.7 | 10.6 | 3.6 | 1,908 | 0 | 177 |
| 178 | Liberia | 0.481 | 60.7 | 10.4 | 5.1 | 1,289 | 7 | 179 |
| 179 | Congo (Democratic Republic) | 0.479 | 59.2 | 9.8 | 7.0 | 1,076 | 9 | 180 |
| 181 | Sierra Leone | 0.477 | 60.1 | 9.6 | 4.6 | 1,622 | -1 | 181 |
| 182 | Guinea | 0.465 | 58.9 | 9.8 | 2.2 | 2,481 | -13 | 182 |
| 184 | Burkina Faso | 0.449 | 59.3 | 9.1 | 2.1 | 2,118 | -8 | 185 |

| | | Human Development Index (HDI) | Life Expectancy at Birth | Expected years of schooling | Mean years of schooling | Gross national income (GNI) per capita | GNI per capita rank minus HDI rank | HDI rank |
|---|---|---|---|---|---|---|---|---|
| 185 | Mozambique | 0.446 | 59.3 | 10.2 | 3.2 | 1,198 | 2 | 184 |
| 186 | Mali | 0.428 | 58.9 | 7.4 | 2.3 | 2,133 | -11 | 186 |
| 187 | Burundi | 0.426 | 61.7 | 10.7 | 3.1 | 732 | 4 | 187 |
| 188 | Central African Republic | 0.404 | 53.9 | 8.0 | 4.3 | 966 | 1 | 188 |
| 189 | Niger | 0.400 | 61.6 | 7.0 | 2.1 | 1,240 | -3 | 189 |
| 190 | Chad | 0.394 | 52.5 | 8.0 | 2.6 | 1,364 | -7 | 190 |
| 191 | South Sudan | 0.385 | 55.0 | 5.5 | 5.7 | 768 | -1 | 191 |

Source: UNDP (2023).

### 3.4.2 Independent Variable

Foreign aid, government expenditure, and Saudi humanitarian aid are the independent variables of this study. Foreign aid is proxied by net official development assistance (ODA). It involves the disbursements of loans made on concessional terms (the net of the repayments of principal) and grants. These financial flows originate from the official agencies of the members of the Development Assistance Committee (DAC), multilateral institutions and non-DAC countries. The primary objective is to promote economic development and welfare in countries and territories listed by DAC as ODA recipients. Loans with a grant element of at least 25%, computed at a 10% discount rate, are included in the aid. All data is presented in constant 2020 U.S dollars (WDI, 2022). The data is sourced from the World Development Indicators (WDI) of the World Bank. Gross national expenditure proxy government expenditure, which is the summed-up value of general government final consumption expenditure and gross capital formation (WDI, 2022). The data is obtained from the World Development Indicators of the World Bank. KSHARC focuses mostly on first aid and relief to countries in need and those that have crises like natural disasters, conflicts, or otherwise. It includes health, education, water, sanitation and hygiene, nutrition, protection, humanitarian and emergency relief, coordination, charitable assistance, camp coordination, multi cluster and early recovery (KSHARC, 2024). All the data was provided in U.S dollars.

### 3.4.3 Moderating Variable

The Government Effectiveness variable captures perception about the quality of public service, quality of the civil service, and its degree of independence from political pressures, the quality of policy formulation and implementation, and credibility commitment to such policies on the part of the government. Government Effectiveness is measured in percentile rank, which denotes the country's rank among all countries covered by the aggregate indicator, where 0 corresponds to the lowest rank and 100 to the highest rank. Percentile ranks have been adjusted to correct for changes over time in the composition of the countries covered by the WGI (WGI, 2022). The data was sourced from the World Governance Indicators (WGI) of the World Bank.

### 3.4.4 Control Variables

This study has four sets of control variables, namely economic growth, control of corruption, foreign direct investment, and population size. Economic growth is proxied by the annual percentage growth rate of Gross Domestic Product (GDP) at market prices. GDP is computed with constant local currency, and aggregates are based on constant prices from 2015 in US dollars. The comprehensive measure of the GDP includes the sum of gross value added by all resident producers within the economy. The sum includes any product taxes yet subtracts any subsidies that have not been added to the value of the products. In this regard, it is worth noting that GDP is calculated without deducting for depreciation of fabricated assets or for depletion and degradation of natural resources (WDI, 2022). The data was sourced from the World Development Indicators (WDI) of the World Bank.

Control of corruption is a variable that explains the extent to which elite and private interests utilize public power for private gains. It covers bribes given and taken, petty and grand corruption together with cooptation of state institutions by these entities. Control of corruption is measured in percentile rank numerical value between 0 and 100, and the country's percentile ranks at the level of all countries that made up the aggregate indicator. The percentage ranks have been changed to reflect the fact that, over time, the composition of the countries included in WGI also changes (WGI, 2022). The data was extracted from the World Governance Indicators (WGI) of the World Bank.

The foreign direct investment variable incorporates the International Monetary Fund (IMF), International Financial Statistics and Balance of Payments databases, World Bank, International Debt Statistics, and World Bank and OECD GDP estimates (WDI, 2022). The data was obtained from the World Development Indicators of the World Bank.

Population size is proxied by total population based on the de facto definition of population. It includes all residents regardless of legal status or citizenship (WDI, 2022). The values shown are midyear estimates. The data was sourced from the World Development Indicators (WDI) of the World Bank.

All variables, along with their measurements, are presented in Table 3, with corresponding notations in the model and expected signs associated with each variable.

Table 3.2. Variables and Measurement

| Variables | Proxies/Measurement | Notation & Unit | Source | Expected Signs |
|---|---|---|---|---|
| Social Development | Human Development Index (HDI) | HDI Score | UNDP | |
| Foreign Aid | Net official development assistance and official aid received | AID Constant US$ | WDI | Positive (Mahembe & Odhiambo, 2021; Akobeng, 2020) |
| Government Expenditure | Gross national expenditure | GX % of GDP | WDI | Positive (Tatuev et al., 2018; Dahmardeh & Tabar, 2013) |
| Country Specific Aid | Kingdom of Saudi Arabia's Aid | SA | KSHARC | Positive (Sritharan et al. 2023; Tyson & Ford 2022) |
| Economic Growth | GDP growth | GDP annual % | WDI | Positive (Abdul Rehman et al., 2020) |
| Governance Quality | Government Effectiveness | GE Rank | WGI | Positive (Arora & Chong, 2018) |
| | Control of Corruption | CC Rank | WGI | Negative (Ghimire, 2022) |
| Foreign Direct Investment | Foreign direct investment | FDI % of GDP | WDI | Positive (Das, 2020) |
| Population Size | Population | PS Total | WDI | Positive or Negative (Hidayati, 2020) |

Source: Author's Illustrations.

KSA Aid varied significantly among the 27 African OIC member countries, as captured in Table 3.3. The activities carried out ranged from food security, health, early

recovery, water, sanitation, and hygiene, education, multi-cluster, camp coordination nutrition, protection, humanitarian and emergency relief coordination, to charitable assistance. Somalia stood out to be the largest receiver, with the total aid given over the period at $109,730,258.00, an indication of the nation's unsolved problems and a dire need for huge support. Huge aid amounts also went to countries like Nigeria with $14,730,997.00 and Niger with $11,654,110.00, reflecting their large population and varied developmental needs. The other major recipients of this aid were Mauritania, with US$6,806,131.00; Burkina Faso, US$6,643,759.00; and Djibouti, US$6,192,360.00, relating to the very important mediums by which the aid could actually redress economic and social imbalances. Other countries of smaller amounts and general impact include Tunisia with US$7,189,360.00, Cameroon with US$3,925,422.00, and Senegal with US$3,727,130.00. Countries with aids of about a few million dollars to support pro-development efforts include Gambia, Guinea, and Sierra Leone. Noticeably, Libya received the smallest, $1,238.00, for the given period under study.

Table 3.3. Kingdom of Saudi Arabia’s Aid to African OIC Member Countries

| COUNTRY | YEAR | ID | No. of Projects | SA |
|---|---|---|---|---|
| Algeria | 2013-2022 | 1 | 10 | $ 7,597,833.00 |
| Benin | 2013-2022 | 2 | 15 | $2,073,262.00 |
| Burkina Faso | 2013-2022 | 3 | 13 | $6,643,759.00 |
| Cameroon | 2013-2022 | 4 | 14 | $3,925,422.00 |
| Chad | 2013-2022 | 5 | 21 | $6,673,071.00 |
| Comoros | 2013-2022 | 6 | 8 | $1,297,038.00 |
| Cote d'Ivoire | 2013-2022 | 7 | 5 | $433,664.00 |
| Djibouti | 2013-2022 | 8 | 24 | $6,192,360.00 |
| Egypt, Arab Rep. | 2013-2022 | 9 | 2 | $611,064.00 |
| Gabon | 2013-2022 | 10 | 2 | $100,000.00 |
| Gambia, The | 2013-2022 | 11 | 10 | $1,477,256.00 |
| Guinea | 2013-2022 | 12 | 4 | $1,438,642.00 |
| Guinea-Bissau | 2013-2022 | 13 | 1 | $87,846.00 |

| COUNTRY | YEAR | ID | No. of Projects | SA |
|---|---|---|---|---|
| Libya | 2013-2022 | 14 | 1 | $1,238.00 |
| Mali | 2013-2022 | 15 | 12 | $4,823,941.00 |
| Mauritania | 2013-2022 | 16 | 28 | $6,806,131.00 |
| Morocco | 2013-2022 | 17 | 12 | $1,082,026.00 |
| Mozambique | 2013-2022 | 18 | 1 | $696,441.00 |
| Niger | 2013-2022 | 19 | 24 | $11,654,110.00 |
| Nigeria | 2013-2022 | 20 | 48 | $14,730,997.00 |
| Senegal | 2013-2022 | 21 | 20 | $3,727,130.00 |
| Sierra Leone | 2013-2022 | 22 | 1 | $237,333.00 |
| Somalia | 2013-2022 | 23 | 77 | $109,730,258.00 |
| Sudan | 2013-2022 | 24 | 88 | $60,062,841.00 |
| Togo | 2013-2022 | 25 | 3 | $165,837.00 |
| Tunisia | 2013-2022 | 26 | 4 | $7,189,360.00 |
| Uganda | 2013-2022 | 27 | 1 | $8,925.00 |

Source: Authors Illustrations using data from King Salman Humanitarian Aid and Relief Centre (2022).

### 3.5 SOURCES AND METHODS OF DATA COLLECTION

This study spans between 2013 and 2022 and the data used were collected from secondary sources. These include the UNDP through its Human Development Reports; the World Bank through its World Development Indicators and World Governance Indicators; and the King Salman Humanitarian Aid and Relief Centre (KSHARC).

### 3.6 ESTIMATION TECHNIQUE

The study adopted both 2-Step System Generalized Method of Moments (SGMM) and Difference Generalized Method of Moments (DGMM) estimation techniques because Pooled OLS, fixed and random effect models cannot overcome the problem of endogeneity (i.e., omitted variable bias, and bidirectional causality) that may arise among the explanatory variables (Byaro, 2021). Furthermore, biased and inconsistent findings were produced by Ordinary Least Squares (OLS), fixed effects, random effects

and generalized least squares techniques when lagged dependent variables were used as explanatory variables (Baltagi, 2001; Roodman, 2009).

Endogeneity problem can occur from the dependent variable to the independent variables in the specified model for example, countries with lower HDI may receive more foreign aid and foreign aid can also influence HDI, leading to a bidirectional causality. Higher government expenditure can lead to higher HDI and Higher HDI and result in higher government expenditure, leading to a bidirectional causality. Likewise, economic growth and FDI can both have a bidirectional causality with HDI, suggesting the presence of endogeneity in the model.

The most robust methodological approach to date for dealing with this problem and yielding objective and reliable findings is the GMM. In this study, the GMM technique is appropriate due to empirical relevance and robustness in cases where cross-sectional data dimension is greater than time dimension. It also addresses endogeneity problems (Astuti et al., 2020). However, the GMM is divided into two estimators, namely the difference GMM proposed by Arellano and Bond (1991) and systems GMM proposed by Blundell and Bond (1998). Bond et al. (2001) indicated that the differentiated GMM may be vulnerable to a strong downward finite sample bias. Thus, the study necessitates the estimations of both 2-Step SGMM and DGMM rather than the DGMM estimate alone due to the tendencies of its downward bias. The rationale for using SGMM and DGMM stemmed from the obtainable consistent and reliable parameters when DGMM is downwardly biased. As a result, equation 3.2 can be reformulated using the GMM developed by Blundell and Bond (1998) to achieve the first objective, as follows in Model 1:

**Model 1**

$$InHDI_{it} = \beta_0 + \beta_1 InHDI_{it-1} + \beta_2 InAid_{it} + \beta_3 InGX_{it} + \beta_4 InGDP_{it} + \beta_5 GE_{it} + \beta_6 CC_{it} + \beta_7 InFDI_{it} + \beta_8 InPS_{it} + (\delta_i + \mu_{it}) \quad 3.3$$

$$\Delta InHDI_{it} = \beta_0 + \beta_1(\Delta InHDI_{it-1}) + \beta_2(\Delta InAid_{it}) + \beta_3(\Delta InGX_{it}) + \beta_4(\Delta InGDP_{it}) + \beta_5(\Delta GE_{it}) + \beta_6(\Delta CC_{it}) + \beta_7(\Delta InFDI_{it}) + \beta_8(\Delta InPS_{it}) + \Delta\mu_{it} \quad 3.4$$

Where $InHDI_{it}$ represents the log of HDI as a measure of social development, $InHDI_{it-1}$ is the lag value, $\delta i$ is country unobserved specific effect. In the GMM estimation, lagged levels of the endogenous variables, i.e. $InHDI_{it-1}$, are used as instruments, while the lagged differences of potential endogenous variables, i.e. ($\Delta InHDI_{it-1}$) are used as instruments in equation 3.3 and 3.4, respectively.

An interaction term between foreign aid, government expenditure and government effectiveness are introduced for the second and third objectives to examine whether the quality of governance impacts on the effectiveness of foreign aid and government expenditure across African countries. Therefore, the equation is re-specified as follows in Models 2 and 3 for each objective respectively:

**Model 2 (A)**

$$InHDI_{it} = \beta_0 + \beta_1 InHDI_{it-1} + \beta_2 InAid_{it} + \beta_3 InAid_{it} * GE_{it} + \beta_4 InGDP_{it} + \beta_5 InPS_{it} + In\mu_{it} \quad 3.5$$

$$\Delta InHDI_{it} = \beta_0 + \beta_1(\Delta InHDI_{it-1}) + \beta_2(\Delta InAid_{it}) + \beta_3(\Delta InAid_{it} * \Delta GE_{it}) + \beta_4(InGDP_{it}) + \beta_5(InPS_{it}) + \Delta In\mu_{it} \quad 3.6$$

**Model 2 (B)**

$$InHDI_{it} = \beta_0 + \beta_1 InHDI_{it-1} + \beta_2 InAid_{it} + \beta_3 GE_{it} + \beta_4 InAid_{it} * GE_{it} + In\mu_{it} \quad 3.7$$

$$\Delta InHDI_{it} = \beta_0 + \beta_1(\Delta InHDI_{it-1}) + \beta_2(\Delta InAid_{it}) + \beta_3(\Delta GE_{it}) + \beta_4(\Delta InAid_{it} * \Delta GE_{it}) + \Delta In\mu_{it} \quad 3.8$$

**Model 3 (A)**

$$InHDI_{it} = \beta_0 + \beta_1 InHDI_{it-1} + \beta_2 InGX_{it} + \beta_3 InGX_{it} * GE_{it} + \beta_4 InGDP_{it} + \beta_5 InPS_{it} + In\mu_{it} \quad 3.9$$

$$\Delta InHDI_{it} = \beta_0 + \beta_1(\Delta InHDI_{it-1}) + \beta_2(\Delta InGX_{it}) + \beta_3(\Delta InGX_{it} * \Delta GE_{it}) + \beta_4(\Delta InGDP_{it}) + \beta_5(\Delta InPS_{it}) + \Delta In\mu_{it} \quad 3.10$$

**Model 3 (B)**

$$InHDI_{it} = \beta_0 + \beta_1 InHDI_{it-1} + \beta_2 InGX_{it} + \beta_3 GE_{it} + \beta_4 InGX_{it} * GE_{it} + \beta_5 InGDP_{it} + In\mu_{it} \quad 3.11$$

$$\Delta InHDI_{it} = \beta_0 + \beta_1(\Delta InHDI_{it-1}) + \beta_2(\Delta InGX_{it}) + \beta_3(\Delta GE_{it}) + \beta_4(\Delta InGX_{it} * \Delta GE_{it}) + \beta_5(\Delta InGDP_{it}) + \Delta In\mu_{it} \quad 3.12$$

The coefficient of "aid_governance_interaction" and "expenditure_governance_interaction" variables indicates the extent to which the effectiveness of foreign aid and government expenditure varies in promoting social development, depending on the quality of governance. If the coefficient is positive and statistically significant, it suggests that the positive effect of aid and government expenditure on social development is enhanced by the quality of governance. Conversely, if the coefficient is negative and statistically significant, it suggests that the positive effect of aid and government expenditure is undermined by poor governance.

For the fourth objective, a quadratic term for aid, namely $Aid^2$ was included in the model to examine whether the relationship between aid and social development is nonlinear. The rationale for this approach is that aid may not always have a significant impact on social development; some studies suggested a non-linear link between foreign aid and HDI. According to Asiama (2009), it falls broadly into two different categories. While aggregate bilateral aid did not significantly impact HDI, sector-specific and programme aid did. This was further corroborated by Mohamed and Mzee (2017) that showed the existence of a positive association between aid and HDI in low-HDI countries. Furthermore, Asongu (2012) noted that the aid-HDI nexus was negative, indicating that not all aids enhance human development. Moreover, Ouattara and Strobl (2006) found a non-linear relationship between project aid and growth, suggesting diminishing returns in project aid on growth. The respective equation 3.9 Model 4 is shown below:

**Model 4**

$$InHDI_{it} = \beta_0 + \beta_1 InHDI_{it-1} + \beta_2 InAid_{it} + \beta_3 InAid^2{}_{it} + \beta_4 InGX_{it} + \beta_5 GE_{it} + \beta_6 InFDI_{it} + In\mu_{it} \quad 3.13$$

$$\Delta InHDI_{it} = \beta_0 + \beta_1(\Delta InHDI_{it-1}) + \beta_2(\Delta InAid_{it}) + \beta_3(\Delta InAid^2{}_{it}) + \beta_4(\Delta InGX_{it}) + \beta_5(\Delta GE_{it}) + \beta_6(\Delta InFDI_{it}) + \Delta In\mu_{it} \quad 3.14$$

**Model 5**

$$InHDI_{it} = \beta_0 + \beta_1 InHDI_{it-1} + \beta_2 InSA_{it} + \beta_3 InGDP_{it} + \beta_4 GE_{it} + \beta_5 InFDI_{it} + In\mu_{it} \quad 3.15$$

$$\Delta InHDI_{it} = \beta_0 + \beta_1(\Delta InHDI_{it-1}) + \beta_2(\Delta InSA_{it}) + \beta_3(\Delta InGDP_{it}) + \beta_4(\Delta GE_{it}) + \beta_5(\Delta InFDI_{it}) + \Delta In\mu_{it} \quad 3.16$$

To achieve the fifth objective of the study, the Kingdom of Saudi Arabia's aid variable was introduced to the model above. Several studies have examined a country specific aid or a specific programme aid by the donor country to the recipient country. For instance, Tyson and Ford (2022) considered the U.S. aid to less developed countries LDCs, Cochrane (2021) was UAE aid to three primary recipients (Egypt, Serbia and Yemen) and Sritharan et al. (2023) focused on the Kingdom of Saudi Arabia's aid flow during the Bosnian War and the post-Arab Spring era.

## 3.7 GENERALZED METHOD OF MOMENTS (GMM), JUSTIFICATION FOR SYSTEM GMM AND DIFFERENCE (DGMM) ESTIMATIONS

The study followed Bond et al. (2001) in having a systematic process for choosing between difference and system GMM estimators, which is particularly important in robust estimation using dynamic panel data models. The steps include:

i. Pooled OLS Estimate: Estimates a model using the Ordinary Least Squares technique. From this estimate, retrieve the lag value of the dependent variable's coefficient, which sets an upper bound for further investigations.
ii. Fixed Effect Model Estimate: Estimates the Fixed Effect model. Takes the coefficient of the dependent variable's lag value derived through Fixed Effect model to use as the lower bound for comparison.
iii. Difference GMM Estimate: Run difference GMM. If the fixed effect estimate is close to or lower than the difference GMM estimate, then that can be a signal of downward bias of the model due to weak instrumentation.
iv. System GMM Estimate: If it is known that the DGMM estimate is downward biased, then one may use the SGMM estimator. This estimator deals with the problem by adding more moment conditions to model and increases its robustness in the presence of weak instruments.

It is in ensuring that the steps were followed chronologically that this study systematically progressed to a well-founded choice of the estimator. Where the difference GMM was found downwardly biased, System GMM was used and vice versa. Hence, following the best practices in dynamic panel data analysis and mitigating concerns related to weak instruments.

## 3.8 DIAGNOSTIC TESTS

This section outlines the two diagnostic tests that are required for the validation of GMM estimation which are Arelano-Bond and Sargan-Hansen. The Arrelano-Bond test was used to check for the existence of serial correlation in the model. The Sargan-Hansen test verified the validity of over-identifying restrictions for the GMM instruments. The validity of these instruments is crucial to ensure that the model estimates are precise and consistent. In the following sections, the null hypothesis of these tests and the implications, whether rejected or not rejected, are explained.

### 3.8.1 Arelano-Bond Test

The Arellano-Bond test is a diagnostic test used to check for serial correlation in the GMM estimation, as mentioned briefly earlier. This test is an extension of the Arellano and Bond autocorrelation test commonly used to address the potential issue of serial correlation in GMM estimation (Arellano & Bond, 1991). The test has a null hypothesis ($H_0$) of no serial correlation in both first order autoregression (AR (1)) and second order autoregression (AR (2)) autocorrelation. Rejection of the H0 implies the presence of a given order of serial correlation, while failure to reject the null hypothesis implies an absence of serial order correlation. However, it is important to note that the presence of first-order serial correlation is not necessarily indicative of model misspecification, as it may result from the first difference of independently and identically distributed idiosyncratic errors that are autocorrelated (Maddala & Lahiri, 2009). Thus, there must be no second-order serial autocorrelation, and the instruments must be valid for the estimators to qualify as consistent (Arellano & Bond, 1991).

### 3.8.2 Sargan-Hansen Test

The Sargan-Hansen diagnostic test was used to verify the validity of the instruments used in GMM estimation. According to Hansen (1982) and Sargan (1958), the test assumes that the instruments used in the model are uncorrelated with the error term. The test has a null hypothesis ($H_0$) of no over-identifying restrictions implying instrument validity and correct model specification. The alternative hypothesis claims violation of

the over-identifying restrictions and indicates the invalidity of used instruments and the misspecification of the model. The Sargan-Hansen test statistic is calculated as the difference between the number of instruments used in the model and the number of parameters estimated, multiplied by the vector of moment conditions. The test statistics follow a chi-square distribution with degrees of freedom equal to the difference between the number of instruments and parameters. If the calculated test statistics are not statistically significant, we cannot reject the H0, implying model validity and appropriate use of instruments. However, we reject the H0 if the calculated test statistic is statistically significant. It implies model misspecification and the invalidity of used instruments.

The Sargan-Hansen test is commonly used with the Arellano-Bond test to evaluate the validity of the GMM estimation. Hence, the testing of the instruments' validity via the Sargan-Hansen test assures that the estimated coefficients are consistent and efficient, and the model is accurately specified (Roodman, 2009). This encapsulates the findings of the study holistically and enables a clear-cut identification of actionable policy implications.

## 3.9 CONCLUDING REMARK

This chapter outlined the adopted methodology of the study. It delineated the processes for estimating the relationship between foreign aid, government expenditure, economic growth, government effectiveness, control of corruption, foreign direct investment, population size, and HDI across African countries. The estimation techniques adopted in this study were 2-Step System and Difference GMM, which are quite appropriate for dealing with problems of endogeneity, serial correlation, and heteroscedasticity, and even the downward bias problems that may arise in the model. The study re-specified the equation models for addressing each objective of the study.

First, it introduced interaction terms between foreign aid, government expenditure, and government effectiveness to test how foreign aid, and government expenditure, interact with social development in different African contexts of governance. A squared term for aid was introduced to check for possible non-linearity in the relationship between foreign aid and social development. The chapter concluded

with elaborations of the two required diagnostic tests of Arellano-Bond test and the Sargan-Hansen test, in order to ensure the validity of GMM estimation. More specifically, the Arellano-Bond test checks for the presence of serial correlation in a model's errors, while the Sargan-Hansen test confirms the validity of over-identifying restrictions with regard to GMM instruments. In other words, it assures the validity of adopted instruments and model specification.

Hence, this study provides a robust methodological exposition for the estimation of the relationships between foreign aid, government expenditure and the country specific aid on social development in Africa and caters for earlier estimation issues like endogeneity, serial correlation and downward bias. This enables presentation of the results of the empirical analysis in the next chapter and discussion of the nuanced implications for policymakers and development practitioners.

# CHAPTER FOUR

# RESULTS AND DISCUSSIONS

## 4.1 INTRODUCTION

This chapter presents an in-depth analysis of the estimation results. This includes a discussion on the descriptive statistics and the correlation matrix of variables used in the models. Besides that, it will also present the empirical results for each model along with diagnostics and robustness check.

## 4.2 DESCRIPTIVE STATISTICS AND CORRELATION MATRIX

The results and discussions begin with descriptive statistics and the correlation matrix of the variable under study. Table 4.1 presents the descriptive statistics of all the variables. Looking at the data, it is noticeable that HDI had an average of 0.557; thus, it shows the relative status of overall development across African countries. The deviation from a minimum value of 0.362 to a maximum of 0.817 purely shows the diversity in the level of development. Positive skewness indicates that few countries have very high human development index, which includes Mauritius, Seychelles, Algeria, Egypt, Tunisia, Libya, South Africa, and Gabon. This might reveal some of the success stories or unique circumstances that enabled them to achieve more significant growth in the course of the last years. The mean of Foreign Aid (AID) is $1.01 billion, which is high, and thus an inference can be drawn that there is a decent inflow of foreign assistance to these nations. The high positive skewness of 2.09 indicates that a few countries are receiving disproportionately large aid amounts, particularly Ethiopia, Egypt, Nigeria, Kenya, and Tanzania. The average Government Expenditure (GX) is $108.40 billion, which also represents the proportion of GDP, on the average, that every nation invests in government expenditures. This set of variables has a low skewness of 0.088; hence most countries have a fairly similar share of their GDP going into governmental spending. The mean of the economic growth rate (GDP) is 3.07, which implies that it is the average annual growth of the economies of countries considered in

this study. A negative skewness of -2.31 indicates a distribution that has a long tail towards higher growth rates, indicating that only a few countries have very rapidly growing economies, among them being Benin, Botswana, Congo, Cote d'Ivoire, Djibouti, Ethiopia, Ghana, Rwanda, Senegal, Tanzania, and Togo. The GE mean is 27.31, indicating average perception about government effectiveness. The positive skewness, 0.86, indicates that some countries hold relatively more positive views on governance effectiveness. These countries include Botswana, Cabo Verde, Mauritius, Namibia, Rwanda, Seychelles, and South Africa. The mean CC is 31.55, showing their level of perception on control of corruption. Positive Skewness 0.61 indicates that some countries almost always keep this corruption under control, and they are Botswana, Cabo Verde, Mauritius, Namibia, Rwanda, Seychelles, and South Africa. The mean of Foreign Direct Investment is 3.47, which represents the average percentage of GDP from foreign investment. The positive skewness of 2.92 suggests that a few countries have a disproportionately large share of FDI; these include Chad, Congo Democratic Republic, Congo Republic, Djibouti, Gabon, Gambia, Ghana, Liberia, Madagascar, Mauritania, Mozambique, Namibia, Niger, Sao Tome and Principe, Seychelles, Sierra Leone, Somalia, and Uganda. The mean population size is high at 25,926,218, and hence there is a large amount of diversity in demographics across countries. Positive skewness value of 2.85 indicates that only a few countries have enormously large populations. These are Nigeria, Ethiopia, Egypt, South Africa, Tanzania, Kenya, Uganda, Sudan, Algeria, and Morocco.

The correlation analysis measures the degree of association between the variables. Table 4.2 presents the Correlation Analysis which shows the degree of associations between HDI and the explanatory variables. A weak negative association is observed between AID, GX, GDP, FDI, PS and HDI. In contrast, there is a strong positive correlation between GE of 0.6775 and HDI, thus proving that, with a higher GE, results in a higher HDI score. Likewise, a strong positive correlation is identified between CC of 0.5093 and HDI, indicating improved control of corruption results in higher HDI.

Table 4.1. Descriptive Statistics

| | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|
| Mean | 0.557002 | 1.01E+09 | 108.4018 | 3.070030 | 27.30818 | 31.55183 | 3.474635 | 25926218 |
| Median | 0.535000 | 7.18E+08 | 108.3175 | 3.797027 | 22.85714 | 27.42332 | 2.338142 | 13857547 |
| Maximum | 0.817000 | 7.80E+09 | 157.7995 | 21.07901 | 84.61539 | 94.33962 | 39.81094 | 2.19E+08 |
| Minimum | 0.362000 | 50000.00 | 55.22080 | -36.39198 | 0.476190 | 0.473934 | -18.91777 | 89949.00 |
| Std. Dev. | 0.106735 | 1.10E+09 | 13.88350 | 4.680447 | 19.74574 | 22.15012 | 5.466570 | 35855735 |
| Skewness | 0.545886 | 2.089874 | 0.088053 | -2.313637 | 0.855813 | 0.611001 | 2.924463 | 2.847904 |
| Kurtosis | 2.559433 | 9.663603 | 5.179216 | 17.04170 | 2.880753 | 2.486403 | 18.68739 | 12.69411 |
| Jarque-Bera | 27.25932 | 1216.853 | 94.00659 | 4298.762 | 57.89640 | 34.55575 | 5512.646 | 2486.222 |
| Probability | 0.000001 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| Sum | 262.9050 | 4.78E+11 | 51165.63 | 1449.054 | 12889.46 | 14892.46 | 1640.028 | 1.22E+10 |
| Sum Sq. Dev. | 5.365775 | 5.73E+20 | 90786.02 | 10318.00 | 183640.3 | 231085.7 | 14075.08 | 6.06E+17 |
| Observations | 472 | 472 | 472 | 472 | 472 | 472 | 472 | 472 |

Source: Author's Illustrations.

Table 4.2: Correlation Matrix

| | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|
| HDI | 1 | | | | | | | |
| AID | -0.175932 | 1 | | | | | | |
| GX | -0.297682 | 0.046617 | 1 | | | | | |
| GDP | -0.128683 | 0.184650 | 0.093352 | 1 | | | | |
| GE | 0.677550 | -0.062190 | 0.038478 | 0.109255 | 1 | | | |
| CC | 0.509264 | -0.138213 | 0.178565 | 0.140837 | 0.872311 | 1 | | |
| FDI | -0.045847 | -0.007711 | 0.294171 | 0.065697 | 0.049600 | 0.072185 | 1 | |
| PS | -0.026211 | 0.749203 | -0.105637 | 0.110250 | -0.101704 | -0.185804 | -0.112693 | 1 |

Source: Author's Illustrations.

## 4.3 THE IMPACT OF FOREIGN AID AND GOVERNMENT EXPENDITURE ON SOCIAL DEVELOPMENT ACROSS AFRICAN COUNTRIES

Table 4.3 shows the coefficients of the lagged dependent variable, $InHDI_{it-1}$, for Pooled OSL, Fixed effect and DGMM estimates respectively. The results allow for choosing between DGMM and SGMM. More precisely, as can be seen, the coefficient of the DGMM is lower than the lower limit calculated by the fixed effect model, which results to a downward bias of DGMM and, as such, SGMM is preferred.

Table 4.3. System GMM vs Difference GMM Estimation (Model 1)

| | Pooled OLS | FEM | DGMM |
|---|---|---|---|
| $InHDI_{it-1}$ | 0.991729 | 0.780461 | 0.653905 |

Source: Author's Computation.

The results from the SGMM estimation are illustrated in Table 4.4. It is observed that the estimated coefficient for the lagged HDI is positive and statistically significant at the 1% level, with a value of 0.6533, a t-statistic of 11.34450, and a p-value = 0.0000. That is, a 1% in the previous year's HDI increases the current year's HDI by about 0.65%, *ceteris paribus*. This means that past levels of HDI had a positive effect on the current HDI. For Africa, this has the implication that past investments in education, healthcare, and general human well-being made a very important contribution to the level of HDI.

Table 4.4. System GMM Results (Model 1)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI (-1) | 0.6533*** | 0.0576 | 11.3445 | 0.0000 |
| AID | -0.0150*** | 0.0031 | -4.9302 | 0.0000 |
| GX | -0.0041*** | 0.0013 | -3.2612 | 0.0021 |
| GDP | 0.0002** | 8.4105 | 2.3614 | 0.0224 |
| GE | -0.0007*** | 0.0003 | -2.8116 | 0.0072 |
| CC | -0.0006* | 0.0003 | -2.8116 | 0.0601 |

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| FDI | -0.000183 | 0.0001 | -1.6396 | 0.1078 |
| PS | 0.0307* | 0.0167 | 1.8114 | 0.0765 |
| Root MSE | 0.009078 | Mean dependent var | | -0.003754 |
| S.D. dependent var | 0.009066 | S.E. of regression | | 0.009177 |
| Sum squared resid | 0.030905 | J-statistic | | 22.95773 |
| Instrument rank | 36 | Hansen Statistic | | 0.735153 |
| AR(2) | 0.1849 | No. of Observations | | 375 |

Source: Author's Computation. Note: *** p<0.01, ** p<0.05, * p<0.1 are statistical significance at 1%, 5% and 10% respectively, ρ-values reported for AR (2) and Hansen statistics (See appendix ii for more details).

*The Foreign Aid (AID)* coefficient is -0.0150 and is highly significant at the 1% level, with a t-statistic of -4.930180 and a p-value of 0.0000. It means that a 1% increase in foreign aid leads to a 0.02% decrease in HDI, *ceteris paribus*. The fact that the variable is negative and of very high significance indicates that an increase in foreign aid is, on average, associated with a decreased HDI. This indicates that instead of advancing social development, foreign aid promotes dependency with countries relying on external assistance just to keep their economy stable. This creates aid mismanagement, unbalanced resource allocation or the possibility that aid might not always be directed towards areas that contribute most to social development. This finding corroborates that of Lohani (2004) for a sample of 44 developing countries that had a HDI lower than .595 in the year 1975 but contrary to the findings of Mahembe and Odhiambo (2021), Hana (2015), Murshed and Khanaum (2014).

*Government Expenditure (GX)* coefficient is -0.0041, significant at the 1% level, with a t-statistic of -3.261158, and a p-value of 0.0021. This implies that every 1% increase in government expenditure leads to a decrease in HDI by 0.004%, *ceteris paribus*. This suggests that higher government expenditure reduces HDI. The finding indicates that African countries are facing problems in turning government expenditure into concrete development results, despite more government spending, the countries are not able to use these resources to boost social development. Wang and Wang (2014) also found the same result for China. In contrast, Indonesian government expenditure

on education was found to have a positive impact on HDI, while that for health expenditure was insignificant (Maharda & Aulia, 2020). Similarly, in Iran, government health expenditure had a positive and significant relationship with HDI (Razmi et al., 2012).

*Gross Domestic Product (GDP)* has a positive coefficient of 0.0002, which is statistically significant at the 5 percent level of significance with a t-statistic of 2.361389 and a p-value of 0.0224. This means that for every 1% in GDP, HDI increases by 0.0002%, *ceteris paribus*. Hence, economic growth, proxied by the growth rate of GDP, positively affects HDI through its positive and significant coefficient. The positive association between GDP and HDI implies that economic growth is a determinant of social and social progress. This suggests that education and healthcare broadly follow a natural course as the economy grows, hence improving social development. This finding supports the findings of Abdul Rehman et al. (2020) that found a positive and significant relationship between GDP and variables, such as domestic credit, education expenditures and health expenditures in developing countries. Paul and Adoji (2022), however, proposed the use of the Social Progress Index as a more plausible alternative measure or indicator of sustainable economic growth and national well-being due to the limitations on what the GDP. On the contrary, Brinkman and Brinkman (2011) opposed relying solely on GDP as an indicator of human well-being and progress, with emphasis on incorporating the social and cultural parameters.

*Government Effectiveness (GE)* has a negative coefficient of -0.0007, significant at the 1% level with a t-statistic of -2.811641 and a p-value of 0.0072. This means that, for every 1-unit increase in government effectiveness, HDI decreased by 0.0007 units, *ceteris paribus*. The result indicates that the effectiveness of government policies and programmes does not always translate into better social development outcomes in Africa, as most countries in Africa have negative government effectiveness estimates and are ranked lower in terms of the quality of governance among other continents in the world. The finding is similar to that of Moreira (2017) which brings to the fore organizational and governance gaps that limit government effectiveness in the delivery of education.

*Control of Corruption (CC)* has a coefficient of -0.0006, statistically significant at 10% with a t-statistic of -1.926363 and a p-value of 0.0601. It indicates that there is

a negative relationship between corruption and HDI. Exploring further, it suggests that every 1-unit increase in corruption results in a decrease in social development by 0.0006 units, *ceteris paribus*. This shows that corruption is detrimental to social development. Corruption, a sign of weak government, can prevent the optimal use of resources, erode trust in government and distort development priorities. Some studies on the relationship between corruption and HDI have established a negative relationship. For example, Emadzadeh and Tibash (2023) and Emara (2020) established that corruption reduces human development. This is further supported by Hysa (2011), who also revealed a very negative relationship between corruption and human development in Western Balkan countries. However, Wahyudi (2023) found that control of corruption had a positive impact on economic growth in low-middle-income countries.

*Population Size (PS)* has a coefficient of 0.0307 and is statistically significant at 10% level with an associated t-stat of 1.8114 and p-value of 0.0765. This confirms that there is a positive relationship between population size and HDI and implies that a 1% increase in population size corresponds to a 0.031% increase in HDI, *ceteris paribus*. This positive relationship suggests that larger sizes of the population, on average, are associated with a higher social development. This means that a larger population provides a larger labour force, a larger market, and the possibility of innovation that can enhance social development. In support of this finding, Zgheib et al., (2006), Kelley (1994) and Simon (1989) found a positive link between population size and Human Development Index. On the other hand, various studies have unveiled the negative implications of rapid population growth on education and economic development (Atanda et al., 2012).

The model shows that the lags of HDI, foreign aid, government expenditure, GDP, government effectiveness, control of corruption, and population size are significant predictors of HDI. However, foreign direct investment turns out to have no significant statistical association with HDI. For the diagnostic tests, the Sargan-Hansen test for instrument validity indicates the validity of the instruments used in this model. The Arellano-Bond Serial Correlation Test measures serial correlation of the residuals. In this case, it shows that there is no second-order serial correlation in the series.

## 4.4 THE QUALITY OF GOVERNANCE AND THE EFFECTIVENESS OF FOREIGN AID ACROSS AFRICAN COUNTRIES

Table 4.5 presents the results from Pooled OLS, Fixed Effects and Difference GMM to enable a choice between difference GMM and System GMM. More precisely, it shows the coefficient of the lagged dependent variable ($InHDI_{it-1}$). The difference GMM coefficient is higher than the lower boundary estimated by the fixed effect model, which suggests that there is no downward bias in difference GMM. To this end, difference GMM is preferred.

Table 4.5. System GMM vs Difference GMM Estimation (Model 2)

| | Pooled OLS | FEM | DGMM |
|---|---|---|---|
| $InHDI_{it-1}$ | 1.002628 | 0.140770 | 0.791423 |

Source: Author's Computation

Table 4.6 presents the results of the difference GMM. The coefficient for the lagged HDI is 0.7914 and it is significant at 1% level of significance, t-statistic 38.1553, and p-value of 0.0000. Thus, there exists a strong positive relationship between the lagged HDI and the current HDI at 1% level of significance. A 1% rise in the past level of HDI significantly increases the current HDI level by 0.79%, *ceteris paribus*. This means that past investments in education, healthcare, and general human well-being constitute a large share of the current state of HDI. This result is like that of Model 1 in Table 4.4.

Table 4.6. Difference GMM Results (Model 2A)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.7914*** | 0.0207 | 38.1553 | 0.0000 |
| AID | -0.0127*** | 0.0035 | -3.6157 | 0.0007 |
| AID*GE | -0.0002** | 0.0001 | -2.1341 | 0.0377 |
| GDP | 0.0001*** | 2.2205 | 5.0370 | 0.0000 |
| PS | 0.0149*** | 0.0053 | 2.830 | 0.0066 |

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| Root MSE | 0.009724 | Mean dependent var | | 0.002083 |
| S.D. dependent var | 0.005306 | S.E. of regression | | 0.009784 |
| Sum squared resid | 0.038768 | J-statistic | | 41.67828 |
| Instrument rank | 36 | Hansen Statistic | | 0.095374 |
| R(2) | 0.2845 | No. of Observations | | 410 |

Source: Author's Computation. Note: *** p<0.01, ** p<0.05, * p<0.1 are statistical significance at 1%, 5% and 10% respectively, ρ-values reported for AR(2) and Hansen statistics (See appendix ii for more details).

*Foreign Aid (Aid)* has a coefficient of -0.0127 and is significant at the 1% level with a t-statistic of -3.6157 and a p-value of 0.0007. Thus, this means that for every 1% increase in foreign aid, there is a corresponding 0.013% decrease in HDI, *ceteris paribus*. This raises questions about the effectiveness of foreign aid in promoting development across African countries. It suggests that aid needs to be carefully targeted and managed to ensure that it contributes positively to social development. This result is identical with that of Model 1 in Table 4.4.

*Interaction term of Aid and Government Effectiveness (AID*GE)* has a coefficient of -0.000248, and this term is statistically significant at the 5% level of significance with a t-statistic of -2.1341 and a p-value of 0.0377. This proves that the interaction between foreign aid and government effectiveness negatively impacts social development. In other words, the negative impact of foreign aid on social development will be more pronounced when foreign aid is combined with lower government effectiveness. This suggests that effective government institutions are very instrumental in translating aid into positive social development outcomes. If the government is ineffective in the use of aid resources, then there can be wastage which can hamper social development. This emphasizes that good governance is needed in order to have effective aid interventions, if there is less government effectiveness, then the interaction of aid with such parameters could undermine social development and result in a stronger negative impact on it. Thus, if aid is truly aimed at producing good outcomes, it is not simply enough to provide aid, but must make sure that it is utilized accordingly. This brings out clearly the importance of effective governance in ensuring that aid is utilized

effectively and transparently. There is a strong body of studies suggesting that foreign aid had a negative interaction with government effectiveness, hence resulting in less than expected HDI for example, Egas (2018), and Ilorah and Ngwakwe (2021) revealed the negative effect of foreign aid on government effectiveness. Ilorah and Ngwakwe (2021) took cognizance of the role of governance variables within the sub-Saharan region of Africa. Extending this line of argument, Signor and Vandernoot (2021) added that HDI is largely endogenously driven and foreign aid itself is not quite impactful. However, Asiama and Quartey (2009) came up with a modified case suggesting that while aggregate bilateral aid may not significantly impact HDI, sector-specific and programme aid can have a positive effect.

*Economic Growth (GDP)* has a coefficient of 0.0001, significant at the 1 percent level with a t-statistic of 5.03696 and a p-value of 0.0000. This means that there is a positive relationship between GDP and HDI such that if the GDP increases by 1%, it will lead to a 0.0001% increase in the HDI, *ceteris paribus*. Higher levels of economic growth are thus related to higher levels of human development, proxy by GDP. This suggests, having sustainable economic growth becomes imperative for improving social development outcomes. Policies that promote economic growth positively impact well-being. This finding is in line with the finding of Model 1 in Table 4.4.

*Population Size (PS)* has a coefficient of 0.0149 and is statistically significant at the 1% significance level with a t-statistic of 2.8297 and p-value 0.0066. This depicts that there exists a positive relationship between population size and HDI. A 1% increase in population size leads to 0.015% increases in HDI, *ceteris paribus.* The positive relationship implies that, on average, larger population size is associated with higher HDI. The finding is the same as in the Model 1 of Table 4.4.

The results obtained suggest that past HDI, interaction term between foreign aid and government effectiveness and GDP contribute to explaining the current HDI. For diagnostic tests, the Sargan-Hansen test for instrument validity and the Arellano-Bond Serial Correlation Test for serial correlation of the residuals, suggest that instruments used in the model are valid, and there is no second order serial correlation in residuals of the model.

Following the checklist for using multiplicative interaction models by Branbor et al. (2005), there is caution about the possibility of underspecifying a model by omitting any important constitutive term of which only 10% of the articles they survey followed the checklist. This study re-estimates the interaction between government effectiveness with foreign aid and government expenditure in accordance with Branbor et al. (2005) shown in Table 4.7.

Table 4.7. Difference GMM Results (Model 2B)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.8145*** | 0.0083 | 97.8907 | 0.0000 |
| AID | 0.0007 | 0.0022 | 0.3390 | 0.7375 |
| GE | -0.0002*** | 7.6905 | -2.9750 | 0.0064 |
| AID*GE | -0.0002** | 8.0105 | -2.6183 | 0.0148 |
| Root MSE | 0.006093 | Mean dependent var | | 0.002481 |
| S.D. dependent var | 0.004748 | S.E. of regression | | 0.006152 |
| Sum squared resid | 0.007722 | J-statistic | | 22.70668 |
| Instrument rank | 26 | Hansen Statistic | | 0.418448 |
| AR(2) | 0.9954 | No. of Observations | | 208 |

Source: Author's Computations. Note: *** p<0.01, ** p<0.05, * p<0.1 are statistical significance at 1%, 5% and 10% respectively, ρ-values reported for AR(2) and Hansen statistics (See appendix ii for more details).

The empirical results indicate that the sign and significance of the interaction between aid and government effectiveness remain identical to in Model 2a. The change is in the aid term, which is now positive, although it is not significant. The variable of interest in this analysis, i.e. AID*GE, produces similar results under both Model 2a and 2b. This means that, as illustrated by Branbor et al. (2005), matters relating to omitted variable bias become more prominent in non-linear probability models.

## 4.5 THE QUALITY OF GOVERNANCE AND THE EFFECTIVENESS OF GOVERNMENT EXPENDITURE ACROSS AFRICAN COUNTRIES

Table 4.8 presents the estimation results of pooled OLS, fixed effect and difference GMM, which helps choose either difference GMM or system GMM. Specifically, it shows the coefficient of the lagged dependent variable. As shown by the result, the coefficient obtained from the difference GMM is greater than the lower bound set by the fixed effect model and, therefore, there is no downward bias in the difference GMM. As such, difference GMM is preferred.

Table 4.8. System GMM vs Difference GMM Estimation (Model 3)

| | Pooled OLS | FEM | DGMM |
|---|---|---|---|
| $HDI_{it-1}$ | 1.002828 | 0.143329 | 0.827579 |

Source: Author's Computation.

Table 4.9 presents GMM results. The lagged HDI coefficient is 0.8276 and is significant at 1% with a t-statistic of 46.6145 and a p-value of 0.0000. It thus follows that there exists a strong positive relationship between the lagged HDI and current HDI, such that a 1% increase in the past level of HDI significantly increases the current level of HDI by 0.828%, *ceteris paribus*. This implies that historical investments in education, healthcare and overall human well-being contribute significantly to the current state of social development. This result is like that of Models 1 and 2 in Tables 4.4 and 4.6, respectively.

Table 4.9. Difference GMM Results (Model 3A)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.8276*** | 0.0178 | 46.6145 | 0.0000 |
| GX | -0.0023** | 0.0010 | -2.3307 | 0.0240 |
| GX*GE | -0.0001*** | 2.4605 | -4.9964 | 0.0000 |
| GDP | 0.0001*** | 1.9205 | 5.6781 | 0.0000 |

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| PS | -0.0349*** | 0.0052 | -6.6612 | 0.0000 |
| Root MSE | 0.006099 | Mean dependent var | | 0.002097 |
| S.D. dependent var | 0.005323 | S.E. of regression | | 0.006139 |
| Sum squared resid | 0.014246 | J-statistic | | 44.39820 |
| Instrument rank | 36 | Hansen Statistic | | 0.056334 |
| R(2) | 0.8319 | No. of Observations | | 383 |

Source: Author's Computations. Note: *** p<0.01, ** p<0.05, * p<0.1 are statistical significance at 1%, 5% and 10% respectively, ρ-values reported for AR(2) and Hansen statistics (See appendix ii for more details).

*Government Expenditure (GX)* coefficient is -0.0023 and is significant at 5% with a t-statistic of -2.3307 and a p-value of 0.0240. This means that for every 1% increase in government expenditure, HDI will decrease by 0.002%, *ceteris paribus*. The results are corroborated by the findings of Agnello et al. (2017) and Rahmawati and Nur Intan (2020), who both found that fiscal austerity and government stability as key determinants of the repercussions of government spending on HDI. While Agnello et al. (2017) emphasized the adverse effect of spending-driven fiscal consolidation on HDI, Rahmawati and Nur Intan (2020) showed that government spending potentially has a positive influence on HDI, mainly in its educational dimension. Maharda and Aulia (2020) support this by showing a significant positive relationship between the government expenditure on education and HDI levels in Indonesia. The results of Model 1 in Table 4.4 also support this result.

*Interaction term between Government Expenditure and Government Effectiveness (GX*GE)* has a coefficient of -0.000123. It is statistically significant at the 1% level with a t-statistic of -4.9964 and a p-value of 0.0000. This negative relationship means that government effectiveness negatively moderates how expenditure relates to HDI. The results suggest that an increase in government expenditure may not translate to better social development outcomes if accompanied by a weak governance. This suggests that government effectiveness is crucial to the success of development interventions. This further means that attention must be paid not only to total government expenditure but also to governance quality. Enhancing the level of

government effectiveness can make the impact of government expenditure on social development in Africa more efficient.

*The Economic Growth (GDP)* coefficient is 0.0001 and is significant at the 1% level with a t-statistic of 5.6782 and a p-value of 0.0000. This means that a 1% rise in GDP is associated with a 0.0001% increase in HDI, *ceteris paribus*. This further underscore the importance of economic growth to enhance the outcome of social development in Africa. This result confirms that of Models 1 and 2 in Tables 4.4 and 4.6, respectively.

*Population Size (PS)* coefficient is -0.0349 and significant at the 1% level with a t-statistic of -6.6612 and a p-value of 0.0000. This means that for every 1% increase in population size, HDI decreases by 0.035%, *ceteris paribus*. This goes to prove that a higher population size relates to a lower value of HDI. This negative relationship between population size and HDI unveils the magnitude and complexity of the difficulties posed by rapid population growth in Africa. In that respect, it strained resources, infrastructure, and social services, which lowered social development. The result, however, contradicts the findings of Models 1 and 2 in Tables 4.4 and 4.6 respectively, but is in line with Atanda et al. (2012).

These results suggest that past levels of human development index, governmental expenditure, and the interaction between governmental expenditure and government effectiveness make significant contributions to explaining the current Human Development Index. Diagnostic tests for the instrument validity, the Sargan-Hansen test and for serial correlation of residuals, the Arellano-Bond Serial Correlation Test, indicate that instruments used in the model are valid, and there is no second-order serial correlation in residuals for the model.

From the empirical results as presented in Table 4.10, following the works of Branbor et al. (2005), the sign and significance of the interaction between government expenditure and government effectiveness remain the same as in Model 3a. The only difference remains in the government expenditure term that is positive. Both Models 3a and 3b show a similarity of results in terms of the variable of interest i.e. GX*GE.

Table 4.10. Difference GMM Results (Model 3B)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.8125*** | 0.0162 | 50.1449 | 0.0000 |
| GX | 0.0012*** | 0.0004 | 2.9295 | 0.0075 |
| GE | -0.0003*** | 6.6305 | -4.2212 | 0.0003 |
| GX*GE | -0.0003*** | 5.7005 | -4.8041 | 0.0001 |
| GDP | 0.0006*** | 2.9605 | 19.5607 | 0.0000 |
| Root MSE | 0.003776 | Mean dependent var | | 0.002495 |
| S.D. dependent var | 0.004808 | S.E. of regression | | 0.003827 |
| Sum squared resid | 0.002680 | J-statistic | | 22.58533 |
| Instrument rank | 24 | Hansen Statistic | | 0.25610 |
| AR(2) | 0.8925 | No. of Observations | | 188 |

Source: Author's Computations. Note: *** p<0.01, ** p<0.05, * p<0.1 are statistical significance at are statistical significance at 1%, 5% and 10% respectively, ρ-values reported for AR(2) and Hansen statistics (See appendix ii for more details).1%, 5% and 10% respectively, ρ-values reported for AR(2) and Hansen statistics (See appendix ii for more details).

## 4.6 THE NON-LINEAR RELATIONSHIP BETWEEN FOREIGN AID AND SOCIAL DEVELOPMENT ACROSS AFRICAN COUNTRIES

Table 4.11 presents the results of pooled OLS, fixed effect and difference GMM which help to choose between difference GMM and System GMM. The table presents the coefficient of the lagged dependent variable ($InHDI_{it-1}$). It can be noticed from the above table that the coefficient, obtained from the difference GMM, is closer to the lower bound provided by the fixed effect model, thus implying some downward bias of the difference GMM, hence making the System GMM more reliable.

Table 4.11. System GMM vs Difference GMM Estimation (Model 4)

| | Pooled OLS | FEM | DGMM |
|---|---|---|---|
| $HDI_{it-1}$ | 1.005842 | 0.800082 | 0.809862 |

Source: Author's Computation.

Table 4.12 presents the results of the System GMM. The coefficient for the lagged HDI is 0.8120 and significant at 1% with a t-statistic of -22.93184 and p-value of 0.0000. This means that a 1% increase in the past level of human development significantly increases the current level by 0.81%, *ceteris paribus*. This means that, past investments in education, healthcare and human welfare increase current state of human development. The result is similar to that of Models 1, 2, and 3 in Tables 4.4, 4.6, and 4.8 respectively, which entail the robustness of the estimated parameters.

Table 4.12. System GMM Results (Model 4)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.8120*** | 0.0354 | 22.9318 | 0.0000 |
| AID | -0.0216*** | 0.0033 | -6.5207 | 0.0000 |
| AID*AID | 0.0023*** | 0.0004 | 5.6005 | 0.0000 |
| GX | -0.0055*** | 0.0012 | -4.7234 | 0.0000 |
| GE | -0.0006*** | 0.0001 | -4.0120 | 0.0002 |
| FDI | -0.0002*** | 6.6005 | -2.9238 | 0.0053 |
| Root MSE | 0.007540 | Mean dependent var | | -0.003754 |
| S.D. dependent var | 0.009066 | S.E. of regression | | 0.007601 |
| Sum squared resid | 0.021320 | J-statistic | | 38.70975 |
| Instrument rank | 36 | Hansen Statistic | | 0.132365 |
| R(2) | 0.0617 | No. of Observations | | 375 |

Source: Author's Computations. Note: *** p<0.01, ** p<0.05, * p<0.1 are statistical significance at are statistical significance at 1%, 5% and 10% respectively, ρ-values reported for AR(2) and Hansen statistics (See appendix ii for more details).

*Foreign aid (AID)* has a negative coefficient of -0.0216, which is significant at the 1% level with a t-statistic of -6.5207 and a p-value of 0.0000. This result implies that for every 1% increase in foreign aid, there is a decrease in HDI of 0.022%, *ceteris paribus*. Hence follows that, on average, an increase in foreign aid is associated with a decrease in HDI. This may connote inefficiency or miss-allocation in the current form of aid utilization and hence, there is a need for more strategic and targeted usage. This

finding is also in line with the finding of Models 1 and 2 in Tables 4.4 and 4.6 respectively.

*Squared Foreign Aid (AID*AID)* has a positive coefficient of 0.0023, which is statistically significant at the 1% significant level with a t-statistic of 5.6005 and a p-value of 0.0000. This, therefore, depicts a non-linear relationship between foreign aid and the HDI. The results show that there could be a threshold beyond which the impact of aid on HDI diminishes or even becomes negative. The positive finding of a significant squared foreign aid is supported by the study of (Asongu, 2012). According to Asongu (2012), there is a non-linear relationship between aid effectiveness in economic prosperity and per capita income growth. He further highlighted that the high growth countries benefited most, and the benefits are substantial.

*Government Expenditure (GX)* has a negative coefficient of -0.0055 and is significant at the 1% significance level with a t-statistic of -4.7234 and a p-value of 0.0000. This implies that a 1% increase in government expenditure corresponds to a decrease in HDI by 0.006%, *ceteris paribus*. This means that an average rise in government expenditure corresponds to a fall in the HDI. This indicates an inefficiency or misspending of resources in achieving social development. Further, the result calls for a critical review of expenditure allocations towards ensuring proper channeling of resources into social development initiatives. This finding stands in tandem with that of Models 1 and 3 in Tables 4.4 and 4.8 respectively.

*Government Effectiveness (GE)* has a negative coefficient of -0.0006, and it is significant at the 1% level with a t-statistic of -4.0120 and a p-value of 0.0000. This means that for every 1-unit increase in government effectiveness, HDI reduces by 0.001 units, *ceteris paribus*. This justifies the view that low government effectiveness goes with low social development, and vice versa. Therefore, it underscores the importance of governance quality in achieving positive social development outcomes. The finding is consistent with that of Model 1 in Table 4.4.

*Foreign Direct Investment (FDI)* has a negative coefficient -0.0002, and it is statistically significant at the 1% level of significance with a t-statistic of -2.9238 and p-value of 0.0052. This means that a 1% increase in foreign direct investment is associated with a decrease in HDI by 0.0002%, *ceteris paribus*. This indicates that an

increase in foreign direct investment is associated with a decrease in the Human Development Index. Ford et al. (2007) and Baghirzade (2012) admitted that it is possible for FDI to influence economic growth positively without necessarily resulting in increased HDI. Gokmenoglu et al. (2018) established a high impact of FDI on HDI in Nigeria, while Aderemi et al. (2021) reports a mixed result in the relationship between FDI and poverty reduction.

The lagged value of HDI and squared foreign aid are positive and statistically significant, while foreign aid, government expenditure, and government effectiveness are negative and statistically significant. The diagnostic tests, including Sargan-Hansen test for instrument validity and the Arellano-Bond Serial Correlation Test for serial correlation of the residuals, suggest that the instruments used in the model are valid and there is no second-order serial correlation in the residuals of the model.

## 4.7 THE COUNTRY SPECIFIC AID AND SOCIAL DEVELOPMENT IN AFRICAN OIC MEMBER COUNTRIES

Considering the relationships analyzed in the previous models and the impact of aggregate (multilateral aid) aid on HDI across African countries, it becomes imperative to make a more nuanced examination of the disaggregated aid (the bilateral aid) aspect in form of KSA aid. The focus in this study is particularly on the KSA humanitarian assistance to the 27 African member countries of the OIC since KSA is one of the world's major donors of aid and particularly to African countries that are members of OIC. By so doing, it would show the degree of spillover effects of bilateral aid, otherwise called country-specific aid, beyond multilateral aid. It would then be possible to fairly understand how sources of aid contribute to the outcomes in the social development across African countries, hence enriching insight into the dynamics of development assistance.

Several studies focused on country-specific aid from the donor to the recipient country or a specific programme aid. For instance, Tyson and Ford (2022) evaluated the U.S. foreign aid to health sectors on HDI in LDCs, while Cochrane (2021) did an analysis of the political economy of UAE's aid which was given to the three primary beneficiaries: Egypt, Serbia, and Yemen. Moreover, Asiama (2009) reported that

aggregate bilateral aid had no significant impact on HDI, but it had impact on sector-specific and programme aid. Carlitz and Ziaja (2023) established that fragmentation in health aid could result in internal "brain drain" and project pressure to change, but diversity in governance aid may favour meritocratic behaviour for Nigeria.

The estimation started with a decision between SGMM or DGMM in Table 4.13 as it was done in the previous models. The results show that DGMM was preferred compared to SGMM as the value of HDI lagged dependent variable for the DGMM is greater than fixed effect model.

Table 4.13. System GMM vs Difference GMM

| | Pooled OLS | FEM | DGMM |
|---|---|---|---|
| $HDI_{it-1}$ | 1.000327 | 0.646994 | 0.740423 |

Source: Author's Computations.

Table 4.14 presents the results of the impact of country specific aid on social development in African OIC member countries. The coefficient for the lagged value of HDI is 0.7404, significant at the 1% level. This suggests a that 1% increase in the previous year HDI leads to 0.74% increase in current HDI, *ceteris paribus*. This indicates that past human development index is a robust predictor of present human development index. This result concurs with the previous models.

Table 4.14. Differences GMM Results (Model 5)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.7404*** | 0.0347 | 21.3077 | 0.0000 |
| SA | 0.0012*** | 0.0005 | 2.3274 | 0.0326 |
| GDP | 0.0009*** | 0.0001 | 7.0973 | 0.0000 |
| GE | -0.0003*** | 7.8405 | -4.1098 | 0.0007 |
| FDI | -0.0004*** | 5.1905 | -7.6054 | 0.0000 |
| Root MSE | 0.003938 | Mean dependent var | | 0.001378 |
| S.D. dependent var | 0.004291 | S.E. of regression | | 0.004064 |
| Sum squared resid | 0.001272 | J-statistic | | 14.82045 |
| Instrument rank | 18 | Hansen Statistic | | 0.318695 |
| AR(2) | 0.9702 | No. of Observations | | 104 |

Source: Author's Computations. Note: *** p<0.01, ** p<0.05, * p<0.1 are statistical significance at are statistical significance at 1%, 5% and 10% respectively, ρ-values reported for AR(2) and Hansen statistics (See appendix ii for more details).

*The Kingdom of Saudi Arabia's aid (SA)* has a coefficient of 0.0012 and statistically significant at the 1 % level, indicating a positive relationship between the SA aid and HDI. This thus means that every 1% increase in the SA is associated with a 0.001% increase on HDI, *ceteris paribus*. This suggests that the impact of foreign aid is context dependent. This implies that the Kingdom of Saudi Arabia's aid contributes towards improving the HDI of African OIC member countries. This suggests that the nature, form, or targeted sectors of the foreign aid matters in its effectiveness towards improving social development outcomes. This reinforces the view that not all aids create equal impacts and the need for understanding of the disaggregated aid component (country specific aid) to ascertain its effectiveness in advancing social development. The result is consistent with the empirical study of Asiama and Quartey (2009), which found that aggregate bilateral aid did not show significant effect on the human development indicators and other welfare variables. However, disaggregated aid in the form of sector-specific and programme aid showed a positive impact on HDI. Correspondingly, Tyson and Ford (2022) found that health sector foreign aid by the United States made a significant impact on HDI of the LDCs.

*Economic Growth (GDP)* has a coefficient of 0.0009 and significant at the 1% level. This shows a positive relationship between GDP and HDI. For every 1% increase in GDP, HDI tends to increase by 0.001%, *ceteris paribus*. This suggests that economic growth is linked to higher human development index. This finding is similar to those in the previous models.

*Government Effectiveness (GE)* has a coefficient of -0.0003, which is significant at the 1% level, indicating a negative relationship between government effectiveness and HDI. This means that, for every 1-unit increase in government effectiveness, HDI decreases by 0.0003 units, *ceteris paribus*. The finding follows the findings of the previous models.

*Foreign Direct Investment (FDI)* has a coefficient of -0.0004 and is statistically significant at the 1% level, indicating a negative relationship between FDI and HDI. This means that, with every 1% increase in FDI, there will be a drop in HDI of 0.0004%, *ceteris paribus*.

According to the model, significant predictors for HDI are the lagged HDI, SA, GDP, GE, and FDI. Results obtained from diagnostic tests, in particular Sargan-Hansen for instrument validity and Arellano-Bond Serial Correlation Test, indicate that instruments used in the model are valid, and there is no second-order serial correlation in residuals.

## 4.8 ROBUSTNESS CHECK

Table 4.15 results give further understanding to the estimates also known as robustness check. In the event that SGMM was used due to downward bias from DGMM, the DGMM is used for robustness check and vice versa. Consequently, the approach seeks to ensure an in-depth analysis of the model's stability and reliability through the interaction of both estimation methods. The results indicate that there is no substantive difference between the estimates from the SGMM and DGMM used for the primary estimation and robustness check for each variable. However, there are variations in terms of magnitude of the coefficients, but the significance and the direction of the relationship remain same with respect to the SGMM and DGMM.

Table 4.15. Robustness Check

| Variables | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
|---|---|---|---|---|---|---|---|---|
| | SGMM | DGMM | DGMM | SGMM | DGMM | SGMM | SGMM | DGMM |
| HDI (-1) | 0.6533*** (0.0576) | 0.6539*** (0.0577) | 0.7914*** (0.0207) | 0.7914*** (0.0207) | 0.8276*** (0.0178) | 0.8278*** (0.0178) | 0.8120*** (0.0354) | 0.8099*** (0.0351) |
| AID | -0.0150*** (0.0031) | -0.0151*** (0.0030) | - 0.0127*** (0.0035) | - 0.0127*** (0.0035) | - | - | -0.0216*** (0.0034) | -0.0215*** (0.0033) |
| AID*GE | - | - | -0.0002** (0.0001) | -0.0002** (0.0001) | - | - | - | - |
| AID*AID | - | - | - | - | - | - | 0.0023*** (0.0004) | 0.0023*** (0.0004) |
| GX | -0.0041*** (0.0013) | -0.0040*** (0.0012) | - | - | -0.0023** (0.0010) | -0.0023** (0.0010) | -0.0055*** (0.0012) | -0.0053*** (0.0011) |
| GX*GE | - | - | - | - | -0.0001*** (2.4605) | -0.0001*** (2.5005) | - | - |
| GDP | 0.0002** (8.4105) | 0.0002** (8.4405) | 0.0001*** (2.2205) | 0.0001*** (2.2205) | 0.0001*** (1.9205) | 0.0001*** (2.2105) | - | - |
| GE | -0.0007*** (0.0003) | -0.0007*** (0.0003) | - | - | - | - | -0.0006*** (0.0001) | -0.0006*** (0.0001) |
| CC | -0.0006* (0.0003) | -0.0006* (0.0003) | - | - | - | - | - | - |
| FDI | -0.0002 (0.0001) | -0.0002 (0.0001) | - | - | - | - | -0.0002*** (6.6005) | -0.0002*** (6.6105) |
| PS | 0.0307* (0.0170) | 0.0302* (0.0168) | 0.0149*** (0.0053) | 0.0153*** (0.0053) | -0.0349*** (0.0052) | -0.0351*** (0.0052) | - | - |

Source: Author's Computations. Note: *** p<0.01, ** p<0.05, * p<0.1 are statistical significance at 1%, 5% and 10% respectively. Standard Errors are in Parenthesis (See appendix ii for more details).

## 4.9 EVALUATION OF THE WORKING HYPOTHESES

The validity of the research hypotheses, as formulated in Chapter One, is revisited here in the light of the empirical finding:

$H_0$: *There is no significant impact of foreign aid and government expenditure on HDI across African countries.*

From the SGMM estimates in Model 1 for both foreign aid and government expenditure, it is evident that they have a positive significant effect on social development, proxy by HDI at a 1% level of significance. Therefore, with the statistically significant t-statistics of (-4.9302) for foreign aid and (-3.2612) for government expenditure, the study rejects the null hypothesis.

$H_0$: *Government effectiveness does not have a significant effect on the impact of foreign aid utilization across African countries.*

According to the DGMM estimates in Model 2, the interaction term of Aid and Government Effectiveness (AID*GE) significantly affects social development, proxied by the Human Development Index at a 1% level. Thus, the study rejects the null hypothesis, considering that the t-statistic of (-2.1341) is statistically significant.

$H_0$: *Government effectiveness does not have a significant effect on the impact of government expenditure across African countries.*

Using the DGMM estimates in Model 3, the interaction term of Government Expenditure and Government Effectiveness (GX*GE) significantly affects social development proxied by the Human Development Index at a 1% level. The finding thus the study rejects the null hypothesis with a statistically significant t-statistic of (-4.9964).

$H_0$: *There is no existence of a non-linear relationship between foreign aid and HDI across African countries.*

According to the SGMM estimates of Model 4, Squared Foreign Aid (AID*AID) significantly impacts social development, proxied by Human Development Index at a 1% level. Thus, the study rejects the null hypothesis, considering that the t-statistic is statistically significant at (5.6005).

$H_0$: *Country specific aid does not have a significant impact on HDI in African OIC member countries.*

Using the DGMM estimates in Model 5, it is seen that Kingdom of Saudi Arabia's aid has a significant effect on social development proxied by Human Development Index at 1% level. The study hence rejects the null hypothesis, because the t-statistic is statistically significant at (2.3274).

The models present empirical evidence that supports rejection of all formulated null hypotheses, thus establishing the significance of foreign aid, government expenditure, country specific aid, government effectiveness, and non-linear relationship between foreign aid and HDI across African countries.

## 4.10 CONCLUDING REMARK

This chapter examined financing sources with other determinants of social development across African countries, the interplay among foreign aid, government expenditure, economic growth, government effectiveness, control of corruption, foreign direct investment, population size, and the disaggregated Kingdom of Saudi Arabia's aid influence on social development proxied by HDI. Several key insights were drawn from the vigorous econometrics analysis and empirical findings. Firstly, the positive impact of investing in education, health, and overall human well-being implied that policymakers and other key actors should continue to pay serious attention to these sectors. Secondly, the highly negative relationship between foreign aid and HDI implied cautious and strategic use of the aid in order to have efficient social development. Thirdly, the negative sign of the coefficient of government expenditure underlined institutional challenges confronting African countries. These challenges include corruption, the inefficient use of revenue and the transformation of government expenditures into concrete results for development. It suggested a deliberate policy agenda to address institutional weaknesses in which government expenditure could play a catalytic role in enhancing social development across African countries. Fourthly, the positive relationship of GDP to HDI pointed toward a paramount requirement for the continuation of economic growth in order to realize positive social development outcomes. Fifthly, while government effectiveness and corruption had a negative

impact on HDI, anti-corruption measures, especially in the context of increased transparency and facilitation of efficient resource allocation, presented a dire need to better meet most of human development's critical needs. There was also a non-linear relationship between foreign aid and HDI, which emphasized the pressing need for more nuanced strategies of aid allocation targeted to need and avoiding the likely diminishing returns of foreign aid. Finally, the observed positive impact of the Kingdom of Saudi Arabia’s aid on HDI across African OIC member countries showed the constructive options available for some types of aid in promoting social development, again suggesting substantive insights for more targeted and effective aid policy design. Furthermore, the diagnostics test showed that all instruments used were valid and all the models were free from second order serial correlation.

# CHAPTER FIVE

# SUMMARY, CONCLUSION AND RECOMMENDATIONS

## 5.1 INTRODUCTION

This chapter consists of a summary, actionable policy implications of findings and a conclusion drawn from the major findings of the study. Furthermore, it offers recommendations for policy formulation as well as limitations and suggestions for future research.

## 5.2 SUMMARY OF THE KEY FINDINGS

This study assessed different types of financing sources and their impact on social development in Africa through a multi-model analysis. The study explored the nuanced relationships between foreign aid and government expenditure on social development while moderating for government effectiveness, using data for 54 African countries from 2013 to 2022. Furthermore, the study examined the impact of country specific aid on social development of African countries that are members of the Organization of Islamic Cooperation (OIC). African countries face diverse challenges in achieving social development, and understanding the dynamics of different types of financing sources and their impact on social development is crucial for formulating effective policies tailored to the unique context of the continent. The study utilized both 2-Step System Generalized Method of Moments (SGMM) and Difference Generalized Method of Moments (DGMM) econometrics techniques in analyzing the data.

For Objective 1 as in Model 1 (examining the impact of foreign aid and government expenditure on HDI across African countries). The result revealed that foreign aid (AID) shows a negative and statistically significant coefficient. This result implies that on average, a rise in foreign aid is associated by a decrease in HDI. This is also replicated in Objective 2 as in Model 2 (investigating whether government effectiveness affect the impact of foreign aid utilization across African countries). The

findings shows that the interaction term has a negative coefficient, indicating its adverse effect on social development through foreign aid is more pronounced when coupled with lower government effectiveness. Further, Objective 4 as in Model 4 (empirically testing the presence of a non-linear relationship between foreign aid and HDI across African countries). The empirical result shows that Squared Foreign Aid (AID*AID) has a positive and significant coefficient, hence establishing a non-linear relationship between foreign aid and HDI. The result thus indicates that there may be a threshold beyond which the impact of the aid on HDI diminishes.

Government Expenditure (GX) consistently shows a negative and statistically significant coefficient in both Objective 1 as in Model 1 (assessing the impact of foreign aid and government expenditure on HDI across African countries) and Objective 3 as in Model 3 (exploring whether government effectiveness affect the impact of government expenditure across African countries). This means that the higher the government expenditure, the lower the HDI. The interaction term (GX*GE) reflects that government effectiveness moderates the relationship between government expenditure and HDI negatively.

Moreover, Objective 5 as in Model 5 (examining the impact of country specific aid on HDI in African OIC member countries). The finding revealed that the country specific aid as captures by the Kingdom of Saudi's Arabia's aid has a positive and statistically significant coefficient. This means that while aggregate aid portrays a negative influence on HDI, the disaggregated aid in the form of the Kingdom of Saudi Arabia's aid to OIC member countries in Africa shows a positive relationship. This evidence suggests that targeted and specific aid interventions enhance social development.

## 5.3 ACTIONABLE POLICY IMPLICATIONS OF FINDINGS

From the results in the models, it is evident that the prevailing sources of finance, including foreign aid, government expenditure, and other economic-governance variables, have mixed or negative influence on the social development across Africa countries. The analysis derived the following insights:

i. The negative and highly significant coefficient of Foreign Aid (AID) thus shows that an increase in foreign aid brings about a decrease in HDI. This calls for a strategic and targeted approach toward the use of aid. There is a need for policy makers to address possible inefficiencies and mismanagement of aid resources and orient aid in areas that contribute most toward social development. This result can also be seen from the conditions that the recipient countries must meet before granting the aid, either in currency devaluation or subsidy removal, which may in turn have a negative effect on the economy, with evidence from Nigeria being a case of continuous devaluation of the Naira and more recently, the subsidy removal from petrol.

ii. The negative coefficient of Government Expenditure (GX) implies that an increase in government expenditure is associated with a decrease in HDI. This signals potential inefficiencies in expenditure allocation or challenges to translate expenditure funds into tangible human development outcomes, as in the case of Burundi and Somalia. Policymakers should carefully review expenditure allocations to ensure effective direction of resources toward human development initiatives.

iii. The negative coefficient of the interaction term (AID*GE) suggests negative impacts of the effectiveness of various government policies and programmes on HDI when coupled with foreign aid. This emphasizes nuanced interactions of government effectiveness, aid utilization, and human development. Policymakers should ensure that foreign aid is efficiently used and transparently managed, especially in contexts of low government effectiveness like African countries

iv. Similarly, the negative coefficient of the interaction term (GX*GE) again reinforces the point of moderating influence of government effectiveness on the relationship between government expenditure and HDI. This basically implies that the quality of governance influences the outcome of expenditure allocations on human development. Efficient and transparent governance practices are conducive to the effectiveness of expenditure allocations towards positive human development outcomes, which apply to European, some Middle Eastern, and Asian countries. Policymakers should,

therefore, support governance reforms that ensure optimal impacts of resources of government expenditure towards human development initiatives.

v. Square Foreign Aid (AID*AID) has a positive coefficient, which means the relationship is non-linear. Identification of this kind of non-linear relationship between foreign aid and HDI suggests a more nuanced approach in aid allocation. Policymakers may be interested in solving an optimization problem with the way aid is distributed, taking into account the potential thresholds involved in the process. They should really make proportionate allocation of aid to avoid diminishing returns in the effect of aid on human development.

vi. The result that the Kingdom of Saudi Arabia's aid is positively correlated to HDI means that Saudi Arabia's aid to African OIC member countries plays a constructive role in enhancing their social development. In essence, this means that the better the aid, the better the general well-being, as measured by life expectancy, education, and income. Such insight might be used by policymakers in designing interventions for effective and targeted aid, establishing strategic partnerships for sustainable social development. It will also be helpful in emphasizing aid policies in disaggregating aid, and considering characteristics of the aid including its sources, forms and targeted sectors.

## 5.4 CONCLUSION

This study assessed different types of financing sources and their impact on social development in Africa while moderating for government effectiveness and controlling for economic growth, control of corruption, foreign direct investment and population size. It gathered data from fifty-four (54) African countries within 2013 to 2022 and considered the Two-Gap Model as the theoretical framework. Moreover, in analyzing the data, both System and Difference Generalized Method of Moment econometrics techniques were used.

The results indicated that foreign aid correlated with lower social development, which put emphasis on careful management of the aid usage. government expenditure did not result in better social development as expected, and hence emphasized the importance of efficient use of resources. The study further highlighted the negative moderating role of government effectiveness in the effectiveness of aid utilization and the allocation of government expenditure. Moreover, the non-linear relationship between foreign aid and HDI suggested that the impact of aid on HDI depends on a certain threshold and is also associated with diminishing returns. The analysis of country specific aid and its impact on HDI in African OIC member countries revealed a positive relationship, thus establishing the role of aid in enhancing social development within these countries. For this reason, while aggregate aid had a negative impact on social development, the country specific or disaggregated aid in the form of Kingdom of Saudi Arabia's aid to countries in Africa that are members of OIC had a positive association with HDI. This result thus corroborated the view that the more focused and targeted intervention of aid, as carried out by Kingdom of Saudi Arabia among others, results in the improvement of social development.

## 5.5 RECOMMENDATIONS

Based on the findings from the five models used to assessed different types of financing sources and their impact on social development in Africa, the following recommendations are made:

1. With the persistent negative relationship between foreign aid and HDI, it becomes very important for policymakers to strategically manage aid inflows. This includes careful targets, transparent and effective use of the aid resources to contribute positively to social development outcomes.
2. Recognizing the fact that expenditure by the government is rather negatively influencing HDI, there is a need for efficient allocation of expenditure resources, accompanied by transparency. Policymakers should rather focus on rectifying inefficiencies and corruption and ensure that allocations are made in terms of outcomes related to social development.
3. The interaction terms show how government effectiveness moderates the effectiveness of foreign aid and government expenditure. Improving governance practices, minimizing corruption and enhancing the effectiveness of government policies are crucial for maximizing the positive impact of aid and expenditure allocations on social development.
4. The evidence of non-linearity found with Squared Foreign Aid points to a more sophisticated approach to the amount of aid. In this respect, policymakers should optimize the distribution of aid, considering the potential thresholds in the process, and they should ensure that aid allocation is tailored to specific needs to avoid diminishing returns in terms of aid's impact upon social development.
5. In the light of the positive relationship between Kingdom of Saudi Arabia's aid and HDI in African OIC member countries, there is sufficient ground for policymakers to exploit this favorable association through strategic channeling of the aid to purposeful sectors like education, healthcare, and infrastructure. Based on this, there is an increasing need to have country specific aid or disaggregated aid to effectively cater for the unique developmental requirements of specific OIC countries. Continuous monitoring and check, transparent aid mechanisms and partnership are critical components to sustain the favorable impact of the KSA aid towards sustained social development outcomes in African OIC member countries.

## 5.6 LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

In the future, studies should also be made in order to establish this dynamic relation among different types of financing sources for social development across African countries that are not considered in this study, such as public private partnership, green bond, micro-finance, Islamic finance and remittance. A time series analysis of how relationships among foreign aid, government expenditure, governance quality, and economic indicators would be particularly useful. This would enable a more nuanced understanding of the relationship among the variables and hence contribute to the development of more adaptive and effective policy interventions. Additionally, investigating the impact of external shocks like oil price volatility and climate change on these relationships as well as exploring structural breaks issues in the series could enhance the robustness of the findings and guide policymakers in crafting resilient and responsive strategies for sustainable social development.

Moreover, the HDI that is used as proxy for social development in this study, simplifies and captures only part of what human development entails. It does not reflect inequalities, poverty, human security, empowerment, etc. The HDRO provides other composite indices as broader proxies on some of the key issues of human development, inequality, gender disparity and poverty (UNDP, 2020). This can be explored further by studies in the future.

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# APPENDIX I: RAW DATA

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Algeria | 2013 | 1 | 0.731 | 1.94E+08 | 97.20462 | 2.8 | 40.28436 | 39.33649 | 0.806601 | 38000626 |
| Algeria | 2014 | 1 | 0.735 | 1.48E+08 | 101.52 | 3.8 | 41.82692 | 31.25 | 0.702589 | 38760168 |
| Algeria | 2015 | 1 | 0.74 | 76519997 | 113.3515 | 3.7 | 36.66667 | 30.47619 | -0.32401 | 39543154 |
| Algeria | 2016 | 1 | 0.743 | 1.56E+08 | 114.1807 | 3.2 | 35.23809 | 30 | 1.023696 | 40339329 |
| Algeria | 2017 | 1 | 0.744 | 1.85E+08 | 110.0569 | 1.3 | 31.42857 | 31.90476 | 0.72326 | 41136546 |
| Algeria | 2018 | 1 | 0.745 | 1.45E+08 | 106.3431 | 1.2 | 35.71429 | 28.57143 | 0.838207 | 41927007 |
| Algeria | 2019 | 1 | 0.748 | 1.79E+08 | 106.3809 | 1 | 32.85714 | 28.09524 | 0.804144 | 42705368 |
| Algeria | 2020 | 1 | 0.736 | 2.1E+08 | 110.3913 | -5.1 | 31.90476 | 27.61905 | 0.784883 | 43451666 |
| Algeria | 2021 | 1 | 0.745 | 2.03E+08 | 99.72641 | 3.4 | 28.57143 | 29.52381 | 0.531681 | 44177969 |
| Algeria | 2022 | 1 | 0.745 | 2.03E+08 | 90.76172 | 3.1 | 32.54717 | 28.30189 | 0.039183 | 44903225 |
| Angola | 2013 | 2 | 0.552 | 2.78E+08 | 85.31776 | 4.954613 | 9.952606 | 4.739336 | -5.33728 | 26147002 |
| Angola | 2014 | 2 | 0.563 | 2.28E+08 | 89.94286 | 4.822559 | 14.90385 | 3.846154 | 2.664964 | 27128337 |
| Angola | 2015 | 2 | 0.582 | 4.21E+08 | 103.3793 | 0.943572 | 18.09524 | 4.285714 | 11.4977 | 28127721 |
| Angola | 2016 | 2 | 0.596 | 2.2E+08 | 97.12119 | -2.58011 | 15.2381 | 4.761905 | -0.36018 | 29154746 |
| Angola | 2017 | 2 | 0.597 | 2.33E+08 | 94.24862 | -0.14715 | 17.14286 | 5.714286 | -10.725 | 30208628 |
| Angola | 2018 | 2 | 0.595 | 1.64E+08 | 84.70543 | -1.31636 | 14.7619 | 10.95238 | -8.29905 | 31273533 |
| Angola | 2019 | 2 | 0.595 | 20770000 | 76.24803 | -0.70227 | 11.90476 | 13.80952 | -5.91333 | 32353588 |
| Angola | 2020 | 2 | 0.59 | 1.11E+08 | 86.02222 | -5.63821 | 9.523809 | 18.57143 | -3.715 | 33428486 |
| Angola | 2021 | 2 | 0.586 | 2.18E+08 | 73.80367 | 1.199211 | 12.38095 | 29.04762 | -6.63026 | 34503774 |
| Angola | 2022 | 2 | 0.586 | 2.18E+08 | 73.80367 | 3.045403 | 13.20755 | 30.66038 | -6.18352 | 35588987 |
| Benin | 2013 | 3 | 0.52 | 6.33E+08 | 104.0591 | 7.191434 | 36.49289 | 24.64455 | 2.878637 | 10308730 |
| Benin | 2014 | 3 | 0.524 | 5.75E+08 | 102.4066 | 6.357679 | 35.57692 | 29.80769 | 3.05421 | 10614844 |
| Benin | 2015 | 3 | 0.529 | 4.71E+08 | 107.3154 | 1.778151 | 28.57143 | 34.28571 | 1.315012 | 10932783 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Benin | 2016 | 3 | 0.53 | 5.4E+08 | 103.7734 | 3.339673 | 30.95238 | 35.23809 | 1.114881 | 11260085 |
| Benin | 2017 | 3 | 0.53 | 7.18E+08 | 107.0654 | 5.671555 | 24.76191 | 33.80952 | 1.581705 | 11596779 |
| Benin | 2018 | 3 | 0.53 | 5.8E+08 | 107.2467 | 6.697259 | 30 | 41.42857 | 1.360736 | 11940683 |
| Benin | 2019 | 3 | 0.53 | 6.1E+08 | 104.4203 | 6.865687 | 35.23809 | 41.90476 | 1.516208 | 12290444 |
| Benin | 2020 | 3 | 0.524 | 1.05E+09 | 105.0883 | 3.848792 | 40.95238 | 54.76191 | 1.111839 | 12643123 |
| Benin | 2021 | 3 | 0.525 | 8E+08 | 106.2172 | 7.155452 | 42.85714 | 49.04762 | 1.955815 | 12996895 |
| Benin | 2022 | 3 | 0.525 | 8E+08 | 107.6271 | 6.253245 | 45.75472 | 50.4717 | 1.532048 | 13352864 |
| Botswana | 2013 | 4 | 0.687 | 1.13E+08 | 102.5111 | 11.10282 | 64.92891 | 77.72512 | 0.470418 | 2217278 |
| Botswana | 2014 | 4 | 0.696 | 1.02E+08 | 96.81685 | 5.696965 | 65.38461 | 76.92308 | 3.330197 | 2260376 |
| Botswana | 2015 | 4 | 0.702 | 70830002 | 106.0804 | -4.85099 | 69.04762 | 76.66666 | 2.797733 | 2305171 |
| Botswana | 2016 | 4 | 0.713 | 96889999 | 91.24198 | 7.201819 | 70.47619 | 79.52381 | 0.944945 | 2352416 |
| Botswana | 2017 | 4 | 0.722 | 1.08E+08 | 95.926 | 4.113051 | 65.2381 | 75.71429 | 1.617961 | 2401840 |
| Botswana | 2018 | 4 | 0.716 | 88129997 | 98.46858 | 4.189847 | 62.38095 | 76.19048 | 1.678934 | 2451409 |
| Botswana | 2019 | 4 | 0.717 | 68910004 | 106.7153 | 3.032557 | 66.66666 | 74.28571 | 0.559653 | 2499702 |
| Botswana | 2020 | 4 | 0.713 | 78879997 | 117.4137 | -8.72945 | 58.57143 | 71.42857 | 0.212513 | 2546402 |
| Botswana | 2021 | 4 | 0.693 | 92680000 | 102.1863 | 11.87036 | 63.33333 | 74.7619 | -1.70281 | 2588423 |
| Botswana | 2022 | 4 | 0.693 | 92680000 | 94.54343 | 5.782349 | 67.92453 | 74.0566 | 1.063561 | 2630296 |
| Burkina Faso | 2013 | 5 | 0.402 | 1.01E+09 | 109.8819 | 5.792585 | 29.38389 | 36.49289 | 3.647668 | 17636408 |
| Burkina Faso | 2014 | 5 | 0.408 | 1.09E+09 | 104.9596 | 4.326846 | 28.36539 | 38.94231 | 2.562552 | 18169842 |
| Burkina Faso | 2015 | 5 | 0.418 | 1.07E+09 | 106.8739 | 3.921229 | 27.61905 | 47.61905 | 1.959927 | 18718019 |
| Burkina Faso | 2016 | 5 | 0.427 | 1.11E+09 | 106.0612 | 5.957977 | 29.52381 | 52.38095 | 3.043803 | 19275498 |
| Burkina Faso | 2017 | 5 | 0.438 | 9.39E+08 | 106.364 | 6.203489 | 29.04762 | 51.90476 | 0.018237 | 19835858 |
| Burkina Faso | 2018 | 5 | 0.449 | 1.19E+09 | 104.4378 | 6.604569 | 29.52381 | 52.85714 | 1.689199 | 20392723 |
| Burkina Faso | 2019 | 5 | 0.452 | 1.14E+09 | 103.4319 | 5.688115 | 22.38095 | 48.57143 | 1.007346 | 20951639 |
| Burkina Faso | 2020 | 5 | 0.449 | 1.73E+09 | 104.7394 | 1.930325 | 26.19048 | 50.47619 | -0.5508 | 21522626 |
| Burkina Faso | 2021 | 5 | 0.449 | 1.5E+09 | 104.0857 | 6.906342 | 23.33333 | 50.47619 | -0.4051 | 22100683 |
| Burkina Faso | 2022 | 5 | 0.449 | 1.5E+09 | 104.4125 | 1.479301 | 21.22642 | 51.88679 | 0.642298 | 22673762 |
| Burundi | 2013 | 6 | 0.421 | 5.34E+08 | 128.4135 | 4.92419 | 13.74408 | 1.895735 | 4.761251 | 10149577 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Burundi | 2014 | 6 | 0.426 | 4.92E+08 | 125.603 | 4.24065 | 12.98077 | 8.173077 | 3.021203 | 10494913 |
| Burundi | 2015 | 6 | 0.428 | 3.97E+08 | 110.0038 | -3.9 | 9.523809 | 8.095238 | 1.598673 | 10727148 |
| Burundi | 2016 | 6 | 0.43 | 8.02E+08 | 110.2747 | -0.6 | 6.666667 | 10 | 0.002096 | 10903327 |
| Burundi | 2017 | 6 | 0.428 | 4.6E+08 | 110.1871 | 0.500001 | 7.619048 | 8.571428 | 0.01162 | 11155593 |
| Burundi | 2018 | 6 | 0.428 | 4.55E+08 | 115.2284 | 1.609935 | 7.619048 | 5.238095 | 0.036883 | 11493472 |
| Burundi | 2019 | 6 | 0.431 | 5.7E+08 | 118.6821 | 1.812565 | 8.095238 | 4.761905 | 0.040557 | 11874838 |
| Burundi | 2020 | 6 | 0.426 | 4.81E+08 | 117.6747 | 0.327157 | 9.047619 | 3.809524 | 0.329176 | 12220227 |
| Burundi | 2021 | 6 | 0.426 | 5.58E+08 | 118.8181 | 3.1 | 8.571428 | 2.857143 | 0.357862 | 12551213 |
| Burundi | 2022 | 6 | 0.426 | 5.58E+08 | 118.3731 | 1.849 | 10.37736 | 4.245283 | 0.419198 | 12889576 |
| Cabo Verde | 2013 | 7 | 0.666 | 2.36E+08 | 111.1362 | 0.632137 | 56.39811 | 77.25118 | 4.40125 | 539940 |
| Cabo Verde | 2014 | 7 | 0.667 | 2.22E+08 | 116.8073 | 0.696667 | 56.73077 | 79.80769 | 8.844073 | 546076 |
| Cabo Verde | 2015 | 7 | 0.663 | 1.69E+08 | 111.7376 | 0.936027 | 60.95238 | 79.04762 | 5.490245 | 552166 |
| Cabo Verde | 2016 | 7 | 0.67 | 1.26E+08 | 112.4322 | 4.280715 | 57.61905 | 78.09524 | 6.828451 | 558394 |
| Cabo Verde | 2017 | 7 | 0.675 | 1.31E+08 | 115.9145 | 4.551315 | 59.52381 | 79.04762 | 5.594697 | 564954 |
| Cabo Verde | 2018 | 7 | 0.673 | 85379997 | 114.1355 | 3.706965 | 66.19048 | 78.09524 | 4.695957 | 571202 |
| Cabo Verde | 2019 | 7 | 0.676 | 1.57E+08 | 109.749 | 7.636082 | 64.28571 | 79.04762 | 5.422794 | 577030 |
| Cabo Verde | 2020 | 7 | 0.662 | 1.58E+08 | 130.1242 | -19.3028 | 60.47619 | 79.52381 | 3.602187 | 582640 |
| Cabo Verde | 2021 | 7 | 0.662 | 1.42E+08 | 130.969 | 6.811176 | 52.38095 | 82.38095 | 4.375652 | 587925 |
| Cabo Verde | 2022 | 7 | 0.662 | 1.42E+08 | 118.5203 | 17.71418 | 51.88679 | 81.13207 | 5.287063 | 593149 |
| Cameroon | 2013 | 8 | 0.542 | 7.19E+08 | 102.3963 | 4.995529 | 19.90521 | 9.952606 | 1.622968 | 21632850 |
| Cameroon | 2014 | 8 | 0.551 | 8.09E+08 | 103.6124 | 5.719818 | 20.19231 | 10.09615 | 1.994843 | 22299585 |
| Cameroon | 2015 | 8 | 0.56 | 7.19E+08 | 103.5618 | 5.666953 | 20.47619 | 12.38095 | 2.15564 | 23012646 |
| Cameroon | 2016 | 8 | 0.564 | 8.16E+08 | 102.7387 | 4.535794 | 20.95238 | 11.42857 | 1.963349 | 23711630 |
| Cameroon | 2017 | 8 | 0.571 | 1.28E+09 | 102.4968 | 3.541177 | 19.04762 | 10.95238 | 2.25621 | 24393181 |
| Cameroon | 2018 | 8 | 0.577 | 1.17E+09 | 103.1151 | 3.955514 | 18.09524 | 11.42857 | 1.913982 | 25076747 |
| Cameroon | 2019 | 8 | 0.583 | 1.34E+09 | 103.6783 | 3.47506 | 17.14286 | 10.95238 | 2.583196 | 25782341 |
| Cameroon | 2020 | 8 | 0.578 | 1.4E+09 | 103.2673 | 0.259933 | 17.14286 | 12.38095 | 1.655956 | 26491087 |
| Cameroon | 2021 | 8 | 0.576 | 1.07E+09 | 103.6542 | 3.649917 | 16.19048 | 13.33333 | 2.125205 | 27198628 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Cameroon | 2022 | 8 | 0.576 | 1.07E+09 | 101.0886 | 3.540978 | 18.86792 | 13.20755 | 2.00386 | 27914536 |
| Central African Republic | 2013 | 9 | 0.368 | 1.92E+08 | 108.4534 | -36.392 | 1.895735 | 12.32228 | 0.109533 | 4802428 |
| Central African Republic | 2014 | 9 | 0.37 | 5.77E+08 | 119.7435 | 0.081071 | 1.442308 | 11.05769 | 0.183396 | 4798734 |
| Central African Republic | 2015 | 9 | 0.384 | 5.23E+08 | 119.0097 | 4.337121 | 1.428571 | 7.142857 | 0.176905 | 4819333 |
| Central African Republic | 2016 | 9 | 0.391 | 5.45E+08 | 120.887 | 4.750317 | 2.380952 | 8.571428 | 0.39759 | 4904177 |
| Central African Republic | 2017 | 9 | 0.398 | 5.39E+08 | 122.624 | 4.527278 | 3.333333 | 11.42857 | 0.332413 | 4996741 |
| Central African Republic | 2018 | 9 | 0.405 | 6.44E+08 | 127.4001 | 3.789444 | 2.380952 | 10.47619 | 0.810613 | 5094780 |
| Central African Republic | 2019 | 9 | 0.411 | 6.95E+08 | 130.1335 | 3.1 | 2.380952 | 10.47619 | 1.15253 | 5209324 |
| Central African Republic | 2020 | 9 | 0.407 | 8.32E+08 | 126.8773 | 0.9 | 3.809524 | 9.523809 | 0.07467 | 5343020 |
| Central African Republic | 2021 | 9 | 0.404 | 6.16E+08 | 125.9537 | 0.9 | 4.761905 | 10.95238 | 0.21498 | 5457154 |
| Central African Republic | 2022 | 9 | 0.404 | 6.16E+08 | 128.2276 | 0.9 | 4.245283 | 8.962264 | 1.009298 | 5579144 |
| Chad | 2013 | 10 | 0.386 | 4.5E+08 | 105.5177 | 5.700001 | 6.635071 | 3.317536 | 4.015898 | 13216766 |
| Chad | 2014 | 10 | 0.393 | 3.76E+08 | 108.3038 | 6.899985 | 5.769231 | 6.25 | -4.84583 | 13697126 |
| Chad | 2015 | 10 | 0.389 | 6.55E+08 | 106.9244 | 2.767676 | 6.190476 | 5.238095 | 5.110703 | 14140274 |
| Chad | 2016 | 10 | 0.391 | 6.72E+08 | 103.9791 | -6.25553 | 6.190476 | 4.285714 | 2.423128 | 14592585 |
| Chad | 2017 | 10 | 0.393 | 6.84E+08 | 105.782 | -2.9887 | 5.714286 | 4.761905 | 3.633673 | 15085884 |
| Chad | 2018 | 10 | 0.398 | 8.82E+08 | 101.8234 | 2.374038 | 6.190476 | 7.142857 | 4.100753 | 15604210 |
| Chad | 2019 | 10 | 0.403 | 6.61E+08 | 101.0861 | 3.247182 | 5.714286 | 6.190476 | 5.007878 | 16126866 |
| Chad | 2020 | 10 | 0.397 | 1.04E+09 | 115.2981 | -1.60001 | 6.190476 | 6.190476 | 5.204591 | 16644701 |
| Chad | 2021 | 10 | 0.394 | 6.85E+08 | 105.4845 | -1.19999 | 6.666667 | 4.761905 | 5.985585 | 17179740 |
| Chad | 2022 | 10 | 0.394 | 6.85E+08 | 88.38548 | 2.23598 | 8.490566 | 4.716981 | 4.833212 | 17723315 |
| Comoros | 2013 | 11 | 0.539 | 76470001 | 121.1465 | 4.466247 | 2.369668 | 26.54029 | 0.379103 | 699393 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Comoros | 2014 | 11 | 0.54 | 70629997 | 119.8829 | 2.106658 | 2.403846 | 33.65385 | 0.407499 | 714612 |
| Comoros | 2015 | 11 | 0.544 | 70900002 | 117.5326 | 1.147351 | 4.285714 | 25.23809 | 0.51103 | 730216 |
| Comoros | 2016 | 11 | 0.548 | 57910000 | 115.7871 | 3.320447 | 4.285714 | 27.61905 | 0.352458 | 746232 |
| Comoros | 2017 | 11 | 0.553 | 70690002 | 116.3617 | 3.815763 | 4.285714 | 26.19048 | 0.363777 | 761664 |
| Comoros | 2018 | 11 | 0.557 | 91669998 | 117.1781 | 3.642451 | 2.857143 | 21.90476 | 0.47715 | 776313 |
| Comoros | 2019 | 11 | 0.56 | 75769997 | 116.7212 | 1.76078 | 3.333333 | 14.28571 | 0.359894 | 790986 |
| Comoros | 2020 | 11 | 0.562 | 1.32E+08 | 122.3864 | -0.19556 | 4.761905 | 10.95238 | 0.316385 | 806166 |
| Comoros | 2021 | 11 | 0.558 | 1.45E+08 | 120.6631 | 2.112196 | 2.380952 | 7.619048 | 0.310532 | 821625 |
| Comoros | 2022 | 11 | 0.558 | 1.45E+08 | 122.3496 | 2.387678 | 6.132075 | 9.433962 | 0.310605 | 836774 |
| Congo, Dem. Rep. | 2013 | 12 | 0.446 | 2.49E+09 | 104.5742 | 8.481957 | 4.739336 | 4.265403 | 5.194612 | 73460021 |
| Congo, Dem. Rep. | 2014 | 12 | 0.455 | 2.31E+09 | 105.0259 | 9.470288 | 4.326923 | 6.730769 | 4.17603 | 76035588 |
| Congo, Dem. Rep. | 2015 | 12 | 0.463 | 2.77E+09 | 103.8813 | 6.916167 | 3.809524 | 7.619048 | 3.074342 | 78656904 |
| Congo, Dem. Rep. | 2016 | 12 | 0.472 | 2.25E+09 | 108.0123 | 2.399399 | 5.714286 | 6.666667 | 2.510784 | 81430977 |
| Congo, Dem. Rep. | 2017 | 12 | 0.475 | 2.42E+09 | 103.7903 | 3.726948 | 4.761905 | 5.238095 | 2.756443 | 84283273 |
| Congo, Dem. Rep. | 2018 | 12 | 0.48 | 2.54E+09 | 104.8127 | 5.821121 | 5.714286 | 3.809524 | 2.959043 | 87087355 |
| Congo, Dem. Rep. | 2019 | 12 | 0.482 | 2.88E+09 | 103.4998 | 4.384529 | 5.238095 | 3.333333 | 2.609314 | 89906890 |
| Congo, Dem. Rep. | 2020 | 12 | 0.479 | 3.38E+09 | 101.2819 | 1.735423 | 3.333333 | 2.380952 | 3.075078 | 92853164 |
| Congo, Dem. Rep. | 2021 | 12 | 0.479 | 3.34E+09 | 99.70965 | 6.200154 | 3.333333 | 4.285714 | 3.030975 | 95894118 |
| Congo, Dem. Rep. | 2022 | 12 | 0.479 | 3.34E+09 | 99.70965 | 8.924448 | 3.301887 | 3.301887 | 3.178753 | 99010212 |
| Congo, Rep. | 2013 | 13 | 0.58 | 1.44E+08 | 87.13418 | -0.71243 | 11.84834 | 10.42654 | 10.4621 | 4828066 |
| Congo, Rep. | 2014 | 13 | 0.589 | 1E+08 | 97.9296 | 6.716679 | 13.46154 | 9.134615 | 16.13977 | 4944861 |
| Congo, Rep. | 2015 | 13 | 0.59 | 95809998 | 137.2373 | -3.55058 | 13.33333 | 9.523809 | 35.9945 | 5064386 |
| Congo, Rep. | 2016 | 13 | 0.586 | 93610001 | 140.7788 | -10.7832 | 10.95238 | 10.47619 | 0.495225 | 5186824 |
| Congo, Rep. | 2017 | 13 | 0.58 | 1.13E+08 | 97.09722 | -4.38253 | 9.047619 | 7.619048 | 39.81094 | 5312340 |
| Congo, Rep. | 2018 | 13 | 0.578 | 1.47E+08 | 77.97662 | -4.80535 | 10 | 8.095238 | 31.56722 | 5441062 |
| Congo, Rep. | 2019 | 13 | 0.57 | 1.83E+08 | 79.37104 | -0.08689 | 11.42857 | 5.238095 | -11.1972 | 5570733 |
| Congo, Rep. | 2020 | 13 | 0.574 | 2.15E+08 | 85.39681 | -6.23932 | 10 | 5.238095 | -18.9178 | 5702174 |
| Congo, Rep. | 2021 | 13 | 0.571 | 1.85E+08 | 78.69969 | -2.2 | 9.047619 | 6.190476 | 3.98004 | 5835806 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Congo, Rep. | 2022 | 13 | 0.571 | 1.85E+08 | 68.78541 | 1.547953 | 8.962264 | 7.075472 | 3.641717 | 5970424 |
| Cote d'Ivoire | 2013 | 14 | 0.483 | 1.25E+09 | 100.0319 | 10.76021 | 18.48341 | 25.59242 | 0.953204 | 22469268 |
| Cote d'Ivoire | 2014 | 14 | 0.502 | 8.96E+08 | 97.3665 | 9.372 | 19.23077 | 42.30769 | 0.899529 | 22995555 |
| Cote d'Ivoire | 2015 | 14 | 0.513 | 6.99E+08 | 98.00638 | 7.194949 | 24.28572 | 39.52381 | 1.079142 | 23596741 |
| Cote d'Ivoire | 2016 | 14 | 0.524 | 6.61E+08 | 97.68185 | 7.17276 | 24.76191 | 33.80952 | 1.193758 | 24213622 |
| Cote d'Ivoire | 2017 | 14 | 0.534 | 8.74E+08 | 97.66493 | 7.410762 | 20.47619 | 36.66667 | 1.856735 | 24848016 |
| Cote d'Ivoire | 2018 | 14 | 0.542 | 9.7E+08 | 100.6491 | 4.843146 | 28.57143 | 34.28571 | 1.059987 | 25493988 |
| Cote d'Ivoire | 2019 | 14 | 0.55 | 1.21E+09 | 98.48058 | 6.518287 | 33.33333 | 31.90476 | 1.4172 | 26147551 |
| Cote d'Ivoire | 2020 | 14 | 0.551 | 1.56E+09 | 99.09246 | 1.73762 | 33.80952 | 32.38095 | 1.131922 | 26811790 |
| Cote d'Ivoire | 2021 | 14 | 0.55 | 1.47E+09 | 99.9448 | 7 | 32.38095 | 40.47619 | 1.939026 | 27478249 |
| Cote d'Ivoire | 2022 | 14 | 0.55 | 1.47E+09 | 102.648 | 6.74133 | 37.73585 | 42.45283 | 2.261816 | 28160542 |
| Djibouti | 2013 | 15 | 0.483 | 1.4E+08 | 134.9199 | 5.401599 | 17.53555 | 35.54502 | 14.00049 | 971753 |
| Djibouti | 2014 | 15 | 0.488 | 1.58E+08 | 82.61924 | 7.061543 | 15.86539 | 32.69231 | 6.908371 | 989087 |
| Djibouti | 2015 | 15 | 0.493 | 1.86E+08 | 77.52084 | 7.526109 | 14.28571 | 28.09524 | 5.932712 | 1006259 |
| Djibouti | 2016 | 15 | 0.496 | 1.99E+08 | 105.5439 | 7.123432 | 13.80952 | 28.09524 | 6.142062 | 1023261 |
| Djibouti | 2017 | 15 | 0.499 | 1.5E+08 | 105.7712 | 5.458092 | 12.85714 | 28.57143 | 5.970136 | 1040233 |
| Djibouti | 2018 | 15 | 0.506 | 1.79E+08 | 87.15894 | 4.774417 | 15.2381 | 26.19048 | 5.834973 | 1057198 |
| Djibouti | 2019 | 15 | 0.512 | 2.7E+08 | 87.50351 | 5.545131 | 19.52381 | 20.47619 | 5.6655 | 1073994 |
| Djibouti | 2020 | 15 | 0.51 | 2.59E+08 | 91.57417 | 1.202022 | 21.42857 | 25.23809 | 4.974111 | 1090156 |
| Djibouti | 2021 | 15 | 0.509 | 1.67E+08 | 96.85271 | 4.8 | 19.04762 | 23.80952 | 4.944719 | 1105557 |
| Djibouti | 2022 | 15 | 0.509 | 1.67E+08 | 102.1312 | 3 | 22.16981 | 23.58491 | 5.429541 | 1120849 |
| Egypt, Arab Rep. | 2013 | 16 | 0.694 | 5.09E+09 | 106.3373 | 2.185466 | 24.17062 | 33.64929 | 1.453434 | 93377890 |
| Egypt, Arab Rep. | 2014 | 16 | 0.699 | 3.35E+09 | 108.4319 | 2.915912 | 24.03846 | 34.61538 | 1.50925 | 95592324 |
| Egypt, Arab Rep. | 2015 | 16 | 0.706 | 2.76E+09 | 108.4783 | 4.372019 | 28.09524 | 32.85714 | 2.102581 | 97723799 |
| Egypt, Arab Rep. | 2016 | 16 | 0.713 | 2.75E+09 | 109.5556 | 4.346643 | 33.33333 | 32.38095 | 2.438563 | 99784030 |
| Egypt, Arab Rep. | 2017 | 16 | 0.721 | 1.4E+08 | 112.804 | 4.181221 | 32.38095 | 39.04762 | 2.983016 | 1.02E+08 |
| Egypt, Arab Rep. | 2018 | 16 | 0.729 | 2.09E+09 | 109.9417 | 5.331109 | 37.61905 | 34.76191 | 3.100401 | 1.04E+08 |
| Egypt, Arab Rep. | 2019 | 16 | 0.735 | 1.76E+09 | 107.836 | 5.552093 | 40.95238 | 28.57143 | 2.827329 | 1.06E+08 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Egypt, Arab Rep. | 2020 | 16 | 0.734 | 1.56E+09 | 107.1807 | 3.550165 | 36.19048 | 23.80952 | 1.524629 | 1.07E+08 |
| Egypt, Arab Rep. | 2021 | 16 | 0.731 | 7.8E+09 | 108.7347 | 3.290646 | 34.76191 | 26.66667 | 1.206179 | 1.09E+08 |
| Egypt, Arab Rep. | 2022 | 16 | 0.731 | 7.8E+09 | 106.8091 | 6.587846 | 33.96227 | 26.41509 | 2.391181 | 1.11E+08 |
| Equatorial Guinea | 2013 | 17 | 0.594 | 4250000 | 71.58665 | -4.1332 | 7.582938 | 5.21327 | 2.655944 | 1243941 |
| Equatorial Guinea | 2014 | 17 | 0.598 | 320000 | 72.45262 | 0.415066 | 12.5 | 2.403846 | 0.771292 | 1295183 |
| Equatorial Guinea | 2015 | 17 | 0.603 | 8060000 | 85.56111 | -9.11004 | 11.90476 | 1.428571 | 1.769558 | 1346973 |
| Equatorial Guinea | 2016 | 17 | 0.603 | 7470000 | 89.77506 | -8.81642 | 10.47619 | 1.428571 | 0.480382 | 1398927 |
| Equatorial Guinea | 2017 | 17 | 0.601 | 7300000 | 84.70205 | -5.66751 | 11.42857 | 0.952381 | 2.498397 | 1450694 |
| Equatorial Guinea | 2018 | 17 | 0.601 | 6750000 | 84.41661 | -6.23654 | 10.47619 | 2.857143 | 3.024184 | 1502091 |
| Equatorial Guinea | 2019 | 17 | 0.605 | 64510002 | 92.61729 | -5.48183 | 13.80952 | 2.857143 | 3.979952 | 1553031 |
| Equatorial Guinea | 2020 | 17 | 0.599 | 5950000 | 102.4539 | -4.24148 | 10.47619 | 4.285714 | 4.059912 | 1596049 |
| Equatorial Guinea | 2021 | 17 | 0.596 | 12100000 | 91.1208 | -0.94538 | 11.42857 | 3.333333 | 3.74793 | 1634466 |
| Equatorial Guinea | 2022 | 17 | 0.596 | 12100000 | 89.64913 | 3.145798 | 9.905661 | 2.830189 | 3.881103 | 1674908 |
| Eritrea | 2013 | 18 | 0.483 | 76750000 | .. | .. | 3.317536 | 20.85308 | .. | 3296367 |
| Eritrea | 2014 | 18 | 0.502 | 79550003 | .. | .. | 2.884615 | 19.71154 | .. | 3323425 |
| Eritrea | 2015 | 18 | 0.483 | 1E+08 | .. | .. | 2.380952 | 6.190476 | .. | 3340006 |
| Eritrea | 2016 | 18 | 0.488 | 71519997 | .. | .. | 2.857143 | 8.095238 | .. | 3365287 |
| Eritrea | 2017 | 18 | 0.484 | 83230003 | .. | .. | 2.857143 | 10.47619 | .. | 3396933 |
| Eritrea | 2018 | 18 | 0.493 | 84809998 | .. | .. | 1.904762 | 9.047619 | .. | 3445374 |
| Eritrea | 2019 | 18 | 0.495 | 2.74E+08 | .. | .. | 1.904762 | 7.142857 | .. | 3498818 |
| Eritrea | 2020 | 18 | 0.494 | 60830002 | .. | .. | 4.285714 | 8.571428 | .. | 3555868 |
| Eritrea | 2021 | 18 | 0.492 | 39279999 | .. | .. | 4.285714 | 9.047619 | .. | 3620312 |
| Eritrea | 2022 | 18 | 0.492 | 39279999 | .. | .. | 3.773585 | 8.018867 | .. | 3684032 |
| Eswatini | 2013 | 19 | 0.546 | 1.17E+08 | 101.6087 | 3.861214 | 43.12796 | 51.18483 | 1.778993 | 1118319 |
| Eswatini | 2014 | 19 | 0.559 | 87199997 | 101.5377 | 0.923231 | 33.65385 | 50 | 0.582924 | 1125865 |
| Eswatini | 2015 | 19 | 0.575 | 1E+08 | 101.4061 | 2.227481 | 33.80952 | 50.47619 | 0.775195 | 1133936 |
| Eswatini | 2016 | 19 | 0.586 | 1.59E+08 | 100.378 | 1.06261 | 32.85714 | 48.09524 | 0.703667 | 1142524 |
| Eswatini | 2017 | 19 | 0.596 | 1.55E+08 | 103.5606 | 2.026578 | 33.80952 | 54.28571 | -1.30929 | 1151390 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Eswatini | 2018 | 19 | 0.607 | 1.24E+08 | 101.9302 | 2.380095 | 25.71428 | 46.66667 | 0.667099 | 1160428 |
| Eswatini | 2019 | 19 | 0.615 | 71760002 | 99.77869 | 2.692168 | 28.57143 | 42.85714 | 2.865311 | 1169613 |
| Eswatini | 2020 | 19 | 0.61 | 1.05E+08 | 100.6715 | -1.55964 | 22.85714 | 44.76191 | 0.974016 | 1180655 |
| Eswatini | 2021 | 19 | 0.597 | 1.19E+08 | 99.06457 | 7.883306 | 25.71428 | 27.14286 | 2.376761 | 1192271 |
| Eswatini | 2022 | 19 | 0.597 | 1.19E+08 | 99.06457 | 3.914541 | 26.41509 | 26.88679 | 0.275027 | 1201670 |
| Ethiopia | 2013 | 20 | 0.441 | 3.79E+09 | 116.5036 | 10.58227 | 32.22749 | 37.91469 | 2.820408 | 97084366 |
| Ethiopia | 2014 | 20 | 0.45 | 3.45E+09 | 117.4578 | 10.25749 | 36.53846 | 40.86538 | 3.335691 | 99746766 |
| Ethiopia | 2015 | 20 | 0.46 | 3.41E+09 | 120.9295 | 10.39246 | 26.19048 | 39.04762 | 4.066489 | 1.02E+08 |
| Ethiopia | 2016 | 20 | 0.47 | 4.38E+09 | 114.9501 | 9.433483 | 25.71428 | 40 | 5.576203 | 1.05E+08 |
| Ethiopia | 2017 | 20 | 0.48 | 4.35E+09 | 116.0839 | 9.56419 | 21.42857 | 33.33333 | 4.912701 | 1.08E+08 |
| Ethiopia | 2018 | 20 | 0.489 | 4.99E+09 | 110.6435 | 6.816148 | 26.66667 | 36.66667 | 3.98772 | 1.11E+08 |
| Ethiopia | 2019 | 20 | 0.498 | 4.8E+09 | 113.1393 | 8.364086 | 27.61905 | 38.09524 | 2.65736 | 1.14E+08 |
| Ethiopia | 2020 | 20 | 0.498 | 5.3E+09 | 109.7517 | 6.059531 | 30.47619 | 40.47619 | 2.225386 | 1.17E+08 |
| Ethiopia | 2021 | 20 | 0.498 | 3.76E+09 | 109.0816 | 5.641531 | 29.04762 | 37.61905 | 3.828306 | 1.2E+08 |
| Ethiopia | 2022 | 20 | 0.498 | 3.76E+09 | 110.0767 | 5.317096 | 24.0566 | 36.79245 | 2.894692 | 1.23E+08 |
| Gabon | 2013 | 21 | 0.685 | 82169998 | 75.92022 | 5.638699 | 21.80095 | 32.22749 | 1.841539 | 1902226 |
| Gabon | 2014 | 21 | 0.694 | 1.04E+08 | 84.47854 | 4.314964 | 27.40385 | 28.84615 | 6.938647 | 1966855 |
| Gabon | 2015 | 21 | 0.699 | 1.07E+08 | 81.88576 | 3.878899 | 22.38095 | 26.19048 | 0.289977 | 2028517 |
| Gabon | 2016 | 21 | 0.702 | 44799999 | 82.06269 | 2.091442 | 20.47619 | 25.71428 | 8.868154 | 2086206 |
| Gabon | 2017 | 21 | 0.706 | 1.13E+08 | 74.50006 | 0.472642 | 14.7619 | 19.52381 | 8.80157 | 2140215 |
| Gabon | 2018 | 21 | 0.706 | 1.17E+08 | 68.43844 | 0.837917 | 19.04762 | 20.95238 | 8.175989 | 2192012 |
| Gabon | 2019 | 21 | 0.709 | 1.21E+08 | 70.56594 | 3.920809 | 15.2381 | 20 | 9.204098 | 2242785 |
| Gabon | 2020 | 21 | 0.71 | 53209999 | 75.05047 | -1.83776 | 15.2381 | 20.47619 | 11.20835 | 2292573 |
| Gabon | 2021 | 21 | 0.706 | 90209999 | 61.04343 | 1.467957 | 19.52381 | 20.95238 | 7.563681 | 2341179 |
| Gabon | 2022 | 21 | 0.706 | 90209999 | 55.2208 | 3.036942 | 24.5283 | 16.03773 | 5.242054 | 2388992 |
| Gambia, The | 2013 | 22 | 0.471 | 1.07E+08 | 109.5317 | 2.872769 | 25.59242 | 27.48815 | 4.968003 | 2124869 |
| Gambia, The | 2014 | 22 | 0.473 | 94199997 | 112.9152 | -1.40738 | 23.55769 | 28.36539 | 1.871884 | 2189019 |
| Gambia, The | 2015 | 22 | 0.478 | 1.16E+08 | 110.3393 | 4.058074 | 16.19048 | 23.33333 | 5.222556 | 2253133 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Gambia, The | 2016 | 22 | 0.484 | 98059998 | 112.3512 | 1.94336 | 17.14286 | 20 | 4.703702 | 2317206 |
| Gambia, The | 2017 | 22 | 0.489 | 3E+08 | 116.8514 | 4.822611 | 23.33333 | 29.52381 | 4.275242 | 2381182 |
| Gambia, The | 2018 | 22 | 0.495 | 2.36E+08 | 116.2016 | 7.23489 | 22.85714 | 37.14286 | 4.896535 | 2444916 |
| Gambia, The | 2019 | 22 | 0.503 | 1.96E+08 | 119.2806 | 6.222053 | 23.80952 | 39.52381 | 3.919438 | 2508883 |
| Gambia, The | 2020 | 22 | 0.501 | 3.01E+08 | 129.2031 | 0.591487 | 20 | 38.09524 | 10.46128 | 2573995 |
| Gambia, The | 2021 | 22 | 0.5 | 2.31E+08 | 123.0997 | 4.265492 | 27.14286 | 40.95238 | 12.35385 | 2639916 |
| Gambia, The | 2022 | 22 | 0.5 | 2.31E+08 | 125.5279 | 4.923728 | 27.35849 | 46.22641 | 10.38248 | 2705992 |
| Ghana | 2013 | 23 | 0.6 | 1.27E+09 | 109.8778 | 7.312525 | 50.23697 | 55.45024 | 5.136521 | 27525597 |
| Ghana | 2014 | 23 | 0.6 | 1.07E+09 | 107.3728 | 2.85624 | 43.26923 | 52.40385 | 6.139441 | 28196358 |
| Ghana | 2015 | 23 | 0.607 | 1.89E+09 | 108.8579 | 2.120759 | 44.28571 | 50.95238 | 6.461401 | 28870939 |
| Ghana | 2016 | 23 | 0.611 | 1.41E+09 | 105.4905 | 3.373466 | 43.33333 | 51.90476 | 6.205533 | 29554303 |
| Ghana | 2017 | 23 | 0.616 | 1.33E+09 | 102.7946 | 8.128895 | 45.71429 | 46.66667 | 5.388528 | 30222262 |
| Ghana | 2018 | 23 | 0.62 | 1.08E+09 | 101.0487 | 6.200078 | 40.95238 | 51.42857 | 4.441431 | 30870641 |
| Ghana | 2019 | 23 | 0.631 | 9.35E+08 | 101.9256 | 6.507775 | 39.52381 | 52.38095 | 5.677417 | 31522290 |
| Ghana | 2020 | 23 | 0.632 | 2.2E+09 | 97.07477 | 0.513942 | 45.23809 | 50 | 2.678041 | 32180401 |
| Ghana | 2021 | 23 | 0.632 | 1.16E+09 | 98.61477 | 5.356478 | 44.76191 | 50 | 3.300794 | 32833031 |
| Ghana | 2022 | 23 | 0.632 | 1.16E+09 | 97.485 | 3.239706 | 50.4717 | 52.83019 | 2.021725 | 33475870 |
| Guinea | 2013 | 24 | 0.429 | 4.48E+08 | 127.4852 | 3.945687 | 11.37441 | 13.74408 | 0.002268 | 11055430 |
| Guinea | 2014 | 24 | 0.435 | 5.36E+08 | 123.3949 | 3.696553 | 10.57692 | 13.46154 | -0.84022 | 11333365 |
| Guinea | 2015 | 24 | 0.44 | 5.81E+08 | 129.449 | 3.825911 | 11.42857 | 15.2381 | 0.605768 | 11625998 |
| Guinea | 2016 | 24 | 0.45 | 6.09E+08 | 153.0964 | 10.82063 | 12.85714 | 15.2381 | 18.82801 | 11930985 |
| Guinea | 2017 | 24 | 0.458 | 4.98E+08 | 111.931 | 10.30001 | 13.33333 | 14.28571 | 5.594272 | 12240789 |
| Guinea | 2018 | 24 | 0.462 | 6.59E+08 | 108.5699 | 6.358492 | 14.28571 | 13.33333 | 2.975113 | 12554864 |
| Guinea | 2019 | 24 | 0.467 | 5.78E+08 | 108.3312 | 5.616914 | 18.09524 | 18.57143 | 0.330287 | 12877539 |
| Guinea | 2020 | 24 | 0.466 | 7.26E+08 | 121.0597 | 4.920266 | 16.66667 | 18.09524 | 1.243843 | 13205153 |
| Guinea | 2021 | 24 | 0.465 | 5.56E+08 | 118.2654 | 3.9 | 14.7619 | 17.14286 | 1.228015 | 13531906 |
| Guinea | 2022 | 24 | 0.465 | 5.56E+08 | 120.1373 | 4.7 | 15.56604 | 18.39623 | 3.10113 | 13859341 |
| Guinea-Bissau | 2013 | 25 | 0.46 | 1.01E+08 | 107.566 | 3.255904 | 5.21327 | 3.791469 | 1.877444 | 1697753 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Guinea-Bissau | 2014 | 25 | 0.466 | 1.05E+08 | 111.1782 | 0.964561 | 3.365385 | 1.923077 | 2.735075 | 1743309 |
| Guinea-Bissau | 2015 | 25 | 0.472 | 1.03E+08 | 104.6955 | 6.134083 | 3.333333 | 2.380952 | 1.772083 | 1788919 |
| Guinea-Bissau | 2016 | 25 | 0.478 | 2.12E+08 | 104.7959 | 6.262806 | 3.809524 | 2.380952 | 1.206246 | 1834552 |
| Guinea-Bissau | 2017 | 25 | 0.481 | 1.19E+08 | 105.2991 | 5.919177 | 1.904762 | 1.904762 | 1.162159 | 1879826 |
| Guinea-Bissau | 2018 | 25 | 0.482 | 1.54E+08 | 105.4659 | 1.283737 | 6.666667 | 2.380952 | 1.366702 | 1924955 |
| Guinea-Bissau | 2019 | 25 | 0.49 | 1.16E+08 | 114.7967 | 4.5 | 6.190476 | 4.285714 | 4.977547 | 1970457 |
| Guinea-Bissau | 2020 | 25 | 0.483 | 1.47E+08 | 114.8618 | -2.4 | 7.142857 | 7.142857 | 1.46601 | 2015828 |
| Guinea-Bissau | 2021 | 25 | 0.483 | 1.58E+08 | 116.4612 | 3.800002 | 7.142857 | 7.142857 | 1.130883 | 2060721 |
| Guinea-Bissau | 2022 | 25 | 0.483 | 1.58E+08 | 118.0607 | 3.50005 | 6.603774 | 11.79245 | 1.343134 | 2105566 |
| Kenya | 2013 | 26 | 0.554 | 3.27E+09 | 110.7446 | 3.797848 | 37.44076 | 14.69194 | 1.81417 | 44792368 |
| Kenya | 2014 | 26 | 0.558 | 2.62E+09 | 112.7613 | 5.020111 | 40.86538 | 16.34615 | 1.202208 | 45831863 |
| Kenya | 2015 | 26 | 0.561 | 2.63E+09 | 110.3468 | 4.967721 | 38.57143 | 14.28571 | 0.8838 | 46851488 |
| Kenya | 2016 | 26 | 0.569 | 2.34E+09 | 108.3655 | 4.213517 | 37.14286 | 16.66667 | 0.627591 | 47894670 |
| Kenya | 2017 | 26 | 0.572 | 2.62E+09 | 110.9115 | 3.837958 | 37.14286 | 15.2381 | 1.640837 | 48948137 |
| Kenya | 2018 | 26 | 0.577 | 2.53E+09 | 108.8276 | 5.647946 | 34.28571 | 20.47619 | 0.832686 | 49953304 |
| Kenya | 2019 | 26 | 0.581 | 3.26E+09 | 108.9353 | 5.114159 | 35.71429 | 24.28572 | 0.468169 | 50951450 |
| Kenya | 2020 | 26 | 0.578 | 3.99E+09 | 108.5686 | -0.27277 | 38.09524 | 20.95238 | 0.423521 | 51985780 |
| Kenya | 2021 | 26 | 0.575 | 2.99E+09 | 108.0342 | 7.590489 | 38.57143 | 26.19048 | 0.422364 | 53005614 |
| Kenya | 2022 | 26 | 0.575 | 2.99E+09 | 107.8107 | 4.846635 | 41.03773 | 24.0566 | 0.347014 | 54027487 |
| Lesotho | 2013 | 27 | 0.49 | 3.32E+08 | 156.8661 | 1.792531 | 37.91469 | 63.98104 | 2.130402 | 2073939 |
| Lesotho | 2014 | 27 | 0.496 | 1.07E+08 | 149.9931 | 1.710544 | 27.88461 | 61.53846 | 3.869587 | 2095242 |
| Lesotho | 2015 | 27 | 0.503 | 92959999 | 143.9351 | 3.127558 | 22.85714 | 56.66667 | 8.751525 | 2118521 |
| Lesotho | 2016 | 27 | 0.514 | 1.2E+08 | 145.5645 | 3.6054 | 19.52381 | 55.23809 | 3.747331 | 2143872 |
| Lesotho | 2017 | 27 | 0.518 | 1.53E+08 | 151.3888 | -3.13817 | 18.57143 | 55.23809 | 1.828067 | 2170617 |
| Lesotho | 2018 | 27 | 0.522 | 1.57E+08 | 141.1301 | -1.48063 | 17.14286 | 51.90476 | 1.598987 | 2198017 |
| Lesotho | 2019 | 27 | 0.524 | 1.43E+08 | 146.6084 | -0.76423 | 15.71429 | 51.42857 | 1.466837 | 2225702 |
| Lesotho | 2020 | 27 | 0.521 | 1.71E+08 | 157.7995 | -5.6194 | 16.19048 | 49.04762 | 1.322245 | 2254100 |
| Lesotho | 2021 | 27 | 0.514 | 1.69E+08 | .. | 1.55768 | 15.2381 | 43.33333 | -0.52128 | 2281454 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Lesotho | 2022 | 27 | 0.514 | 1.69E+08 | .. | 0.591918 | 17.45283 | 41.98113 | -0.3062 | 2305825 |
| Liberia | 2013 | 28 | 0.475 | 5.21E+08 | .. | 8.687288 | 7.109005 | 27.01422 | 62.90685 | 4427313 |
| Liberia | 2014 | 28 | 0.472 | 7.28E+08 | .. | 0.701393 | 7.692307 | 24.51923 | 15.55874 | 4519398 |
| Liberia | 2015 | 28 | 0.473 | 1.17E+09 | .. | -0.01856 | 7.142857 | 29.52381 | 7.210238 | 4612329 |
| Liberia | 2016 | 28 | 0.478 | 8.76E+08 | .. | -1.55496 | 7.142857 | 26.19048 | 9.171903 | 4706097 |
| Liberia | 2017 | 28 | 0.481 | 6.61E+08 | .. | 2.455156 | 8.095238 | 27.61905 | 7.309486 | 4796631 |
| Liberia | 2018 | 28 | 0.483 | 6.01E+08 | .. | 1.157575 | 8.095238 | 18.57143 | 3.772685 | 4889391 |
| Liberia | 2019 | 28 | 0.484 | 5.95E+08 | .. | -2.4673 | 7.619048 | 17.61905 | 2.611212 | 4985289 |
| Liberia | 2020 | 28 | 0.48 | 6.52E+08 | .. | -2.98249 | 7.619048 | 20 | 2.860543 | 5087584 |
| Liberia | 2021 | 28 | 0.481 | 5.67E+08 | .. | 4.986713 | 8.095238 | 19.04762 | 1.301795 | 5193416 |
| Liberia | 2022 | 28 | 0.481 | 5.67E+08 | .. | 4.808113 | 8.018867 | 20.28302 | 1.827188 | 5302681 |
| Libya | 2013 | 29 | 0.716 | 1.21E+08 | 86.55704 | -17.998 | 8.056872 | 1.421801 | 0.931638 | 5985221 |
| Libya | 2014 | 29 | 0.699 | 1.95E+08 | 112.0484 | -23.0428 | 5.288462 | 2.884615 | .. | 6097764 |
| Libya | 2015 | 29 | 0.699 | 1.67E+08 | 112.45 | -0.84266 | 5.714286 | 0.952381 | .. | 6192235 |
| Libya | 2016 | 29 | 0.696 | 1.93E+08 | 111.9544 | -1.49094 | 3.333333 | 2.857143 | .. | 6282196 |
| Libya | 2017 | 29 | 0.714 | 4.57E+08 | 93.15445 | 32.4918 | 5.238095 | 3.333333 | .. | 6378261 |
| Libya | 2018 | 29 | 0.722 | 3.03E+08 | 84.55412 | 7.941368 | 3.809524 | 3.333333 | .. | 6477793 |
| Libya | 2019 | 29 | 0.722 | 3.03E+08 | 92.53889 | -11.1957 | 2.857143 | 2.380952 | .. | 6569088 |
| Libya | 2020 | 29 | 0.703 | 2.96E+08 | 88.57903 | -29.7871 | 2.380952 | 2.857143 | .. | 6653942 |
| Libya | 2021 | 29 | 0.718 | 3.26E+08 | 84.60485 | 31.37252 | 3.809524 | 3.809524 | .. | 6735277 |
| Libya | 2022 | 29 | 0.718 | 3.26E+08 | 80.63066 | -1.23698 | 2.35849 | 3.773585 | .. | 6812341 |
| Madagascar | 2013 | 30 | 0.499 | 4.8E+08 | 109.8233 | 2.300376 | 12.32228 | 23.22275 | 4.554645 | 23588073 |
| Madagascar | 2014 | 30 | 0.502 | 5.63E+08 | 105.4056 | 3.339203 | 8.173077 | 21.63461 | 2.977511 | 24215976 |
| Madagascar | 2015 | 30 | 0.504 | 7.3E+08 | 104.4391 | 3.132298 | 7.619048 | 20 | 2.897277 | 24850912 |
| Madagascar | 2016 | 30 | 0.505 | 6.69E+08 | 102.6496 | 3.993146 | 9.523809 | 16.19048 | 4.564608 | 25501941 |
| Madagascar | 2017 | 30 | 0.507 | 8.17E+08 | 103.5381 | 3.933308 | 10.47619 | 13.33333 | 3.527972 | 26169542 |
| Madagascar | 2018 | 30 | 0.507 | 7.6E+08 | 106.3263 | 3.194357 | 9.523809 | 14.7619 | 4.447928 | 26846541 |
| Madagascar | 2019 | 30 | 0.51 | 7.51E+08 | 108.6869 | 4.411232 | 10 | 14.7619 | 3.362798 | 27533134 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Madagascar | 2020 | 30 | 0.501 | 1.3E+09 | 113.4179 | -7.13767 | 13.33333 | 16.66667 | 2.746571 | 28225177 |
| Madagascar | 2021 | 30 | 0.501 | 9.92E+08 | 108.9085 | 5.739616 | 13.80952 | 18.57143 | 2.456494 | 28915653 |
| Madagascar | 2022 | 30 | 0.501 | 9.92E+08 | 109.063 | 3.796205 | 14.62264 | 17.92453 | 2.649584 | 29611714 |
| Malawi | 2013 | 31 | 0.478 | 1.08E+09 | .. | 5.41035 | 36.01896 | 32.70142 | 5.619851 | 16024775 |
| Malawi | 2014 | 31 | 0.487 | 8.87E+08 | .. | 5.62527 | 25.48077 | 25 | 6.795414 | 16477966 |
| Malawi | 2015 | 31 | 0.491 | 1.1E+09 | .. | 2.8 | 25.23809 | 23.80952 | 3.121075 | 16938942 |
| Malawi | 2016 | 31 | 0.498 | 1.32E+09 | .. | 2.5 | 21.90476 | 23.80952 | 1.46273 | 17405624 |
| Malawi | 2017 | 31 | 0.505 | 1.6E+09 | .. | 4 | 23.80952 | 28.09524 | 1.008549 | 17881167 |
| Malawi | 2018 | 31 | 0.51 | 1.29E+09 | .. | 4.391688 | 20.47619 | 24.76191 | 0.779423 | 18367883 |
| Malawi | 2019 | 31 | 0.519 | 1.19E+09 | .. | 5.448181 | 20.95238 | 25.23809 | 0.500916 | 18867337 |
| Malawi | 2020 | 31 | 0.516 | 1.45E+09 | .. | 0.799998 | 19.52381 | 40 | 0.375237 | 19377061 |
| Malawi | 2021 | 31 | 0.512 | 1.09E+09 | .. | 2.751403 | 21.42857 | 44.76191 | 0.368289 | 19889742 |
| Malawi | 2022 | 31 | 0.512 | 1.09E+09 | .. | 0.923436 | 20.75472 | 30.18868 | 1.432349 | 20405317 |
| Mali | 2013 | 32 | 0.407 | 1.33E+09 | 114.7196 | 2.295068 | 20.85308 | 22.27488 | 2.325365 | 17004033 |
| Mali | 2014 | 32 | 0.415 | 1.17E+09 | 115.5277 | 7.084684 | 14.42308 | 26.44231 | 1.003936 | 17551814 |
| Mali | 2015 | 32 | 0.416 | 1.29E+09 | 115.5522 | 6.1718 | 17.61905 | 27.61905 | 2.102484 | 18112907 |
| Mali | 2016 | 32 | 0.421 | 1.3E+09 | 116.8775 | 5.852299 | 14.28571 | 29.52381 | 2.541533 | 18700106 |
| Mali | 2017 | 32 | 0.426 | 1.43E+09 | 113.6403 | 5.305456 | 16.19048 | 29.04762 | 3.649342 | 19311355 |
| Mali | 2018 | 32 | 0.43 | 1.56E+09 | 111.1 | 4.746484 | 13.80952 | 26.66667 | 2.737385 | 19934298 |
| Mali | 2019 | 32 | 0.433 | 1.86E+09 | 112.2481 | 4.756161 | 12.85714 | 26.66667 | 4.971522 | 20567424 |
| Mali | 2020 | 32 | 0.427 | 1.57E+09 | 105.6773 | -1.23545 | 11.42857 | 24.28572 | 3.073803 | 21224040 |
| Mali | 2021 | 32 | 0.428 | 1.33E+09 | 111.4757 | 3.052614 | 10.95238 | 20 | 3.314148 | 21904983 |
| Mali | 2022 | 32 | 0.428 | 1.33E+09 | 110.7032 | 3.687484 | 11.32076 | 21.22642 | 1.343339 | 22593590 |
| Mauritania | 2013 | 33 | 0.531 | 2.81E+08 | 111.3016 | 4.150813 | 16.11374 | 21.80095 | 15.589 | 3742959 |
| Mauritania | 2014 | 33 | 0.537 | 2.49E+08 | 116.832 | 4.274823 | 16.34615 | 16.82692 | 7.623617 | 3843174 |
| Mauritania | 2015 | 33 | 0.544 | 3.51E+08 | 116.9565 | 5.376339 | 13.80952 | 17.61905 | 8.135849 | 3946220 |
| Mauritania | 2016 | 33 | 0.541 | 3.3E+08 | 105.3031 | 1.260909 | 20 | 25.23809 | 4.237315 | 4051890 |
| Mauritania | 2017 | 33 | 0.545 | 3.08E+08 | 109.8036 | 6.270546 | 20.95238 | 24.28572 | 8.650076 | 4160015 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Mauritania | 2018 | 33 | 0.556 | 4.52E+08 | 115.9742 | 4.772174 | 19.52381 | 23.33333 | 10.34168 | 4270712 |
| Mauritania | 2019 | 33 | 0.563 | 4.08E+08 | 113.0248 | 5.296637 | 30.95238 | 21.90476 | -10.954 | 4383849 |
| Mauritania | 2020 | 33 | 0.556 | 6.45E+08 | 113.3322 | -0.93852 | 17.61905 | 23.33333 | 11.0394 | 4498604 |
| Mauritania | 2021 | 33 | 0.556 | 4.01E+08 | 121.4881 | 2.445368 | 22.85714 | 21.90476 | 10.70655 | 4614974 |
| Mauritania | 2022 | 33 | 0.556 | 4.01E+08 | 131.2365 | 5.2 | 25.4717 | 23.11321 | 11.06028 | 4736139 |
| Mauritius | 2013 | 34 | 0.782 | 1.36E+08 | 109.141 | 3.360406 | 76.77725 | 63.50711 | 2.386478 | 1258927 |
| Mauritius | 2014 | 34 | 0.793 | 40070000 | 106.3479 | 3.82697 | 84.61539 | 64.90385 | 3.484455 | 1261208 |
| Mauritius | 2015 | 34 | 0.795 | 85360001 | 104.2529 | 3.690557 | 83.33334 | 61.42857 | 1.802698 | 1262879 |
| Mauritius | 2016 | 34 | 0.801 | 45980000 | 103.3466 | 3.862468 | 79.52381 | 59.52381 | 3.007462 | 1263747 |
| Mauritius | 2017 | 34 | 0.805 | 15020000 | 104.1306 | 3.937984 | 79.52381 | 60 | 3.500169 | 1264887 |
| Mauritius | 2018 | 34 | 0.811 | 69540001 | 105.0685 | 4.006741 | 77.14286 | 60 | 3.125142 | 1265577 |
| Mauritius | 2019 | 34 | 0.817 | 22540001 | 107.558 | 2.891285 | 77.14286 | 60 | 3.076109 | 1265985 |
| Mauritius | 2020 | 34 | 0.804 | 3.35E+08 | 108.3877 | -14.5974 | 77.14286 | 65.2381 | 1.970593 | 1266014 |
| Mauritius | 2021 | 34 | 0.802 | 3.02E+08 | 110.1353 | 3.39938 | 76.19048 | 65.2381 | 2.206167 | 1266334 |
| Mauritius | 2022 | 34 | 0.802 | 3.02E+08 | 106.2481 | 8.690735 | 75.9434 | 65.56604 | 1.954553 | 1262523 |
| Morocco | 2013 | 35 | 0.635 | 1.93E+09 | 105.6497 | 4.122213 | 52.60664 | 41.70616 | 2.903863 | 33803527 |
| Morocco | 2014 | 35 | 0.644 | 2.11E+09 | 111.6276 | 2.719244 | 48.07692 | 47.11538 | 2.959254 | 34248603 |
| Morocco | 2015 | 35 | 0.654 | 1.65E+09 | 107.297 | 4.344583 | 47.61905 | 48.09524 | 2.946111 | 34680458 |
| Morocco | 2016 | 35 | 0.661 | 2.24E+09 | 109.6535 | 0.521186 | 46.19048 | 50.47619 | 1.930005 | 35107264 |
| Morocco | 2017 | 35 | 0.67 | 2.57E+09 | 108.9604 | 5.057898 | 40.47619 | 49.04762 | 2.260922 | 35528115 |
| Morocco | 2018 | 35 | 0.676 | 8.21E+08 | 109.598 | 3.065641 | 39.04762 | 44.76191 | 2.783379 | 35927511 |
| Morocco | 2019 | 35 | 0.682 | 7.78E+08 | 107.812 | 2.890975 | 40.47619 | 41.42857 | 1.334798 | 36304408 |
| Morocco | 2020 | 35 | 0.679 | 1.83E+09 | 107.256 | -7.18708 | 46.66667 | 38.57143 | 1.169132 | 36688772 |
| Morocco | 2021 | 35 | 0.683 | 9.27E+08 | 109.0884 | 7.929668 | 45.23809 | 38.57143 | 1.584799 | 37076584 |
| Morocco | 2022 | 35 | 0.683 | 9.27E+08 | 111.5935 | 1.079969 | 47.16981 | 41.50943 | 1.623058 | 37457971 |
| Mozambique | 2013 | 36 | 0.427 | 2.24E+09 | 149.6626 | 6.963607 | 31.75356 | 34.12322 | 39.45622 | 25251731 |
| Mozambique | 2014 | 36 | 0.433 | 2.02E+09 | 148.8971 | 7.398513 | 23.07692 | 29.32692 | 28.21615 | 26038704 |
| Mozambique | 2015 | 36 | 0.44 | 1.94E+09 | 131.7524 | 6.723279 | 20.95238 | 24.76191 | 24.25151 | 26843246 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Mozambique | 2016 | 36 | 0.443 | 1.63E+09 | 138.5478 | 3.824214 | 16.66667 | 17.14286 | 26.20551 | 27696493 |
| Mozambique | 2017 | 36 | 0.445 | 1.89E+09 | 122.5607 | 3.741318 | 16.66667 | 19.04762 | 17.54337 | 28569441 |
| Mozambique | 2018 | 36 | 0.451 | 1.84E+09 | 137.4642 | 3.443813 | 15.71429 | 23.80952 | 11.30358 | 29423878 |
| Mozambique | 2019 | 36 | 0.456 | 1.88E+09 | 147.4622 | 2.314443 | 16.19048 | 22.38095 | 21.95791 | 30285595 |
| Mozambique | 2020 | 36 | 0.453 | 2.56E+09 | 142.8839 | -1.19855 | 20.95238 | 24.76191 | 22.5187 | 31178239 |
| Mozambique | 2021 | 36 | 0.446 | 2.13E+09 | 137.4491 | 2.327524 | 25.23809 | 22.85714 | 33.56454 | 32077072 |
| Mozambique | 2022 | 36 | 0.446 | 2.13E+09 | 137.4491 | 4.148415 | 25 | 21.69811 | 14.223 | 32969518 |
| Namibia | 2013 | 37 | 0.611 | 2.73E+08 | 122.7207 | 5.61472 | 61.61137 | 66.35071 | 6.452328 | 2204510 |
| Namibia | 2014 | 37 | 0.621 | 2.36E+08 | 125.0458 | 6.092519 | 61.53846 | 62.5 | 3.583167 | 2243001 |
| Namibia | 2015 | 37 | 0.628 | 1.55E+08 | 126.4972 | 4.264175 | 65.71429 | 63.33333 | 7.40068 | 2282704 |
| Namibia | 2016 | 37 | 0.632 | 1.85E+08 | 123.9471 | 0.033794 | 60.95238 | 62.38095 | 3.345704 | 2323352 |
| Namibia | 2017 | 37 | 0.635 | 2.01E+08 | 113.9777 | -1.02725 | 61.90476 | 62.85714 | 2.175057 | 2364534 |
| Namibia | 2018 | 37 | 0.636 | 1.61E+08 | 109.9484 | 1.059943 | 57.61905 | 63.33333 | 1.712998 | 2405680 |
| Namibia | 2019 | 37 | 0.639 | 1.48E+08 | 110.099 | -0.83915 | 56.66667 | 62.85714 | -1.40711 | 2446644 |
| Namibia | 2020 | 37 | 0.633 | 1.8E+08 | 109.5692 | -8.1014 | 53.33333 | 61.90476 | -1.4189 | 2489098 |
| Namibia | 2021 | 37 | 0.615 | 1.73E+08 | 118.288 | 3.524658 | 54.76191 | 61.42857 | 5.549498 | 2530151 |
| Namibia | 2022 | 37 | 0.615 | 1.73E+08 | 118.7421 | 4.560294 | 55.18868 | 60.84906 | 7.392559 | 2567012 |
| Niger | 2013 | 38 | 0.362 | 7.6E+08 | 112.3371 | 5.315131 | 26.54029 | 33.17535 | 7.035166 | 18653199 |
| Niger | 2014 | 38 | 0.37 | 8.76E+08 | 113.8499 | 6.642137 | 24.51923 | 27.88461 | 7.575912 | 19372014 |
| Niger | 2015 | 38 | 0.376 | 9.35E+08 | 116.1907 | 4.392649 | 25.71428 | 28.57143 | 5.467618 | 20128124 |
| Niger | 2016 | 38 | 0.383 | 1.02E+09 | 112.1214 | 5.740893 | 27.14286 | 30.47619 | 2.897745 | 20921743 |
| Niger | 2017 | 38 | 0.39 | 1.29E+09 | 112.9705 | 5.00136 | 21.90476 | 27.14286 | 3.028231 | 21737922 |
| Niger | 2018 | 38 | 0.399 | 1.32E+09 | 114.4636 | 7.210803 | 18.57143 | 31.90476 | 3.638493 | 22577058 |
| Niger | 2019 | 38 | 0.406 | 1.48E+09 | 114.8709 | 5.941397 | 19.04762 | 31.42857 | 5.552202 | 23443393 |
| Niger | 2020 | 38 | 0.401 | 1.93E+09 | 115.4909 | 3.550228 | 28.09524 | 28.09524 | 2.624047 | 24333639 |
| Niger | 2021 | 38 | 0.4 | 1.68E+09 | 116.9433 | 1.387129 | 30.47619 | 31.42857 | 3.988126 | 25252722 |
| Niger | 2022 | 38 | 0.4 | 1.68E+09 | 118.6559 | 11.5 | 28.77358 | 31.13208 | 4.157147 | 26207977 |
| Nigeria | 2013 | 39 | 0.506 | 2.49E+09 | 94.94905 | 6.671335 | 15.63981 | 9.478673 | 1.069539 | 1.75E+08 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Nigeria | 2014 | 39 | 0.512 | 2.41E+09 | 94.01494 | 6.309719 | 11.53846 | 7.692307 | 0.817478 | 1.79E+08 |
| Nigeria | 2015 | 39 | 0.516 | 2.56E+09 | 100 | 2.652693 | 15.2381 | 12.85714 | 0.621502 | 1.84E+08 |
| Nigeria | 2016 | 39 | 0.521 | 2.68E+09 | 102.2863 | -1.61687 | 11.42857 | 13.33333 | 0.853396 | 1.89E+08 |
| Nigeria | 2017 | 39 | 0.526 | 3.55E+09 | 100.0045 | 0.805887 | 13.80952 | 12.38095 | 0.642183 | 1.93E+08 |
| Nigeria | 2018 | 39 | 0.531 | 3.35E+09 | 102.0141 | 1.922757 | 11.90476 | 12.38095 | 0.183822 | 1.98E+08 |
| Nigeria | 2019 | 39 | 0.538 | 3.37E+09 | 105.582 | 2.208429 | 9.523809 | 12.38095 | 0.485778 | 2.03E+08 |
| Nigeria | 2020 | 39 | 0.535 | 3.38E+09 | 100.1156 | -1.79425 | 11.90476 | 13.80952 | 0.551893 | 2.08E+08 |
| Nigeria | 2021 | 39 | 0.535 | 3.18E+09 | 101.0996 | 3.647187 | 13.33333 | 14.28571 | 0.751578 | 2.13E+08 |
| Nigeria | 2022 | 39 | 0.535 | 3.18E+09 | 101.0996 | 3.251681 | 14.15094 | 14.62264 | -0.03913 | 2.19E+08 |
| Rwanda | 2013 | 40 | 0.508 | 1.06E+09 | 115.7082 | 4.719855 | 54.02843 | 72.03792 | 2.989287 | 11101350 |
| Rwanda | 2014 | 40 | 0.513 | 1E+09 | 116.1653 | 6.167163 | 52.88462 | 75.48077 | 3.811088 | 11368451 |
| Rwanda | 2015 | 40 | 0.515 | 1.15E+09 | 118.7382 | 8.856847 | 48.57143 | 70.47619 | 1.897077 | 11642959 |
| Rwanda | 2016 | 40 | 0.524 | 1.24E+09 | 118.6412 | 5.970757 | 53.80952 | 70.47619 | 3.217218 | 11930899 |
| Rwanda | 2017 | 40 | 0.526 | 1.3E+09 | 112.6185 | 3.936611 | 60.47619 | 71.42857 | 2.961536 | 12230339 |
| Rwanda | 2018 | 40 | 0.528 | 1.13E+09 | 113.5701 | 8.539836 | 54.76191 | 69.04762 | 3.800051 | 12531808 |
| Rwanda | 2019 | 40 | 0.534 | 1.2E+09 | 114.3284 | 9.464025 | 56.19048 | 67.14286 | 2.543545 | 12835028 |
| Rwanda | 2020 | 40 | 0.532 | 1.62E+09 | 116.5384 | -3.37399 | 61.42857 | 67.61905 | 1.500199 | 13146362 |
| Rwanda | 2021 | 40 | 0.534 | 1.25E+09 | 115.6196 | 10.87673 | 60 | 70 | 1.916696 | 13461888 |
| Rwanda | 2022 | 40 | 0.534 | 1.25E+09 | 115.4075 | 8.157488 | 61.32076 | 70.28302 | 2.994107 | 13776698 |
| Sao Tome and Principe | 2013 | 41 | 0.573 | 51270000 | .. | 4.814793 | 25.11848 | 54.02843 | 4.046636 | 193757 |
| Sao Tome and Principe | 2014 | 41 | 0.584 | 39389999 | .. | 6.549935 | 18.26923 | 57.21154 | 7.644391 | 197497 |
| Sao Tome and Principe | 2015 | 41 | 0.596 | 53869999 | .. | 3.911338 | 20 | 55.23809 | 8.83488 | 201124 |
| Sao Tome and Principe | 2016 | 41 | 0.603 | 50919998 | .. | 4.164769 | 22.38095 | 54.28571 | 6.752933 | 204632 |
| Sao Tome and Principe | 2017 | 41 | 0.612 | 42610001 | .. | 3.848981 | 19.52381 | 59.52381 | 9.107349 | 208036 |
| Sao Tome and Principe | 2018 | 41 | 0.617 | 52570000 | .. | 2.945269 | 21.42857 | 59.52381 | 5.748478 | 211344 |
| Sao Tome and Principe | 2019 | 41 | 0.622 | 52410000 | .. | 2.210856 | 24.28572 | 59.04762 | 5.659893 | 214599 |
| Sao Tome and Principe | 2020 | 41 | 0.619 | 91980003 | .. | 3.024568 | 25.23809 | 59.04762 | 9.969756 | 218641 |
| Sao Tome and Principe | 2021 | 41 | 0.618 | 66449997 | .. | 1.877923 | 24.28572 | 60.47619 | 11.20283 | 223107 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Sao Tome and Principe | 2022 | 41 | 0.618 | 66449997 | .. | 0.927137 | 20.28302 | 62.73585 | 23.15866 | 227380 |
| Senegal | 2013 | 42 | 0.496 | 9.68E+08 | 115.9273 | 2.412385 | 40.75829 | 53.08057 | 1.645818 | 13595566 |
| Senegal | 2014 | 42 | 0.502 | 1.08E+09 | 114.8859 | 6.224074 | 38.94231 | 58.65385 | 2.036131 | 13970308 |
| Senegal | 2015 | 42 | 0.505 | 9.36E+08 | 112.7559 | 6.367044 | 35.23809 | 57.61905 | 2.301949 | 14356181 |
| Senegal | 2016 | 42 | 0.507 | 7.85E+08 | 110.9865 | 6.356069 | 34.28571 | 56.19048 | 2.481103 | 14751356 |
| Senegal | 2017 | 42 | 0.509 | 9.55E+08 | 113.8451 | 7.407486 | 38.57143 | 52.85714 | 2.801854 | 15157793 |
| Senegal | 2018 | 42 | 0.512 | 1.01E+09 | 115.8917 | 6.209241 | 40 | 55.23809 | 3.667658 | 15574909 |
| Senegal | 2019 | 42 | 0.513 | 1.48E+09 | 114.27 | 4.613628 | 45.71429 | 55.71429 | 4.552476 | 16000781 |
| Senegal | 2020 | 42 | 0.513 | 1.61E+09 | 118.6458 | 1.342074 | 50.95238 | 55.71429 | 7.523957 | 16436120 |
| Senegal | 2021 | 42 | 0.511 | 1.31E+09 | 119.9427 | 6.539674 | 53.80952 | 57.14286 | 9.387768 | 16876720 |
| Senegal | 2022 | 42 | 0.511 | 1.31E+09 | 122.829 | 4.153856 | 52.83019 | 53.77359 | 9.34164 | 17316449 |
| Seychelles | 2013 | 43 | 0.787 | 25700001 | 107.1085 | 1.253735 | 69.19431 | 71.56398 | 4.32398 | 89949 |
| Seychelles | 2014 | 43 | 0.796 | 11330000 | 115.2397 | 4.063692 | 71.15385 | 70.67308 | 7.808971 | 91359 |
| Seychelles | 2015 | 43 | 0.796 | 7170000 | 107.5174 | 4.194587 | 71.90476 | 82.38095 | 7.610426 | 93419 |
| Seychelles | 2016 | 43 | 0.796 | 6080000 | 110.9254 | 5.104827 | 71.42857 | 81.90476 | 4.68464 | 94677 |
| Seychelles | 2017 | 43 | 0.796 | 17059999 | 110.5369 | 2.783945 | 69.52381 | 80 | 12.89807 | 95843 |
| Seychelles | 2018 | 43 | 0.8 | 8800000 | 113.0556 | 3.709434 | 74.28571 | 80 | 19.21967 | 96762 |
| Seychelles | 2019 | 43 | 0.802 | 2595000 | 109.8806 | 4.876946 | 72.85714 | 84.28571 | 15.62749 | 97625 |
| Seychelles | 2020 | 43 | 0.793 | 1200000 | 123.8212 | -8.64921 | 73.80952 | 89.52381 | 6.764042 | 98462 |
| Seychelles | 2021 | 43 | 0.785 | 50000 | 112.7808 | 5.4 | 77.61905 | 91.90476 | 8.66217 | 99258 |
| Seychelles | 2022 | 43 | 0.785 | 50000 | 110.1567 | 8.8 | 73.1132 | 94.33962 | 13.35013 | 100060 |
| Sierra Leone | 2013 | 44 | 0.459 | 4.3E+08 | 130.1993 | 21.07901 | 10.90047 | 19.90521 | 8.732411 | 6964859 |
| Sierra Leone | 2014 | 44 | 0.461 | 8.48E+08 | 121.6656 | 4.559254 | 10.09615 | 15.86539 | 7.479085 | 7140688 |
| Sierra Leone | 2015 | 44 | 0.453 | 9.78E+08 | 127.8576 | -20.4911 | 8.571428 | 22.85714 | 5.936832 | 7314773 |
| Sierra Leone | 2016 | 44 | 0.457 | 7.43E+08 | 128.1483 | 6.346728 | 10 | 20.95238 | 3.5858 | 7493913 |
| Sierra Leone | 2017 | 44 | 0.466 | 5.76E+08 | 122.6429 | 3.753803 | 10 | 32.85714 | 11.12329 | 7677565 |
| Sierra Leone | 2018 | 44 | 0.47 | 5.15E+08 | 121.7612 | 3.472903 | 10.95238 | 35.71429 | 6.130698 | 7861281 |
| Sierra Leone | 2019 | 44 | 0.48 | 5.84E+08 | 119.6968 | 5.253746 | 10.95238 | 36.19048 | 8.3992 | 8046828 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Sierra Leone | 2020 | 44 | 0.475 | 8.41E+08 | 121.3758 | -1.96849 | 12.85714 | 39.52381 | 4.250632 | 8233970 |
| Sierra Leone | 2021 | 44 | 0.477 | 6.59E+08 | 124.5345 | 4.1047 | 11.90476 | 36.19048 | 4.99594 | 8420641 |
| Sierra Leone | 2022 | 44 | 0.477 | 6.59E+08 | 124.5345 | 3.500742 | 11.79245 | 32.54717 | 6.296684 | 8605718 |
| Somalia | 2013 | 45 | .. | 9.69E+08 | .. | 6.4955 | 0.47619 | 0.238095 | 5.63688 | 12852485 |
| Somalia | 2014 | 45 | .. | 1.02E+09 | .. | 7.7942 | 0.47619 | 0.238095 | 5.19403 | 13309235 |
| Somalia | 2015 | 45 | .. | 1.21E+09 | .. | 15.04994 | 0.952381 | 0.47619 | 5.679475 | 13763906 |
| Somalia | 2016 | 45 | .. | 1.24E+09 | .. | 8.532293 | 0.47619 | 0.952381 | 5.963137 | 14292847 |
| Somalia | 2017 | 45 | .. | 1.84E+09 | .. | 2.349583 | 0.47619 | 0.47619 | 6.578713 | 14864221 |
| Somalia | 2018 | 45 | .. | 1.58E+09 | .. | 7.530969 | 0.952381 | 0.238095 | 6.967213 | 15411094 |
| Somalia | 2019 | 45 | .. | 1.76E+09 | .. | 7.456522 | 0.952381 | 0.47619 | 6.89283 | 15981300 |
| Somalia | 2020 | 45 | .. | 3.04E+09 | .. | 2.489374 | 0.952381 | 1.904762 | 7.758245 | 16537016 |
| Somalia | 2021 | 45 | .. | 2.25E+09 | .. | 4.04911 | 1.428571 | 0.952381 | 7.878867 | 17065581 |
| Somalia | 2022 | 45 | .. | 2.25E+09 | .. | 4.798779 | 1.415094 | 0.471698 | 7.826627 | 17597511 |
| South Africa | 2013 | 46 | 0.704 | 1.29E+09 | 102.1165 | 2.485468 | 63.03318 | 54.50237 | 2.053581 | 53873616 |
| South Africa | 2014 | 46 | 0.712 | 1.09E+09 | 101.4983 | 1.413826 | 59.61538 | 54.32692 | 1.519327 | 54729551 |
| South Africa | 2015 | 46 | 0.716 | 1.55E+09 | 101.2994 | 1.321862 | 56.19048 | 54.76191 | 0.438736 | 55876504 |
| South Africa | 2016 | 46 | 0.719 | 1.28E+09 | 99.54908 | 0.664552 | 57.14286 | 57.14286 | 0.684613 | 56422274 |
| South Africa | 2017 | 46 | 0.72 | 1.07E+09 | 98.85578 | 1.157947 | 56.19048 | 52.38095 | 0.539674 | 56641209 |
| South Africa | 2018 | 46 | 0.726 | 9.41E+08 | 99.50242 | 1.522329 | 56.66667 | 52.38095 | 1.378038 | 57339635 |
| South Africa | 2019 | 46 | 0.736 | 9.89E+08 | 99.45982 | 0.303453 | 58.57143 | 54.28571 | 1.316779 | 58087055 |
| South Africa | 2020 | 46 | 0.727 | 1.2E+09 | 95.71726 | -6.34247 | 53.80952 | 53.33333 | 0.934055 | 58801927 |
| South Africa | 2021 | 46 | 0.713 | 9.92E+08 | 94.11901 | 4.913097 | 50 | 53.80952 | 9.703406 | 59392255 |
| South Africa | 2022 | 46 | 0.713 | 9.92E+08 | 97.78853 | 2.042299 | 48.11321 | 44.81132 | 2.265458 | 59893885 |
| South Sudan | 2013 | 47 | 0.411 | 1.35E+09 | 131.2802 | 13.12973 | 1.421801 | 2.843602 | -4.30359 | 11106031 |
| South Sudan | 2014 | 47 | 0.41 | 1.92E+09 | 87.85128 | 3.373648 | 0.480769 | 0.480769 | 0.007419 | 11213284 |
| South Sudan | 2015 | 47 | 0.412 | 1.76E+09 | 92.24865 | -10.7934 | 0.47619 | 1.662186 | 0.00125 | 11194299 |
| South Sudan | 2016 | 47 | 0.402 | 1.7E+09 | .. | .. | 0.47619 | 1.071477 | .. | 11066105 |
| South Sudan | 2017 | 47 | 0.395 | 2.29E+09 | .. | .. | 0.47619 | 1.366831 | .. | 10658226 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| South Sudan | 2018 | 47 | 0.395 | 1.59E+09 | .. | .. | 0.47619 | 0.47619 | .. | 10395329 |
| South Sudan | 2019 | 47 | 0.393 | 1.72E+09 | .. | .. | 0.47619 | 0.47619 | .. | 10447666 |
| South Sudan | 2020 | 47 | 0.386 | 1.82E+09 | .. | .. | 0.47619 | 0.47619 | .. | 10606227 |
| South Sudan | 2021 | 47 | 0.385 | 1.98E+09 | .. | .. | 0.47619 | 0.47619 | .. | 10748272 |
| South Sudan | 2022 | 47 | 0.385 | 1.98E+09 | .. | .. | 0.47619 | 0.47619 | .. | 10913164 |
| Sudan | 2013 | 48 | 0.497 | 1.54E+09 | 104.674 | 1.955145 | 4.265403 | 0.473934 | 2.556349 | 35990704 |
| Sudan | 2014 | 48 | 0.504 | 8.53E+08 | 107.2836 | 4.66138 | 4.807693 | 3.365385 | 1.628874 | 37003245 |
| Sudan | 2015 | 48 | 0.508 | 1.02E+09 | 104.2955 | 1.910177 | 5.238095 | 3.333333 | 2.033747 | 38171178 |
| Sudan | 2016 | 48 | 0.511 | 8.62E+08 | 99.94831 | 3.467642 | 5.238095 | 3.333333 | 1.033351 | 39377169 |
| Sudan | 2017 | 48 | 0.514 | 9.07E+08 | 99.71285 | 0.709256 | 6.190476 | 2.857143 | 0.821238 | 40679828 |
| Sudan | 2018 | 48 | 0.514 | 9.76E+08 | 106.7183 | -2.68093 | 4.761905 | 6.190476 | 3.512695 | 41999059 |
| Sudan | 2019 | 48 | 0.514 | 1.58E+09 | 108.9007 | -2.17825 | 4.761905 | 6.666667 | 2.55227 | 43232093 |
| Sudan | 2020 | 48 | 0.51 | 2.35E+09 | 99.70452 | -3.6298 | 5.714286 | 6.666667 | 2.651934 | 44440486 |
| Sudan | 2021 | 48 | 0.508 | 3.56E+09 | 99.62825 | -1.86852 | 5.714286 | 8.095238 | 1.52754 | 45657202 |
| Sudan | 2022 | 48 | 0.508 | 3.56E+09 | 99.55668 | -0.95341 | 4.716981 | 6.603774 | 1.110104 | 46874204 |
| Tanzania | 2013 | 49 | 0.51 | 3.34E+09 | 114.4412 | 6.781586 | 28.43602 | 22.74882 | 4.569258 | 49253643 |
| Tanzania | 2014 | 49 | 0.515 | 2.56E+09 | 113.0719 | 6.732462 | 25.96154 | 25.48077 | 2.83417 | 50814552 |
| Tanzania | 2015 | 49 | 0.52 | 2.72E+09 | 106.5479 | 6.160629 | 29.52381 | 27.14286 | 3.178703 | 52542823 |
| Tanzania | 2016 | 49 | 0.524 | 2.47E+09 | 101.1671 | 6.867116 | 31.90476 | 34.76191 | 1.735926 | 54401802 |
| Tanzania | 2017 | 49 | 0.528 | 2.71E+09 | 102.4344 | 6.772906 | 26.66667 | 40 | 1.760081 | 56267032 |
| Tanzania | 2018 | 49 | 0.538 | 2.48E+09 | 106.3673 | 5.457583 | 21.90476 | 38.57143 | 1.704411 | 58090443 |
| Tanzania | 2019 | 49 | 0.548 | 2.18E+09 | 106.168 | 5.8 | 18.57143 | 38.57143 | 1.994592 | 59872579 |
| Tanzania | 2020 | 49 | 0.548 | 2.28E+09 | 101.0063 | 1.991965 | 23.33333 | 39.04762 | 1.036629 | 61704518 |
| Tanzania | 2021 | 49 | 0.549 | 2.42E+09 | 101.7292 | 4.321384 | 30 | 40 | 1.461899 | 63588334 |
| Tanzania | 2022 | 49 | 0.549 | 2.42E+09 | 104.2354 | 4.558027 | 34.43396 | 43.39622 | 1.468065 | 65497748 |
| Togo | 2013 | 50 | 0.499 | 2.16E+08 | 115.5779 | 6.112343 | 9.00474 | 15.16588 | 3.126269 | 7106229 |
| Togo | 2014 | 50 | 0.505 | 2E+08 | 115.4124 | 5.920589 | 9.615385 | 18.26923 | 0.868907 | 7288383 |
| Togo | 2015 | 50 | 0.514 | 2.16E+08 | 117.7212 | 5.742868 | 10 | 25.71428 | 4.538615 | 7473229 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Togo | 2016 | 50 | 0.518 | 1.82E+08 | 113.0671 | 5.559079 | 11.90476 | 27.14286 | -0.76776 | 7661354 |
| Togo | 2017 | 50 | 0.524 | 3.64E+08 | 107.5951 | 4.347748 | 11.90476 | 25.71428 | 1.384709 | 7852795 |
| Togo | 2018 | 50 | 0.528 | 3.4E+08 | 107.3338 | 5.138472 | 12.38095 | 25.23809 | -2.57458 | 8046679 |
| Togo | 2019 | 50 | 0.535 | 4.16E+08 | 107.4347 | 4.922926 | 14.7619 | 26.19048 | 4.943723 | 8243094 |
| Togo | 2020 | 50 | 0.535 | 5.61E+08 | 108.7887 | 1.975743 | 24.28572 | 26.66667 | -0.80125 | 8442580 |
| Togo | 2021 | 50 | 0.539 | 3.2E+08 | 108.7052 | 5.991572 | 26.19048 | 27.61905 | -1.63452 | 8644829 |
| Togo | 2022 | 50 | 0.539 | 3.2E+08 | 109.904 | 5.81054 | 28.30189 | 27.35849 | -2.7926 | 8848699 |
| Tunisia | 2013 | 51 | 0.727 | 6.61E+08 | 109.3682 | 2.429931 | 53.08057 | 56.87204 | 2.174413 | 11300284 |
| Tunisia | 2014 | 51 | 0.73 | 8.01E+08 | 105.1525 | 3.090328 | 51.92308 | 55.76923 | 2.038427 | 11428948 |
| Tunisia | 2015 | 51 | 0.733 | 5.58E+08 | 110.4489 | 0.967703 | 49.52381 | 54.28571 | 2.119993 | 11557779 |
| Tunisia | 2016 | 51 | 0.737 | 7.18E+08 | 110.5021 | 1.117426 | 44.76191 | 52.85714 | 1.403446 | 11685667 |
| Tunisia | 2017 | 51 | 0.74 | 8.73E+08 | 112.3676 | 2.237839 | 50.95238 | 50.95238 | 1.923313 | 11811443 |
| Tunisia | 2018 | 51 | 0.743 | 8.12E+08 | 112.9003 | 2.624828 | 51.90476 | 53.33333 | 2.316757 | 11933041 |
| Tunisia | 2019 | 51 | 0.745 | 1.01E+09 | 110.4319 | 1.588013 | 50.47619 | 50.95238 | 1.933328 | 12049314 |
| Tunisia | 2020 | 51 | 0.737 | 9.75E+08 | 108.3406 | -8.81788 | 46.19048 | 50.95238 | 1.392086 | 12161723 |
| Tunisia | 2021 | 51 | 0.731 | 1.03E+09 | 110.1009 | 4.405362 | 43.80952 | 46.66667 | 1.141829 | 12262946 |
| Tunisia | 2022 | 51 | 0.731 | 1.03E+09 | 109.5827 | 2.521761 | 41.50943 | 47.64151 | 1.528696 | 12356117 |
| Uganda | 2013 | 52 | 0.509 | 1.67E+09 | 111.6287 | 3.586906 | 33.17535 | 13.27014 | 3.790317 | 35273570 |
| Uganda | 2014 | 52 | 0.512 | 1.6E+09 | 103.3082 | 5.106307 | 31.25 | 12.98077 | 3.245896 | 36336539 |
| Uganda | 2015 | 52 | 0.517 | 1.74E+09 | 109.5651 | 5.18786 | 32.38095 | 13.33333 | 2.277605 | 37477356 |
| Uganda | 2016 | 52 | 0.519 | 1.88E+09 | 104.5503 | 4.781 | 30.47619 | 12.85714 | 2.14253 | 38748299 |
| Uganda | 2017 | 52 | 0.52 | 2.12E+09 | 103.5148 | 3.131406 | 30.47619 | 13.80952 | 2.610889 | 40127085 |
| Uganda | 2018 | 52 | 0.522 | 1.97E+09 | 105.2673 | 6.303924 | 24.28572 | 13.80952 | 3.205128 | 41515395 |
| Uganda | 2019 | 52 | 0.525 | 2.08E+09 | 105.479 | 6.438745 | 28.09524 | 11.42857 | 3.603043 | 42949080 |
| Uganda | 2020 | 52 | 0.524 | 3.09E+09 | 104.9794 | 2.951306 | 29.04762 | 16.19048 | 2.32352 | 44404611 |
| Uganda | 2021 | 52 | 0.525 | 2.38E+09 | 106.1322 | 3.53658 | 31.42857 | 16.19048 | 2.716495 | 45853778 |
| Uganda | 2022 | 52 | 0.525 | 2.38E+09 | 104.9673 | 4.650134 | 31.13208 | 16.50943 | 3.349903 | 47249585 |
| Zambia | 2013 | 53 | 0.554 | 1.11E+09 | 98.42431 | 5.057232 | 35.54502 | 46.91943 | 7.489325 | 15234976 |

| OUNTRY | YEAR | ID | HDI | AID | GX | GDP | GE | CC | FDI | PS |
|---|---|---|---|---|---|---|---|---|---|---|
| Zambia | 2014 | 53 | 0.557 | 9.73E+08 | 100.8285 | 4.697992 | 31.73077 | 45.19231 | 5.555428 | 15737793 |
| Zambia | 2015 | 53 | 0.562 | 8.48E+08 | 108.232 | 2.920375 | 30 | 43.80952 | 7.447417 | 16248230 |
| Zambia | 2016 | 53 | 0.564 | 1.03E+09 | 105.6895 | 3.776679 | 24.28572 | 41.42857 | 3.16252 | 16767761 |
| Zambia | 2017 | 53 | 0.568 | 1.09E+09 | 101.705 | 3.504336 | 24.28572 | 34.28571 | 4.280501 | 17298054 |
| Zambia | 2018 | 53 | 0.572 | 1.02E+09 | 96.31783 | 4.034494 | 28.09524 | 28.09524 | 1.552319 | 17835893 |
| Zambia | 2019 | 53 | 0.575 | 9.72E+08 | 99.19513 | 1.441306 | 25.23809 | 27.61905 | 2.350919 | 18380477 |
| Zambia | 2020 | 53 | 0.57 | 1.02E+09 | 85.48638 | -2.78506 | 19.04762 | 26.19048 | 1.353931 | 18927715 |
| Zambia | 2021 | 53 | 0.565 | 1.02E+09 | 81.63615 | 4.598734 | 18.09524 | 25.71428 | -1.22558 | 19473125 |
| Zambia | 2022 | 53 | 0.565 | 1.02E+09 | 81.63615 | 4.744942 | 27.83019 | 34.43396 | 0.036292 | 20017675 |
| Zimbabwe | 2013 | 54 | 0.567 | 7.94E+08 | 114.681 | 3.196731 | 8.530806 | 2.369668 | 1.95406 | 13555422 |
| Zimbabwe | 2014 | 54 | 0.576 | 7.27E+08 | 112.8113 | 1.484543 | 9.134615 | 4.326923 | 2.425173 | 13855753 |
| Zimbabwe | 2015 | 54 | 0.582 | 8.27E+08 | 118.4285 | 2.02365 | 9.047619 | 6.666667 | 1.999687 | 14154937 |
| Zimbabwe | 2016 | 54 | 0.588 | 6.99E+08 | 111.332 | 0.900955 | 8.571428 | 9.523809 | 1.669274 | 14452704 |
| Zimbabwe | 2017 | 54 | 0.594 | 7.66E+08 | 110.7119 | 4.080264 | 8.571428 | 9.523809 | 1.746885 | 14751101 |
| Zimbabwe | 2018 | 54 | 0.602 | 8.06E+08 | 102.2223 | 5.009867 | 8.571428 | 10 | 2.101721 | 15052184 |
| Zimbabwe | 2019 | 54 | 0.601 | 8.68E+08 | 98.36065 | -6.33245 | 8.571428 | 10 | 1.142806 | 15354608 |
| Zimbabwe | 2020 | 54 | 0.6 | 9.85E+08 | 102.8165 | -7.81695 | 8.095238 | 10 | 0.699034 | 15669666 |
| Zimbabwe | 2021 | 54 | 0.593 | 9.23E+08 | 105.4898 | 8.468017 | 10.47619 | 10 | 0.881174 | 15993524 |
| Zimbabwe | 2022 | 54 | 0.593 | 9.23E+08 | 105.4898 | 3.4 | 10.84906 | 8.490566 | 1.651509 | 16320537 |

**Note:** For countries with missing data in one period, the study used Last Observation Carried Forward (LOCF) and for those with two missing periods, linear interpolation is applied.

# APPENDIX II: DATA ANALYSIS

## MODEL 1

**Objective:** To assess the impact of foreign aid and government expenditure on HDI across African countries.

**Equation:**

$$InHDI_{it} = \beta_0 + \beta_1 InHDI_{it-1} + \beta_2 InAid_{it} + \beta_3 InGX_{it} + \beta_4 InGDP_{it} + \beta_5 InGE_{it} + \beta_6 InCC_{it} + \beta_7 InFDI_{it} + \beta_8 InPS_{it} + (\delta_i + \mu_{it})$$

$$\Delta InHDI_{it} = \beta_0 + \beta_1(\Delta InHDI_{it-1}) + \beta_2(\Delta InAid_{it}) + \beta_3(\Delta InGX_{it}) + \beta_4(\Delta InGDP_{it}) + \beta_5(\Delta InGE_{it}) + \beta_6(\Delta InCC_{it}) + \beta_7(\Delta InFDI_{it}) + \beta_8(\Delta InPS_{it}) + \Delta\mu_{it}$$

Dependent Variable: HDI
Method: Panel Least Squares
Date: 12/06/23 Time: 21:46
Sample (adjusted): 2014 2022
Periods included: 9
Cross-sections included: 48
Total panel (unbalanced) observations: 423
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.991729 | 0.004304 | 230.4360 | 0.0000 |
| AID | -0.000933 | 0.000384 | -2.429172 | 0.0190 |
| GX | -1.68E-05 | 0.000269 | -0.062259 | 0.9506 |
| GDP | 0.000313 | 9.70E-05 | 3.224188 | 0.0023 |
| GE | 1.17E-06 | 3.77E-05 | 0.030927 | 0.9755 |
| CC | 1.04E-05 | 3.39E-05 | 0.306004 | 0.7610 |
| FDI | -9.59E-06 | 4.08E-05 | -0.235343 | 0.8150 |
| PS | 0.000906 | 0.000415 | 2.181421 | 0.0342 |
| C | 0.005847 | 0.002185 | 2.675325 | 0.0102 |

| | | | |
|---|---|---|---|
| Root MSE | 0.004841 | R-squared | 0.997918 |
| Mean dependent var | 0.558939 | Adjusted R-squared | 0.997878 |
| S.D. dependent var | 0.106220 | S.E. of regression | 0.004894 |
| Akaike info criterion | -7.780764 | Sum squared resid | 0.009914 |
| Schwarz criterion | -7.694650 | Log likelihood | 1654.632 |
| Hannan-Quinn criter. | -7.746738 | F-statistic | 24801.87 |
| Durbin-Watson stat | 1.365885 | Prob(F-statistic) | 0.000000 |

Dependent Variable: HDI
Method: Panel Least Squares
Date: 12/06/23 Time: 21:48
Sample (adjusted): 2014 2022
Periods included: 9
Cross-sections included: 48
Total panel (unbalanced) observations: 423
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
WARNING: estimated coefficient covariance matrix is of reduced rank
Standard error and t-statistic probabilities adjusted for clustering

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.780461 | 0.026475 | 29.47964 | 0.0000 |
| AID | -0.000287 | 0.000241 | -1.189104 | 0.2404 |
| GX | 0.000403 | 0.000386 | 1.043542 | 0.3020 |
| GDP | 0.000145 | 5.61E-05 | 2.588768 | 0.0128 |
| GE | 0.000127 | 6.42E-05 | 1.980253 | 0.0535 |
| CC | 1.11E-05 | 7.53E-05 | 0.147351 | 0.8835 |
| FDI | 1.22E-05 | 5.39E-05 | 0.225727 | 0.8224 |
| PS | 0.006690 | 0.002707 | 2.470954 | 0.0172 |
| C | 0.119900 | 0.014777 | 8.114122 | 0.0000 |

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

| | | | |
|---|---|---|---|
| Root MSE | 0.002936 | R-squared | 0.999234 |
| Mean dependent var | 0.558939 | Adjusted R-squared | 0.999100 |
| S.D. dependent var | 0.106220 | S.E. of regression | 0.003187 |
| Akaike info criterion | -8.521088 | Sum squared resid | 0.003646 |
| Schwarz criterion | -7.908720 | Log likelihood | 1866.210 |
| Hannan-Quinn criter. | -8.279122 | F-statistic | 7436.286 |
| Durbin-Watson stat | 1.982351 | Prob(F-statistic) | 0.000000 |

Dependent Variable: HDI
Method: Panel Generalized Method of Moments
Transformation: First Differences
Date: 12/06/23 Time: 21:45
Sample (adjusted): 2015 2022
Periods included: 8
Cross-sections included: 48
Total panel (unbalanced) observations: 375
White period (period correlation) instrument weighting matrix
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering
Instrument specification: @DYN(HDI,-2)
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.653905 | 0.057657 | 11.34131 | 0.0000 |
| AID | -0.015129 | 0.003040 | -4.976637 | 0.0000 |
| GX | -0.004049 | 0.001240 | -3.263820 | 0.0021 |
| GDP | 0.000201 | 8.44E-05 | 2.385457 | 0.0211 |
| GE | -0.000714 | 0.000252 | -2.833380 | 0.0068 |
| CC | -0.000614 | 0.000312 | -1.965213 | 0.0553 |
| FDI | -0.000184 | 0.000111 | -1.662505 | 0.1031 |
| PS | 0.030286 | 0.016778 | 1.805071 | 0.0775 |

Effects Specification

Cross-section fixed (first differences)

| | | | |
|---|---|---|---|
| Root MSE | 0.008399 | Mean dependent var | 0.002091 |
| S.D. dependent var | 0.005142 | S.E. of regression | 0.008490 |
| Sum squared resid | 0.026456 | J-statistic | 22.90319 |
| Instrument rank | 36 | Prob(J-statistic) | 0.737870 |

Dependent Variable: HDI
Method: Panel Generalized Method of Moments
Transformation: Orthogonal Deviations
Date: 12/06/23 Time: 21:43
Sample (adjusted): 2015 2022
Periods included: 8
Cross-sections included: 48
Total panel (unbalanced) observations: 375
White period (period correlation) instrument weighting matrix
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering
Instrument specification: @DYN(HDI,-2)
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.653307 | 0.057588 | 11.34450 | 0.0000 |
| AID | -0.015046 | 0.003052 | -4.930180 | 0.0000 |
| GX | -0.004092 | 0.001255 | -3.261158 | 0.0021 |
| GDP | 0.000199 | 8.41E-05 | 2.361389 | 0.0224 |
| GE | -0.000716 | 0.000255 | -2.811641 | 0.0072 |
| CC | -0.000595 | 0.000309 | -1.926363 | 0.0601 |
| FDI | -0.000183 | 0.000111 | -1.639630 | 0.1078 |
| PS | 0.030703 | 0.016950 | 1.811391 | 0.0765 |

Effects Specification

Cross-section fixed (orthogonal deviations)

| | | | |
|---|---|---|---|
| Root MSE | 0.009078 | Mean dependent var | -0.003754 |
| S.D. dependent var | 0.009066 | S.E. of regression | 0.009177 |
| Sum squared resid | 0.030905 | J-statistic | 22.95773 |
| Instrument rank | 36 | Prob(J-statistic) | 0.735153 |

Arellano-Bond Serial Correlation Test
Equation: Untitled
Date: 12/06/23 Time: 21:45
Sample: 2013 2022
Included observations: 375

| Test order | m-Statistic | rho | SE(rho) | Prob. |
|---|---|---|---|---|
| AR(1) | -1.822469 | -0.004509 | 0.002474 | 0.0684 |
| AR(2) | -1.325764 | -0.001403 | 0.001058 | 0.1849 |

## MODEL 2 (A)

**Objective:** To investigate whether government effectiveness affect the impact of foreign aid utilization across African countries.

**Equation:**

$$InHDI_{it} = \beta_0 + \beta_1 InHDI_{it-1} + \beta_2 InAid_{it} + \beta_3 InAid_{it} * InGE_{it} + \beta_4 InGDP_{it} + \beta_5 InPS_{it} + In\mu_{it}$$

$$\Delta InHDI_{it} = \beta_0 + \beta_1(\Delta InHDI_{it-1}) + \beta_2(\Delta InAid_{it}) + \beta_3(\Delta InAid_{it} * \Delta InGE_{it}) + \beta_4(InGDP_{it}) + \beta_5(InPS_{it}) + \Delta In\mu_{it}$$

Dependent Variable: HDI
Method: Panel Least Squares
Date: 12/06/23 Time: 22:18
Sample (adjusted): 2014 2022
Periods included: 9
Cross-sections included: 52
Total panel (unbalanced) observations: 462
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 1.002628 | 0.000539 | 1859.645 | 0.0000 |
| AID | -0.001432 | 0.000555 | -2.578073 | 0.0129 |
| AID*GE | 2.91E-05 | 1.43E-05 | 2.032318 | 0.0473 |
| GDP | 0.000303 | 9.02E-05 | 3.362005 | 0.0015 |
| PS | 0.000789 | 0.000285 | 2.771382 | 0.0078 |

| | | | |
|---|---|---|---|
| Root MSE | 0.005179 | R-squared | 0.997573 |
| Mean dependent var | 0.559749 | Adjusted R-squared | 0.997552 |
| S.D. dependent var | 0.105231 | S.E. of regression | 0.005207 |
| Akaike info criterion | -7.666913 | Sum squared resid | 0.012390 |
| Schwarz criterion | -7.622156 | Log likelihood | 1776.057 |
| Hannan-Quinn criter. | -7.649292 | Durbin-Watson stat | 1.539288 |

Dependent Variable: HDI
Method: Panel Least Squares
Date: 12/06/23 Time: 22:19
Sample (adjusted): 2014 2022
Periods included: 9
Cross-sections included: 52
Total panel (unbalanced) observations: 462
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.140770 | 0.025901 | 5.434897 | 0.0000 |
| HDI(-1) | 0.750718 | 0.046382 | 16.18568 | 0.0000 |
| AID | 0.000786 | 0.001160 | 0.677391 | 0.5012 |
| AID*GE | -3.23E-05 | 3.23E-05 | -0.999730 | 0.3222 |
| GDP | 0.000150 | 3.72E-05 | 4.046803 | 0.0002 |
| PS | 0.005869 | 0.002836 | 2.069764 | 0.0436 |

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

| | | | |
|---|---|---|---|
| Root MSE | 0.003230 | R-squared | 0.999056 |
| Mean dependent var | 0.559749 | Adjusted R-squared | 0.998904 |
| S.D. dependent var | 0.105231 | S.E. of regression | 0.003484 |
| Akaike info criterion | -8.351250 | Sum squared resid | 0.004820 |
| Schwarz criterion | -7.769407 | Log likelihood | 1994.139 |
| Hannan-Quinn criter. | -8.122174 | F-statistic | 6563.349 |
| Durbin-Watson stat | 2.012621 | Prob(F-statistic) | 0.000000 |

Dependent Variable: HDI
Method: Panel Generalized Method of Moments
Transformation: First Differences
Date: 12/06/23 Time: 22:16
Sample (adjusted): 2015 2022
Periods included: 8
Cross-sections included: 52
Total panel (unbalanced) observations: 410
White period (period correlation) instrument weighting matrix
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering
Instrument specification: @DYN(HDI,-2)
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.791423 | 0.020742 | 38.15530 | 0.0000 |
| AID | -0.012717 | 0.003517 | -3.615744 | 0.0007 |
| AID*GE | -0.000248 | 0.000116 | -2.134093 | 0.0377 |
| GDP | 0.000112 | 2.22E-05 | 5.036958 | 0.0000 |
| PS | 0.014934 | 0.005278 | 2.829663 | 0.0066 |

Effects Specification

Cross-section fixed (first differences)

| | | | |
|---|---|---|---|
| Root MSE | 0.009724 | Mean dependent var | 0.002083 |
| S.D. dependent var | 0.005306 | S.E. of regression | 0.009784 |
| Sum squared resid | 0.038768 | J-statistic | 41.67828 |
| Instrument rank | 36 | Prob(J-statistic) | 0.095374 |

Dependent Variable: HDI
Method: Panel Generalized Method of Moments
Transformation: Orthogonal Deviations
Date: 12/06/23 Time: 22:15
Sample (adjusted): 2015 2022
Periods included: 8
Cross-sections included: 52
Total panel (unbalanced) observations: 410
White period (period correlation) instrument weighting matrix
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering
Instrument specification: @DYN(HDI,-2)
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.794026 | 0.021031 | 37.75462 | 0.0000 |
| AID | -0.012921 | 0.003531 | -3.659187 | 0.0006 |
| AID*GE | -0.000245 | 0.000117 | -2.101042 | 0.0406 |
| GDP | 0.000115 | 2.21E-05 | 5.201107 | 0.0000 |
| PS | 0.015311 | 0.005305 | 2.885883 | 0.0057 |

Effects Specification

Cross-section fixed (orthogonal deviations)

| | | | |
|---|---|---|---|
| Root MSE | 0.009305 | Mean dependent var | -0.003795 |
| S.D. dependent var | 0.009059 | S.E. of regression | 0.009362 |
| Sum squared resid | 0.035496 | J-statistic | 41.59494 |
| Instrument rank | 36 | Prob(J-statistic) | 0.096857 |

Arellano-Bond Serial Correlation Test
Equation: Untitled
Date: 12/06/23 Time: 22:20
Sample: 2013 2022
Included observations: 410

| Test order | m-Statistic | rho | SE(rho) | Prob. |
|---|---|---|---|---|
| AR(1) | -2.478902 | -0.009796 | 0.003952 | 0.0132 |
| AR(2) | -1.070269 | -0.001658 | 0.001549 | 0.2845 |

## MODEL 2 (B)

**Objective:** To investigate whether government effectiveness affect the impact of foreign aid utilization across African countries.

## Equation:

$$InHDI_{it} = \beta_0 + \beta_1 InHDI_{it-1} + \beta_2 InAid_{it} + \beta_3 GE_{it} + \beta_4 InAid_{it} * GE_{it} + In\mu_{it}$$

$$\Delta InHDI_{it} = \beta_0 + \beta_1(\Delta InHDI_{it-1}) + \beta_2(\Delta InAid_{it}) + \beta_3(\Delta GE_{it}) + \beta_4(\Delta InAid_{it} * \Delta GE_{it}) + \Delta In\mu_{it}$$

Dependent Variable: HDI
Method: Panel Generalized Method of Moments
Transformation: First Differences
Date: 01/20/24 Time: 23:03
Sample (adjusted): 2015 2022
Periods included: 8
Cross-sections included: 26
Total panel (balanced) observations: 208
White period (period correlation) instrument weighting matrix
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering
Instrument specification: @DYN(HDI,-2)
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.814537 | 0.008321 | 97.89068 | 0.0000 |
| AID | 0.000748 | 0.002207 | 0.338982 | 0.7375 |
| GE | -0.000229 | 7.69E-05 | -2.974976 | 0.0064 |
| AID*GE | -0.000210 | 8.01E-05 | -2.618348 | 0.0148 |

Effects Specification

Cross-section fixed (first differences)

| | | | |
|---|---|---|---|
| Root MSE | 0.006093 | Mean dependent var | 0.002481 |
| S.D. dependent var | 0.004748 | S.E. of regression | 0.006152 |
| Sum squared resid | 0.007722 | J-statistic | 22.70668 |
| Instrument rank | 26 | Prob(J-statistic) | 0.418448 |

Arellano-Bond Serial Correlation Test
Equation: Untitled
Date: 01/21/24 Time: 01:43
Sample: 2013 2022
Included observations: 208

| Test order | m-Statistic | rho | SE(rho) | Prob. |
|---|---|---|---|---|
| AR(1) | NA | -0.002973 | NA | NA |
| AR(2) | -0.005819 | -0.000041 | 0.007029 | 0.9954 |

**MODEL 3 (A)**

**Objective:** To explore whether government effectiveness affect the impact of government expenditure across African countries.

**Equation:**

$$InHDI_{it} = \beta_0 + \beta_1 InHDI_{it-1} + \beta_2 InGX_{it} + \beta_3 InGB_{it} * InGE_{it} + \beta_4 InGDP_{it} + \beta_5 InPS_{it} + In\mu_{it}$$

$$\Delta InHDI_{it} = \beta_0 + \beta_1(\Delta InHDI_{it-1}) + \beta_2(\Delta InGX_{it}) + \beta_3(\Delta InGB_{it} * InGE_{it}) + \beta_4(\Delta InGDP_{it}) + \beta_5(\Delta InPS_{it}) + \Delta In\mu_{it}$$

Dependent Variable: HDI
Method: Panel Least Squares
Date: 12/06/23 Time: 22:24
Sample (adjusted): 2014 2022
Periods included: 9
Cross-sections included: 49
Total panel (unbalanced) observations: 432
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 1.002828 | 0.000566 | 1772.033 | 0.0000 |
| GX | 0.001068 | 0.000405 | 2.638807 | 0.0112 |
| GX*GE | -4.28E-05 | 2.12E-05 | -2.019070 | 0.0491 |
| GDP | 0.000270 | 7.84E-05 | 3.442947 | 0.0012 |
| PS | 0.000277 | 0.000146 | 1.890396 | 0.0648 |
| Root MSE | 0.005205 | R-squared | | 0.997642 |
| Mean dependent var | 0.562088 | Adjusted R-squared | | 0.997620 |
| S.D. dependent var | 0.107314 | S.E. of regression | | 0.005235 |
| Akaike info criterion | -7.655398 | Sum squared resid | | 0.011702 |
| Schwarz criterion | -7.608310 | Log likelihood | | 1658.566 |
| Hannan-Quinn criter. | -7.636808 | Durbin-Watson stat | | 1.539236 |

Dependent Variable: HDI
Method: Panel Least Squares
Date: 12/06/23 Time: 22:24
Sample (adjusted): 2014 2022
Periods included: 9
Cross-sections included: 49
Total panel (unbalanced) observations: 432
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.143329 | 0.025472 | 5.626840 | 0.0000 |
| HDI(-1) | 0.746896 | 0.045471 | 16.42563 | 0.0000 |
| GX | 0.000482 | 0.000908 | 0.531414 | 0.5976 |
| GX*GE | -1.46E-05 | 2.97E-05 | -0.493255 | 0.6241 |
| GDP | 0.000146 | 3.70E-05 | 3.950379 | 0.0003 |
| PS | 0.006148 | 0.002808 | 2.189394 | 0.0335 |
| Effects Specification | | | | |

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

| | | | |
|---|---|---|---|
| Root MSE | 0.003287 | R-squared | 0.999060 |
| Mean dependent var | 0.562088 | Adjusted R-squared | 0.998905 |
| S.D. dependent var | 0.107314 | S.E. of regression | 0.003551 |
| Akaike info criterion | -8.310872 | Sum squared resid | 0.004666 |
| Schwarz criterion | -7.726977 | Log likelihood | 1857.148 |
| Hannan-Quinn criter. | -8.080353 | F-statistic | 6445.735 |
| Durbin-Watson stat | 1.996907 | Prob(F-statistic) | 0.000000 |

Dependent Variable: HDI
Method: Panel Generalized Method of Moments
Transformation: First Differences
Date: 12/06/23 Time: 22:22
Sample (adjusted): 2015 2022
Periods included: 8
Cross-sections included: 49
Total panel (unbalanced) observations: 383
White period (period correlation) instrument weighting matrix
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering
Instrument specification: @DYN(HDI,-2)
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.827579 | 0.017754 | 46.61454 | 0.0000 |
| GX | -0.002253 | 0.000967 | -2.330726 | 0.0240 |
| GX*GE | -0.000123 | 2.46E-05 | -4.996436 | 0.0000 |
| GDP | 0.000109 | 1.92E-05 | 5.678186 | 0.0000 |
| PS | -0.034858 | 0.005233 | -6.661189 | 0.0000 |

Effects Specification

Cross-section fixed (first differences)

| | | | |
|---|---|---|---|
| Root MSE | 0.006099 | Mean dependent var | 0.002097 |
| S.D. dependent var | 0.005323 | S.E. of regression | 0.006139 |
| Sum squared resid | 0.014246 | J-statistic | 44.39820 |
| Instrument rank | 36 | Prob(J-statistic) | 0.056334 |

Dependent Variable: HDI
Method: Panel Generalized Method of Moments
Transformation: Orthogonal Deviations
Date: 12/06/23 Time: 22:23
Sample (adjusted): 2015 2022
Periods included: 8
Cross-sections included: 49
Total panel (unbalanced) observations: 383
White period (period correlation) instrument weighting matrix
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering
Instrument specification: @DYN(HDI,-2)
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.827807 | 0.017778 | 46.56382 | 0.0000 |
| GX | -0.002315 | 0.000981 | -2.358944 | 0.0224 |
| GX*GE | -0.000122 | 2.50E-05 | -4.877996 | 0.0000 |
| GDP | 0.000110 | 1.94E-05 | 5.639763 | 0.0000 |
| PS | -0.035050 | 0.005206 | -6.732047 | 0.0000 |

Effects Specification

Cross-section fixed (orthogonal deviations)

| | | | |
|---|---|---|---|
| Root MSE | 0.005418 | Mean dependent var | -0.003792 |
| S.D. dependent var | 0.009071 | S.E. of regression | 0.005454 |
| Sum squared resid | 0.011244 | J-statistic | 44.23745 |
| Instrument rank | 36 | Prob(J-statistic) | 0.058185 |

Arellano-Bond Serial Correlation Test
Equation: Untitled
Date: 12/06/23 Time: 22:23
Sample: 2013 2022
Included observations: 383

| Test order | m-Statistic | rho | SE(rho) | Prob. |
|---|---|---|---|---|
| AR(1) | -2.925106 | -0.005022 | 0.001717 | 0.0034 |
| AR(2) | -0.212250 | -0.000211 | 0.000996 | 0.8319 |

## MODEL 3 (B)

**Objective:** To explore whether government effectiveness affect the impact of government expenditure across African countries.

## Equation:

$$InHDI_{it} = \beta_0 + \beta_1 InHDI_{it-1} + \beta_2 InGX_{it} + \beta_3 GE_{it} + \beta_4 InGX_{it} * GE_{it} + \beta_5 InGDP_{it} + In\mu_{it}$$

$$\Delta InHDI_{it} = \beta_0 + \beta_1(\Delta InHDI_{it-1}) + \beta_2(\Delta InGX_{it}) + \beta_3(\Delta GE_{it}) + \beta_4(\Delta InGX_{it} * \Delta GE_{it}) + \beta_5(\Delta InGDP_{it}) + \Delta In\mu_{it}$$

Dependent Variable: HDI
Method: Panel Generalized Method of Moments
Transformation: First Differences
Date: 01/20/24 Time: 23:14
Sample (adjusted): 2015 2022
Periods included: 8
Cross-sections included: 24
Total panel (unbalanced) observations: 188
White period (period correlation) instrument weighting matrix
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering
Instrument specification: @DYN(HDI,-2)
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.812537 | 0.016204 | 50.14494 | 0.0000 |
| GX | 0.001187 | 0.000405 | 2.929460 | 0.0075 |
| | -0.000280 | 6.63E-05 | -4.221290 | 0.0003 |
| GX*GE | -0.000274 | 5.70E-05 | -4.804057 | 0.0001 |
| GDP | 0.000578 | 2.96E-05 | 19.56066 | 0.0000 |

Effects Specification

Cross-section fixed (first differences)

| | | | |
|---|---|---|---|
| Root MSE | 0.003776 | Mean dependent var | 0.002495 |
| S.D. dependent var | 0.004808 | S.E. of regression | 0.003827 |
| Sum squared resid | 0.002680 | J-statistic | 22.58533 |
| Instrument rank | 24 | Prob(J-statistic) | 0.256100 |

Arellano-Bond Serial Correlation Test
Equation: Untitled
Date: 01/21/24 Time: 01:44
Sample: 2013 2022
Included observations: 188

| Test order | m-Statistic | rho | SE(rho) | Prob. |
|---|---|---|---|---|
| AR(1) | -2.773282 | -0.000981 | 0.000354 | 0.0055 |
| AR(2) | -0.135169 | -0.000034 | 0.000255 | 0.8925 |

## MODEL 4

**Objective:** To empirically test the presence of a non-linear relationship between foreign aid and HDI across African countries.

## Equation:

$$InHDI_{it} = \beta_0 + \beta_1 InHDI_{it-1} + \beta_2 InAid_{it} + \beta_3 InAid^2{}_{it} + \beta_4 InGB_{it} + \beta_5 InGE_{it} + \beta_6 InFDI_{it} + In\mu_{it}$$

$$\Delta InHDI_{it} = \beta_0 + \beta_1(\Delta InHDI_{it-1}) + \beta_2(\Delta InAid_{it}) + \beta_3(\Delta InAid^2{}_{it}) + \beta_4(\Delta InGB_{it}) + \beta_5(\Delta InGE_{it}) + \beta_6(\Delta InFDI_{it}) + \Delta In\mu_{it}$$

Dependent Variable: HDI
Method: Panel Least Squares
Date: 12/06/23 Time: 22:32
Sample (adjusted): 2014 2022
Periods included: 9
Cross-sections included: 48
Total panel (unbalanced) observations: 423
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 1.005842 | 0.000880 | 1143.057 | 0.0000 |
| AID | 0.000611 | 0.000379 | 1.612484 | 0.1136 |
| AID*AID | -0.000159 | 0.000102 | -1.560261 | 0.1254 |
| GX | 0.000440 | 0.000242 | 1.816727 | 0.0756 |
| GE | -2.49E-05 | 1.39E-05 | -1.791025 | 0.0797 |
| FDI | -8.40E-06 | 5.36E-05 | -0.156733 | 0.8761 |

| | | | |
|---|---|---|---|
| Root MSE | 0.005197 | R-squared | 0.997600 |
| Mean dependent var | 0.558939 | Adjusted R-squared | 0.997571 |
| S.D. dependent var | 0.106220 | S.E. of regression | 0.005235 |
| Akaike info criterion | -7.653000 | Sum squared resid | 0.011426 |
| Schwarz criterion | -7.595590 | Log likelihood | 1624.609 |
| Hannan-Quinn criter. | -7.630315 | Durbin-Watson stat | 1.171365 |

Dependent Variable: HDI
Method: Panel Least Squares
Date: 12/06/23 Time: 22:33
Sample (adjusted): 2014 2022
Periods included: 9
Cross-sections included: 48
Total panel (unbalanced) observations: 423
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.109729 | 0.016217 | 6.766464 | 0.0000 |
| HDI(-1) | 0.800082 | 0.030072 | 26.60564 | 0.0000 |
| AID | -0.000707 | 0.000710 | -0.995875 | 0.3244 |
| AID*AID | 0.000122 | 9.78E-05 | 1.248326 | 0.2181 |
| GX | 0.000367 | 0.000382 | 0.960271 | 0.3418 |
| GE | 0.000142 | 6.28E-05 | 2.269851 | 0.0278 |
| FDI | 1.95E-05 | 6.06E-05 | 0.322075 | 0.7488 |

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

| | | | |
|---|---|---|---|
| Root MSE | 0.003000 | R-squared | 0.999200 |
| Mean dependent var | 0.558939 | Adjusted R-squared | 0.999065 |
| S.D. dependent var | 0.106220 | S.E. of regression | 0.003248 |
| Akaike info criterion | -8.487188 | Sum squared resid | 0.003807 |
| Schwarz criterion | -7.893956 | Log likelihood | 1857.040 |
| Hannan-Quinn criter. | -8.252783 | F-statistic | 7394.949 |
| Durbin-Watson stat | 1.932688 | Prob(F-statistic) | 0.000000 |

Dependent Variable: HDI
Method: Panel Generalized Method of Moments
Transformation: First Differences
Date: 12/06/23 Time: 22:30
Sample (adjusted): 2015 2022
Periods included: 8
Cross-sections included: 48
Total panel (unbalanced) observations: 375
White period (period correlation) instrument weighting matrix
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering
Instrument specification: @DYN(HDI,-2)
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.809862 | 0.035145 | 23.04362 | 0.0000 |
| AID | -0.021488 | 0.003275 | -6.560488 | 0.0000 |
| AID*AID | 0.002331 | 0.000416 | 5.608376 | 0.0000 |
| GX | -0.005342 | 0.001140 | -4.686456 | 0.0000 |
| GE | -0.000571 | 0.000140 | -4.065741 | 0.0002 |
| FDI | -0.000192 | 6.61E-05 | -2.898669 | 0.0057 |

Effects Specification

Cross-section fixed (first differences)

| | | | |
|---|---|---|---|
| Root MSE | 0.007646 | Mean dependent var | 0.002091 |
| S.D. dependent var | 0.005142 | S.E. of regression | 0.007708 |
| Sum squared resid | 0.021926 | J-statistic | 38.87670 |
| Instrument rank | 36 | Prob(J-statistic) | 0.128515 |

Dependent Variable: HDI
Method: Panel Generalized Method of Moments
Transformation: Orthogonal Deviations
Date: 12/06/23 Time: 22:32
Sample (adjusted): 2015 2022
Periods included: 8
Cross-sections included: 48
Total panel (unbalanced) observations: 375
White period (period correlation) instrument weighting matrix
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering
Instrument specification: @DYN(HDI,-2)
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.812021 | 0.035410 | 22.93184 | 0.0000 |
| AID | -0.021639 | 0.003319 | -6.520726 | 0.0000 |
| AID*AID | 0.002344 | 0.000418 | 5.600461 | 0.0000 |
| GX | -0.005456 | 0.001155 | -4.723370 | 0.0000 |
| GE | -0.000565 | 0.000141 | -4.012003 | 0.0002 |
| FDI | -0.000193 | 6.60E-05 | -2.923794 | 0.0053 |

Effects Specification

Cross-section fixed (orthogonal deviations)

| | | | |
|---|---|---|---|
| Root MSE | 0.007540 | Mean dependent var | -0.003754 |
| S.D. dependent var | 0.009066 | S.E. of regression | 0.007601 |
| Sum squared resid | 0.021320 | J-statistic | 38.70975 |
| Instrument rank | 36 | Prob(J-statistic) | 0.132365 |

Arellano-Bond Serial Correlation Test
Equation: Untitled
Date: 12/06/23 Time: 22:31
Sample: 2013 2022
Included observations: 375

| Test order | m-Statistic | rho | SE(rho) | Prob. |
|---|---|---|---|---|
| AR(1) | -2.149374 | -0.006097 | 0.002837 | 0.0316 |
| AR(2) | -1.868460 | -0.002080 | 0.001113 | 0.0617 |

## MODEL 5

**Objective:** To examine the impact of country specific aid on HDI in African OIC member countries.

## Equation:

$$InHDI_{it} = \beta_0 + \beta_1 InHDI_{it-1} + \beta_2 InSA_{it} + \beta_3 InGDP_{it} + \beta_4 GE_{it} + \beta_5 InFDI_{it} + In\mu_{it}$$

$$\Delta InHDI_{it} = \beta_0 + \beta_1(\Delta InHDI_{it-1}) + \beta_2(\Delta InSA_{it}) + \beta_3(\Delta InGDP_{it}) + \beta_4(\Delta GE_{it}) + \beta_5(\Delta InFDI_{it}) + \Delta In\mu_{it}$$

Dependent Variable: HDI
Method: Panel Least Squares
Date: 01/20/24 Time: 22:47
Sample (adjusted): 2016 2022
Periods included: 7
Cross-sections included: 22
Total panel (unbalanced) observations: 104
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 1.000327 | 0.004530 | 220.8119 | 0.0000 |
| SA | 7.89E-05 | 0.000256 | 0.308050 | 0.7611 |
| GDP | 0.000452 | 0.000173 | 2.617413 | 0.0161 |
| GE | -4.22E-05 | 3.46E-05 | -1.219446 | 0.2362 |
| FDI | 2.28E-05 | 8.47E-05 | 0.269809 | 0.7899 |
| C | 0.000692 | 0.002362 | 0.292789 | 0.7726 |

Effects Specification

Period fixed (dummy variables)

| | | | |
|---|---|---|---|
| Root MSE | 0.002625 | R-squared | 0.999177 |
| Mean dependent var | 0.526846 | Adjusted R-squared | 0.999079 |
| S.D. dependent var | 0.091965 | S.E. of regression | 0.002791 |
| Akaike info criterion | -8.816845 | Sum squared resid | 0.000717 |
| Schwarz criterion | -8.511723 | Log likelihood | 470.4759 |
| Hannan-Quinn criter. | -8.693231 | F-statistic | 10159.83 |
| Durbin-Watson stat | 1.802536 | Prob(F-statistic) | 0.000000 |

Dependent Variable: HDI
Method: Panel Least Squares
Date: 01/20/24 Time: 22:48
Sample (adjusted): 2016 2022
Periods included: 7
Cross-sections included: 22
Total panel (unbalanced) observations: 104
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
WARNING: estimated coefficient covariance matrix is of reduced rank
Standard error and t-statistic probabilities adjusted for clustering

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.646994 | 0.077835 | 8.312334 | 0.0000 |
| SA1 | -0.000249 | 0.000271 | -0.919255 | 0.3684 |
| GDP | 0.000429 | 0.000248 | 1.727497 | 0.0988 |
| GE | -3.66E-06 | 7.13E-05 | -0.051308 | 0.9596 |
| FDI | -3.97E-05 | 5.87E-05 | -0.676072 | 0.5064 |
| C | 0.185687 | 0.041139 | 4.513653 | 0.0002 |

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

| | | | |
|---|---|---|---|
| Root MSE | 0.001817 | R-squared | 0.999606 |
| Mean dependent var | 0.526846 | Adjusted R-squared | 0.999428 |
| S.D. dependent var | 0.091965 | S.E. of regression | 0.002199 |
| Akaike info criterion | -9.149155 | Sum squared resid | 0.000343 |
| Schwarz criterion | -8.310069 | Log likelihood | 508.7561 |
| Hannan-Quinn criter. | -8.809217 | F-statistic | 5629.819 |
| Durbin-Watson stat | 2.573219 | Prob(F-statistic) | 0.000000 |

Dependent Variable: HDI
Method: Panel Generalized Method of Moments
Transformation: First Differences
Date: 01/20/24 Time: 22:44
Sample (adjusted): 2017 2022
Periods included: 6
Cross-sections included: 18
Total panel (unbalanced) observations: 82
White period (period correlation) instrument weighting matrix
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering
Instrument specification: @DYN(HDI,-2)
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.740423 | 0.034749 | 21.30767 | 0.0000 |
| SA1 | 0.001229 | 0.000528 | 2.327356 | 0.0326 |
| GDP | 0.000943 | 0.000133 | 7.097286 | 0.0000 |
| GE | -0.000322 | 7.84E-05 | -4.109842 | 0.0007 |
| FDI | -0.000395 | 5.19E-05 | -7.605441 | 0.0000 |

Effects Specification

Cross-section fixed (first differences)

| | | | |
|---|---|---|---|
| Root MSE | 0.003938 | Mean dependent var | 0.001378 |
| S.D. dependent var | 0.004291 | S.E. of regression | 0.004064 |
| Sum squared resid | 0.001272 | J-statistic | 14.82045 |
| Instrument rank | 18 | Prob(J-statistic) | 0.318695 |

Dependent Variable: HDI
Method: Panel Generalized Method of Moments
Transformation: Orthogonal Deviations
Date: 01/20/24 Time: 22:52
Sample (adjusted): 2017 2022
Periods included: 6
Cross-sections included: 18
Total panel (unbalanced) observations: 82
White period (period correlation) instrument weighting matrix
White period (cross-section cluster) standard errors & covariance (d.f. corrected)
Standard error and t-statistic probabilities adjusted for clustering
Instrument specification: @DYN(HDI,-2)
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HDI(-1) | 0.670325 | 0.029344 | 22.84400 | 0.0000 |
| SA1 | 0.001561 | 0.001750 | 0.891903 | 0.3849 |
| GDP | 0.000790 | 9.96E-05 | 7.939511 | 0.0000 |
| GE | -0.000399 | 0.000134 | -2.976273 | 0.0085 |
| FDI | -0.000456 | 0.000111 | -4.097190 | 0.0008 |

Effects Specification

Cross-section fixed (orthogonal deviations)

| | | | |
|---|---|---|---|
| Root MSE | 0.003493 | Mean dependent var | -0.001534 |
| S.D. dependent var | 0.005247 | S.E. of regression | 0.003605 |
| Sum squared resid | 0.001001 | J-statistic | 12.86068 |
| Instrument rank | 18 | Prob(J-statistic) | 0.458630 |

Arellano-Bond Serial Correlation Test
Equation: Untitled
Date: 01/20/24 Time: 22:42
Sample: 2013 2022
Included observations: 82

| Test order | m-Statistic | rho | SE(rho) | Prob. |
|---|---|---|---|---|
| AR(1) | NA | -0.000356 | NA | NA |
| AR(2) | 0.037370 | 0.000053 | 0.001415 | 0.9702 |