

FOREIGN AID, ECONOMIC GROWTH, AND INSTITUTIONAL QUALITY: EVIDENCE FROM GOVERNMENT EFFECTIVENESS IN AFRICAN COUNTRIES

A Thesis

**Submitted to the Master's Study Program of Economics at the Faculty
of Economics and Business in Partial Fulfillment of the requirements
for the Degree of**

Master of Arts (M.A)



**Universitas
Islam Internasional
Indonesia**

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UNIVERSITAS ISLAM INTERNASIONAL INDONESIA

DEPOK

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ABSTRACT

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This research examines the relationship between foreign aid and economic growth in 37 African countries from 2000 to 2022, emphasizing the moderating role of institutional quality specifically government effectiveness. While existing literature presents mixed results on the impact of official development assistance (ODA), this research introduces institutional quality as a key factor influencing aid outcomes. Using panel data, the study applies pooled OLS, fixed effects (FE), and random effects (RE) models to assess aid effectiveness. A novel aspect of the study is the interaction term between ODA and government effectiveness, allowing for an evaluation of whether stronger institutions enhance aid's impact on growth. The research also explores regional differences by categorizing countries based on colonial history into British, French, and others to understand historical influences on institutional capacity. Findings show that while OLS and RE models suggest a positive effect of aid on growth, the FE model reveals an insignificant or negative relationship. However, when institutional quality is accounted for, aid becomes effective under better governance conditions, supporting the conditional aid effectiveness hypothesis. The study concludes that foreign aid promotes growth only when coupled with strong institutions, highlighting the importance of governance reforms for maximizing aid impact in Africa.

Keywords: *Foreign Aid, Economic Growth, Government Effectiveness, Africa*

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ABBREVIATION DIRECTORY

ODA	: <i>Official Development Assistance</i>
SSA	: <i>Sub-Saharan Africa</i>
OLS	: <i>Ordinary Least-Square</i>
FE	: <i>Fixed Effects</i>
RE	: <i>Random Effects</i>
INQ	: <i>Institutional Quality</i>
GFCF	: <i>Gross Fixed Capital Formation</i>
FDI	: <i>Foreign Direct Investment</i>
VIF	: <i>Variance Inflation Factors</i>
USD	: <i>United States Dollar</i>

CHAPTER I

INTRODUCTION

1.1 Research Background

Foreign aid, also known as official development assistance (ODA), consists of resource transfer from the public sector through loans and grants at concessional financial terms to developing countries (Berthault Moreira, 2005). According to Adusei (2020), the World Development Indicators of the World Bank, defines aid as “resource transfers from development partners in the form of grants and concessional loans to developing countries to embark on holistic development in the recipient countries”.

Foreign Aid is a dynamic factor in economics that researchers have various outcomes regarding its impact in promoting development. Development economics see aid as a vital variable for filling the prevalent savings gap in poor nations to promote growth in developing countries (Adusei, 2020). Such positive effect of aid on economic growth influences the Marshall plan which recorded 13.2 billion US Dollars flow of funds from United States of America to Europe from 1948 to 1952 which brings in economic recovery after the end of the Second World War in Europe according to (P. Frimpong, 2008).

Official Development Assistance (foreign aid) programs began or were initiated by the developed countries and sent to the developing countries even to the availability of compelling empirical literatures that they could reduce poverty and increase

economic growth (Manty, 2013). Looking at Africa and the type of countries that are there, one can say that nearly all African countries are categorized under third-world countries (Developing countries). Aid to developing countries and African countries included is not a new thing, this has been happening for so long and among the primary purpose of these aids are to help uplift the economies of the developing countries for them to realize development. The expected impact of aid sent to developing countries is economic development and the purpose of this research is to find what impact aid is having in the economy of African countries?

The flow of foreign aid to developing countries causes the respective governments in the developing countries to be inefficient and poor in their efforts when it comes to taxes collection, this undermines government accountability and gives more room for corruption which can discourage potential investors Adusei (2020). Some other researchers say that external aid relates to economic development in Sub-Saharan Africa (Mbah & Amassoma, 2014). The role of foreign aid continues to be contentious and non-conclusive in managing the development of transition economies (Ilorah & Ngwakwe, 2021). (Sachs, 2008) concluded in his work that aid could lead to an upward movement in development and growth, and it is an active factor that could improve economic investment.

According to Žižmond & Novak (2006), in directing the course of economic growth, a well-established and functioning economic institution is important. This is the reason in this research, we want to include government effectiveness as a yardstick for institutional quality in our model to see the role it will play on the impact of foreign

aid on economic development. One can argue that the impact of foreign aid on economic development remain a huge gap that needs more research on and Ilorah & Ngwakwe (2021) emphasize in their research that aid and economic development within African countries remains a vacuum which needs more research considering the fact that Africa being a region lagging behind in global transition.

Growth in output in an economy is referred to as economic growth. It is used as a measurement indicator to measure the economic strength or health of nations and regions (David Ashworth, 2015 cited by (Adusei, 2020)). Knowing or measuring the growth of an economy is an important aspect of development. For instance, major economic policies are made using or considering the economic growth of a country. Investors usually consider the economic condition of a nation as a ground in making asset allocation and investment decisions in those countries. Economic growth is a vital factor and countries that are realizing economic growth are likely to be decreasing debt to GDP ratio, reducing the poverty rate or level, and it will be reducing unemployment rate by providing more employment opportunities to its people (Pettinger, 2016). Based on this statement of Pettinger (2016), economic growth is a very important factor that should be among the fundamental target of every country. Among the challenges faced by a lot of countries, are high poverty rate and high unemployment rate. If economic growth means the reduction of poverty rate and unemployment rate, then it is important to know how to achieve such economic growth. That is the reason this research wants to find if foreign aid is among factors that boost economic growth in African Countries.

Pettinger (2016) explained that economic growth improves the well-being of the people in a country as economic growth means growth in income level and output. This led to individuals getting more opportunities to be able to cover the living cost and afford necessities and they will have a better living standard.

Development is mainly progress, be it social, cultural, or economic that serves both today and tomorrow's basic needs (Nathan Andrews, 2009). According to Sen (2004), this needs five freedoms which are interconnected; these freedoms are economic opportunities, social freedoms, political freedoms, protective security, and transparency.

Many African countries especially Sub-Saharan African countries started gaining independence before and after 1965, since then the real GDP per Capita of most of these countries has either declined or remained stagnant around the same level (Mallik, 2008).

Mallik (2008) believes that many Sub-Saharan African countries have been bound by foreign aid into a debt trap; the more most of these countries received foreign aid, the more aid-dependent they have become. The negative relationship between aid and economic growth is due to how the inflow of aid left the recipient countries to rely on aid overly and left these recipient countries in a vicious cycle of poverty (Gehardt 2010 cited by (Adusei, 2020)).

Another strand in the literature believes that aid can have a positive relationship with economic growth but with a condition and that is, when factors like government

accountability and governance, level of corruption, institutional quality and other policy variables have efficiently been considered. They backed their theory with the study of (Burnside & Dollar, 2000); (Philip, 2004); (World Bank (1998)), these studies hold the stance that foreign aid has the ability of promoting economic growth in developing countries under good government policies and that aid is not bringing about the targeted economic growth in developing countries due to the existence of poor governmental issues. (Adusei, 2020) believes that the variables those the above researchers based their theory on, if they are not efficiently managed, they could undermine the positive impact of aid on economic growth. It says for instance, corruption can lead to aid that is received for development to be embezzled and due to low accountability of government officials in developing countries, public funds including aid are mismanaged. In this research, we want to see if that is the case in African countries. Our objective is to see if institutional quality in African countries will make foreign aid positively impact economic growth.

The flow of foreign aid to developing countries is necessitated by the weak industrial base and low human capital development index (HDI) and these are prevalent in most developing or third world countries (Nwude et al., 2023). Among the many reasons for the flow of aid from the developing world to many African countries is the low level or quality of industrial development of these countries as mentioned by (Nwude et al., 2023).

Many African countries are lacking behind in terms of industrial development, and this causes many negative effects with regards to increase the unemployment rate

which have a link to the rapid growing crime rate in most of these African countries. The nature of African countries especially Sub-Saharan African countries are mostly aid dependent, which is the reason there is expectation that aid should have an impact on economic growth in African countries.

Ouedraogo et al. (2021) states that Sub-Saharan African countries depend heavily on foreign aid. The African countries have received over 1 trillion US Dollars' worth of aid from 1948 to 2009 (Moyo, 2009). Africa is the major recipient of foreign aid, the continent currently receives an average of 40 billion Dollars' worth of aid per year which makes it the continent with major aid recipients (World Bank Report, 2017). Despite the rise in the flow of aid from the developed countries or World Bank and other world organizations, the level of growth and development remains constant in most African countries (Jena & Sethi, 2020).

In the last decades, a significant inflow of foreign aid has been attracted by Sub-Saharan African countries with about 22% increase from 36.1 billion US Dollars in the year 2017 to 44.28 billion US Dollars in the year 2016 which is 28% of the global flow of foreign aid (World Bank Report, 2017). One notes that the findings or results differ according to the approach used when focusing on the traditional purpose of foreign aid which is promotion of the economic growth of developing countries (Berthault Moreira, 2005).

According to Adusei (2020), positive link between economic growth and aid is supported by many researchers such as (Sachs, 2008); (Papanek, 1973); (Arndt et al., 2010);(Crosswell, 1998); among others. Adusei (2020) states from these writers' point

of view, is that foreign aid serves as a support to existing domestic savings and other sources of inflows into a nation. They believe that aid can be used to improve on the current human capital, build up the infrastructure of a country, and help to ease the importation of essential goods and machinery, and aid can boost technology to improve production and the living standards of the people in the recipient countries.

A similar statistic about the movement of aid from developed countries to developing countries especially to African countries is stated by Younsi et al. (2019) in their study, the effect of foreign aid, foreign direct investment and domestic investment in African countries. According to them, official development assistance flows to the developing countries increased significantly from the developed countries during the decade of the 2000s. They further state that Africa recorded the highest totaling to 49.954 million US dollars of net official development assistance (ODA) 2016 then followed by Asia with 43.516 US Dollars according to AID recipient data by World Bank, 2016.

Younsi et al. (2019) further state that net flows official development assistance (ODA) continues to be distributed to different developing countries than any other official flows or instance Foreign Direct Investment (FDI). According to Younsi et al. (2019), Additional factors such as geopolitical considerations, cultural and historical ties also affect aid allocations among developing countries. Which means that aid allocations to developing countries are not only determined by the respective country's need for aid. This argument is supported by Alesina & Dollar (2000); Anderson (2008). The "official announcement" for a move towards selectivity in allocating aid gave new

impetus to the discussion about aid effectiveness (Berthault Moreira, 2005). The study on the impact of aid on economic growth is still inconclusive. There are differences in terms of data, estimation method and set of samples. While there are numerous studies which state that aid positively influences economic growth, on the other hand, there exists other empirical findings that states that aid influences growth negatively (Younsi et al., 2019).

Despite decades of substantial foreign aid flows to developing countries, particularly in Africa, the region continues to face continues development challenges. Africa especially countries in Sub-Saharan Africa region remains one of the largest recipients of Official Development Assistance (ODA), yet it consistently ranks low in Human Development Index (HDI) and Gross National Income (GNI) per capita. (Tang & Bundhoo, 2017) argue that this paradox raises serious questions and concerns about aid effectiveness in achieving growth and economic development objectives. They find that aid alone does not significantly stimulate growth unless complemented by sound policy and institutional environments.

Moreover, (Ekanayake & Chatrna, 2010) emphasize that foreign aid's effectiveness varies significantly depending on the region, the type of aid, and the quality of governance. In their extensive panel study covering 85 countries, they concluded that while aid has the potential to stimulate growth, this outcome is not guaranteed across all contexts, especially in countries plagued with corruption and weak institutions.

In addition, empirical evidence from (Durberry et al., 1998) suggests that the macroeconomic environment is critical to the success of aid. Their findings strongly support the claim that foreign aid contributes positively to growth only when macroeconomic policies are stable and well-targeted. Thus, the mere volume of aid is not sufficient its allocation and utilization matter immensely.

These findings underscore the need to move beyond conventional aid narratives and explore the conditional factors such as governance quality, institutional effectiveness, and economic policy coherence that influence aid outcomes. This research, therefore, seeks to evaluate the impact of foreign aid on economic growth in African countries, with particular focus on how institutional quality conditions the effectiveness of such foreign aid.

(Ian & Sam, 2025) wrote about the cutting of USAID and which countries are mostly affected and how it affects them. Below is their arguments and observations regarding USAID cuts: While the debate on aid effectiveness continues, recent geopolitical developments have triggered new concerns regarding the stability and predictability of foreign aid flows, especially to low-income countries. A significant policy shift occurred in early 2025 when the United States administration under President Trump initiated broad cuts to USAID programs, issuing stop-work orders, recalling in-country staff, and pausing or terminating many active foreign assistance projects. This marks a sharp departure from previous U.S. foreign aid strategies, with serious implications for aid-dependent economies, particularly in Africa.

The Center for Global Development (CGD) reports that the freeze in U.S. foreign aid would result in economic shocks exceeding 1% of GNI in 23 countries, with eight countries expected to face losses greater than 3% of GNI. The most exposed countries include South Sudan, Somalia, DR Congo, Liberia, Uganda, Ethiopia, Sudan, and Afghanistan, apart from one country which is Afghanistan, all the other countries are in Africa and all of which rely heavily on USAID for either humanitarian relief or sectoral development programs in health, governance, or reproductive services. In some of these countries, USAID constitutes more than 40% of total aid received and supports core service delivery such as emergency health interventions and nutritional support.

The Center for Global Development (CGD) analysis further underscores that these countries are not only aid-dependent but also among the most fragile and institutionally weak. In Liberia, for example, basic healthcare is the primary area of USAID support, while in Uganda, the focus is on population and reproductive health. In fragile states like Somalia and South Sudan, USAID's aid supports long-standing emergency responses to internal displacement and food insecurity. In these contexts, abrupt aid reductions risk exacerbating human suffering, reversing developmental progress, and increasing geopolitical instability.

Importantly, the USAID cuts expose structural vulnerabilities in foreign aid governance. Many African countries have historically relied on a few major bilateral donors, and the United States though not the most generous relative to income has long been the largest provider in absolute terms, especially for humanitarian aid and global

health. This over-dependence means that shocks in donor behavior translate directly into fiscal crises for recipient governments and can affect national development strategies. As noted in the CGD's report, in the absence of rapid action by other donors like Germany, Sweden, Canada, or China, the consequences for health, education, and poverty alleviation could be profound.

This development is highly relevant to the objectives of this research. The volatility of aid flows as demonstrated by the USAID cuts reinforces the argument that institutional quality plays a critical role in managing aid effectiveness. Countries with stronger institutions and better governance frameworks are better positioned to mitigate the negative effects of donor shocks, reallocate domestic resources efficiently, and attract alternative development partners. In contrast, countries with weaker institutions may face budget shortfalls, service delivery failures, and increased vulnerability.

Furthermore, the USAID cuts offer a real-time case study that supports the theoretical framework of this thesis, particularly the extension of the Burnside & Dollar model to include an interaction between aid and institutional quality. The differential impact of aid cuts across countries despite similar levels of aid dependence highlights the importance of governance capacity, absorptive efficiency, and domestic policy responses.

The significance of foreign aid to low-income and aid-dependent countries has never been more evident than during the recent decision by the Trump administration in early 2025 to terminate nearly 90% of USAID foreign aid contracts. This unprecedented policy shift disrupted humanitarian operations across multiple

continents slamming health programs, education projects, and food assistance in regions already struggling with weak institutions and high poverty levels (Imray, 2025).

According to AP News, the abrupt cancellation of more than 10,000 USAID contracts led to the immediate closure of hospitals in Haiti, health clinics in Somalia, and the cessation of vital HIV programs in South Africa. Dr. Kate Rees, a public health specialist in Cape Town, described the situation as being “pushed off a cliff,” with life-saving services terminated without warning. In South Africa alone, the U.S.-funded PEPFAR HIV program, which previously supported treatment for 5.5 million people, suffered major funding setbacks, threatening hard-earned gains in global health outcomes.

The global reaction was alarmed and swift. The Danish Refugee Council called the decision “appalling,” while NGOs like Alight and Inter-Action warned of immediate consequences including starvation, untreated diseases, and renewed waves of HIV infections. Jocelyn Wyatt, CEO of Alight, confirmed that 13 communities in Somalia lost their only source of health care in a single day.

This episode highlights a critical vulnerability in development financing: when aid is withdrawn abruptly from fragile states, lives are lost, public systems collapse, and instability deepens. More importantly, it raises questions about the long-term sustainability and strategic use of foreign aid in regions such as Sub-Saharan Africa, where many countries are already highly dependent on a few donors (Imray, 2025).

1.2 Problem Statement

Many African countries are perceived to be the center for aid, many believe that Africa countries based on their natural resources should not be aid dependent but rather should be independent and probably be a donor. Aid as the name implies, it should be free therefore the expectation is the recipient countries is that they should realize development from it. The big question is, is that the case in African countries?

Despite decades of foreign aid to African countries, the relationship between aid and economic growth remains controversial. Existing literatures on the relationship between aid and growth offer mixed findings: some state that aid positively influences economic growth (Minoiu & Reddy, 2010); (Azam & Feng, 2021); (Cungu & Swinnen, 2003), others findings state that aid has a negative impact on economic growth (Easterly et al., 2004), while others highlight that the effectiveness of aid is dependent or conditional on sound policy environments.

This lack of consensus on what is the actual impact on foreign aid raises critical questions about the role of foreign aid in fostering economic development in Africa. Additionally, much of the literature generalizes findings across diverse contexts, overlooking country-specific factors such as governance quality and institutional capacity. Therefore, there is a pressing need to investigate the nuanced dynamics of aid effectiveness in African economies, with particular attention to how governance influence outcomes.

1.3 Research Questions

This study wants to find the relationship between foreign aid and economic growth in African countries. This research focuses addressing key gaps in the literature by exploring wider regional differences and finding the role of institutional quality. The following research questions guide the study:

1. What is the impact of foreign aid on economic growth in African countries?
2. What impact does the interaction of foreign aid with institutional quality have on economic growth?
3. How does the impact of foreign aid on economic growth differ across different colonial origins?

1.4 Research Objectives

The research objectives for this study are outlined as follows:

1. To analyze the relationship between foreign aid and economic growth in African countries over a defined period.
2. To assess how the interaction of aid with institutional quality promotes economic growth in African countries.
3. To know how foreign aid impact on African countries' economies based on England colonies, French colonies and other colonies in Africa.

1.5 Novelty of the study

This research will contribute to the already available literature by having the desire to find the relationship between foreign aid and economic growth while doing a comparison based on former colonial history or background. This research covers based on Anglophone, Francophone and other colonial countries in Africa, which was not done by Nwude et al. (2023), who only focused on Sub-Saharan African countries. This study will check how impactful foreign aid will be when institutional quality (government effectiveness) is considered in interaction with foreign aid. While Nwude et al. (2023) only focus on only 40 Sub-Saharan African countries, this research encompasses all African countries, providing a broader and more comprehensive analysis of the relationship between foreign aid and economic growth across the African continent and this study will consider the institutional quality of all the countries.

A major novelty in our research is the inclusion of institutional quality as a key factor. This diversity of African countries in terms of government effectiveness might bring a new insight to this research. Analyzing how government effectiveness moderates the relationship between foreign aid and GDP growth, our study adds a crucial dimension that is not addressed in the referenced research.

By analyzing all African countries, this research has the potential to deliver relevant findings for the entire continent which could be important for policy makers in Africa. This wider geographical scope enhances the relevance of your study to African policymakers and development agencies or partners around the world.

CHAPTER II

LITERATURE REVIEW

2.1 Economic Growth Theory

The study of economic growth focuses on understanding how economies expand their productive capacity over time. Classical growth models, such as the Harrod-Domar model, emphasize the role of savings and investment in driving growth (Domar, 1946); (Harrod, 1938). According to this view, a higher savings rate leads to greater investment in physical capital, which expands output and income in the economy.

The Solow-Swan neoclassical growth model (Solow, 1956) later introduced technological progress and diminishing returns to capital as core determinants of long-run economic growth. In the Solow model, an economy's steady-state growth depends on savings, population growth, capital accumulation, and exogenous technological progress. However, it assumes that poorer countries can catch up to richer ones through capital deepening provided that those poorer countries can mobilize sufficient investment.

More recently, endogenous growth theories (Romer, 1986); (Lucas, 1988) highlight that technological progress, human capital development, and institutions can drive sustained growth from within the economy. These theories place emphasis on the role of knowledge, innovation, governance quality, and efficient resource allocation.

2.2 The Foreign Aid-Growth Link

In developing countries, a common barrier to growth is the shortage of domestic savings needed to finance investment often referred to as the savings-investment gap. To address this, (Chenery, 1967) Two-Gap Model argues that foreign aid can help bridge both the savings gap and the foreign exchange gap. By providing additional financial resources, aid can enable countries to import capital goods, build infrastructure, and finance productive investment beyond what domestic resources alone allow.

Empirical research, such as (Burnside & Dollar, 2000), builds on this theoretical foundation by testing whether aid, when combined with sound policies, positively impacts growth. Their work suggests that aid effectiveness is conditional on the quality of institutions and governance a finding that underpins the framework of this study.

The theoretical pillar of this study is grounded in the Two-Gap Model by Chenery (1967), which argues that developing countries face both foreign exchange gap and savings gap. These gaps limit the capacity to import necessary capital goods and prevent sufficient domestic investment. Foreign aid (ODA) and foreign direct investment (FDI) are thus seen as external sources of capital that can fill these gaps and stimulate the economy and brings economic growth.

This idea is emphasized in studies such as Adusei (2020), who also argued that foreign aid is often aimed at bridging the savings gap in low-income countries to promote long-term development. Iyoha (2001) similarly highlights how external shocks and low domestic savings result in underinvestment, reinforcing the role of

foreign capital in closing these deficits. Ozekhome (2017) supports this by showing that FDI and aid help mitigate the investment shortfall in low-income countries.

In line with this perspective, Burnside and Dollar (2000) introduced a widely cited theoretical and empirical framework that incorporates foreign aid into a macroeconomic model of growth. Their model demonstrates that aid can be effective in raising economic output but according to them, this only applies in countries with sound fiscal, monetary, and trade policies.

In this research, we adopt a model used by (Burnside & Dollar, 2000) in their seminal work on aid, policies, and growth. Their framework incorporates a production function where economic output is influenced by capital, labor, and foreign aid. In this study, we modified their model to include institutional quality as a critical variable that improves the effectiveness of foreign aid. By introducing this modification, the research aims to examine how institutional quality enhances the effect of foreign aid on economic growth in Africa.

Burnside and Dollar start with a representative agent's utility maximization problem below.

$$\sum_{t=0}^{\infty} \beta^t \frac{(C_t - \bar{C})^{1-\gamma} - 1}{1-\gamma}$$

Whereby:

β : The discount factor ($0 < \beta < 1$), representing how much the agent values future utility compared to current utility.

C_t : Consumption at time t .

$\bar{C}$: A subsistence level of consumption, below which utility drops sharply.

γ : The coefficient of relative risk aversion reflects the curvature of the utility function:

If $\gamma > 1$, the agent is risk averse.

If $\gamma = 1$, utility simplifies to a logarithmic form.

$(C_t - \bar{C})^{1-\gamma} - 1$: The functional form of utility derived from consumption adjusted for $\bar{C}$.

Budget Constraint:

The utility function, face a budget constraint that accounts for output, foreign aid, investment, and depreciation. The resource constraint is:

$$C_t + I_t = AK_t^\alpha L_t^{1-\alpha} + F_t$$

Where:

$C_t + I_t$: Total resources allocated to consumption and investment.

$K_t^\alpha L_t^{1-\alpha}$: Output produced using capital (K_t) and labor (L_t), given productivity (A).

F_t : Foreign aid inflows.

This ensures that consumption and investment cannot exceed the economy's production plus foreign aid.

Capital Accumulation Dynamics:

The evolution of the capital stock is described as:

$$K_{t+1} = (1 - \delta)K_t + I_t$$

Where:

$(1 - \delta)K_t$: The remaining capital after depreciation (δ).

I_t : New investments that add to the capital stock.

The modified model explicitly incorporates an interaction term between institutional quality and foreign aid, reflecting the hypothesis that better and stronger institutions and governance improves the productive use of foreign aid. This adjustment allows for a more nuanced analysis of aid effectiveness, tailored to the unique challenges and opportunities within African economies.

To incorporate the impact of institutional quality (π), which improves the effectiveness of foreign aid (F_t), we modify the production function as follows:

$$C_t + I_t = AK_t^\alpha L_t^{1-\alpha} + (\pi)F_t$$

Where π represent the Impact of Institutional Quality and $0 \leq \pi \leq 1$.

Explanation:

(π): A value that captures how institutional quality enhances the productivity of foreign aid.

If π is high, aid is used more effectively, increasing its impact on output (Y).

F_t : Foreign aid inflows.

Other variables remain the same: K_t : Capital stock, L_t : Labor, A : Total factor productivity (TFP) and α : Capital's share of output.

However, the effectiveness of aid is not uniform. As Manty (2013) shows using panel co-integration analysis in West African countries, the relationship between aid and growth varies across countries. Their findings showed that aid is positive in Mali, insignificant in Senegal, and negative in Guinea. This aligns with the theoretical prediction that institutional quality (π) moderates the productivity of aid, as shown in the modified model where πF_t represents the aid-enhancing role of governance.

Furthermore, some scholars have challenged the optimistic view of aid. Easterly et al. (2004) and Ram (2004), using expanded datasets and robustness checks, question the reliability of Burnside and Dollar's results, finding little evidence that aid leads to sustained growth. Boone (1996) and Boycko et al. (1996) argue that in poorly governed or elitist political systems, aid tends to be wasted or misused, contributing neither to investment nor poverty reduction once again tying back to the theory's assumption that aid is only productive under certain institutional conditions.

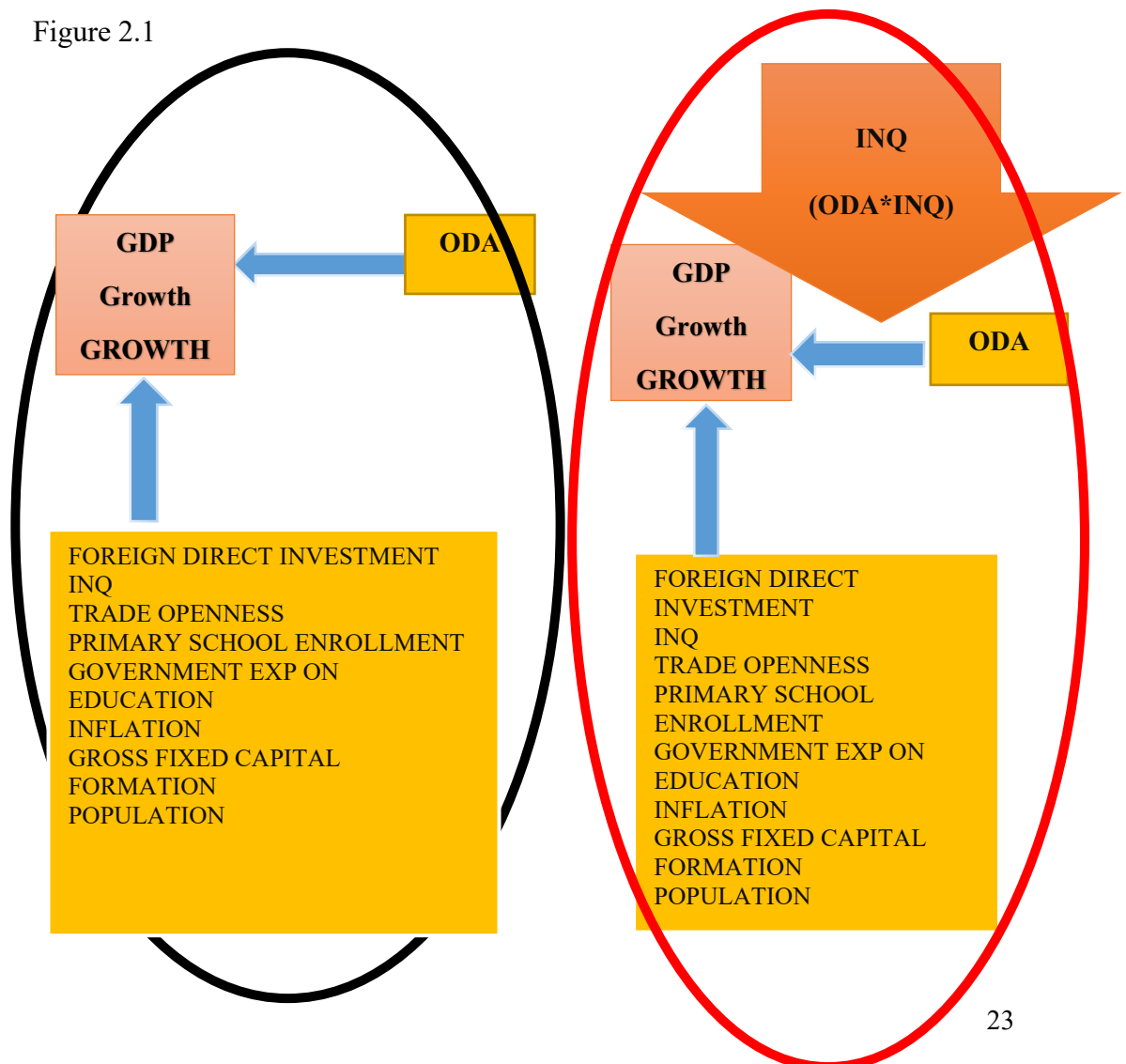
This study builds on both the theoretical and empirical insights by explicitly modeling the interaction between foreign aid and institutional quality, consistent with

the π parameter in the modified production function. By doing so, it aims to assess whether aid is more effective in African countries with stronger governance structures, and whether colonial legacies and historical institutions play a role in shaping this relationship.

2.3 Conceptual Framework

The conceptual framework below illustrates the relationship between Foreign Aid (ODA), Institutional Quality, and Economic Growth and with other control variables. Institutional Quality acts as a moderating variable that influences how effectively foreign aid translates into economic growth. Control variables such as FDI, Trade Openness, Primary school enrollment, Inflation, Gross Fixed Capital Formation and Population are included to control for other growth determinants.

Figure 2.1



The variables within the black circle represent the **Baseline Model** and the variables in the line red circle represent the **Interaction Model**.

2.4 Empirical Evidence

A study was done on the effect of official development assistance on the economic growth of developing countries by (Minoiu & Reddy, 2010). In their research, they applied a different method from the previous research. They separated the aid sent to the developing countries into two components. They separated aid meant for development and aid specifically targeted at development. Their results show that aid meant for development has a significant impact on long term economic growth in developing countries. They believe that aid donors prefer their donation to impact growth and development with recipient countries.

In another research by Azam & Feng (2021), they assess the effect of foreign aid on economic growth in transition countries. They used the fixed-effect regression and applied a cross-sectional time series technique. They categorized the countries into blocks of income. The categorization is in three blocks: low-income countries, lower-middle-income countries, and middle-income countries. They find that foreign aid produces a positive effect on the economic growth of these countries when they combine all the income groups with foreign aid. However, when the countries are classified based on income blocks, the findings show mixed results. The result shows that foreign aid has limited impact on the low-income economies, the result shows a

positive effect of foreign direct investment and foreign aid on economic growth in lower-middle income countries.

There are empirical studies that claim that there generally exists a positive correlation between aid and economic growth. Researchers who believe this view that foreign aid usually in foreign currency, can fill the Saving-investment gap, directly support domestic resources and also fill the foreign exchange gap. The portion of researchers who believe this aid-led growth concept claim that the positive impact or effectiveness of aid on growth is conditional on policies, institutional quality and political regime of recipient nations (Manty, 2013).

Hadjimichael et al. (1995) did research on the impact of foreign aid on growth, in their research, they use a sample of forty-one countries. Their research finds evidence of a positive impact of aid on economic growth for the period of 1986 to 1992. Durbarry et al. (1998) confirmed the impact of aid on growth in their research by using an augmented Easterly-Fisher model and employing panel data and cross-section techniques for a total sample of sixty-eight developing countries spanning Sub-Saharan African countries, the Caribbean and Latin American countries.

Manty (2013) confirms that there is another set of researchers who supports the view that foreign aid leads to economic growth. And these sets of academics provide some evidence or evidence that aid effectiveness depends on existing political conditions. These political conditions can either be the quality, type or stability of the regime.

Ilorah & Ngwakwe (2021) did a study to analyze the effect of foreign aid on economic development using governance effective variables in their research as a moderating means. Their first finding shows a negative relationship between external aid and GDP per capita in Sub-Saharan Africa and interestingly, when they use governance as a moderating variable, the results show a positive correlation between foreign aid and GDP. Some researchers argue that the benefit of aid to recipient countries sometimes does not reflect economic growth (Ilorah & Ngwakwe, 2021).

Murthy et al. (1994) found in their study that aid had a positive long run impact in Cameroon from 1970 to 1990, Cameroon has a similar economic situation or trend with many African countries.

(Burnside & Dollar, 2000), in a multi-country use policy to measure the relationship between economic growth and aid. Their study found that aid had been effective in promoting economic growth in countries with good policies. Good policies and policy implementations might be a problem across some African Countries due high rate of corruption and ineffective government. That is the reason we want to include institutional quality in our model to see what impact it will have with respect to the effect of aid in African countries. Burke & Ahmadi-Esfahani (2006) did not find enough proof to conclude that aid had a significant effect on the economic growth in Thailand, Indonesia and Philippines during the year 1970 to 2000 using a simultaneous equation model.

Researchers on the impact of foreign aid and economic development in Africa had different findings (Mallik, 2008). A significant relationship between external aid and

economic growth is found by some researchers (Adebayo & Beton Kalmaz, 2020). Other researchers found a negative link between external aid and economic development (Ismail, 2020). Adusei (2020) cited Griffin & Enos (1970); Okon (2012); Bräutigam & Knack (2004), and said, these researchers report a negative link between aid and growth.

According to Manty (2013), “Not all studies however provide full support for this aid-growth-policy view”. Easterly et al. (2004) did not find evidence to support the results of some researchers who states that foreign aid influence growth for instance Burnside & Dollar (2000) and suggest that their model results do not hold up to robustness checks. Burnside & Dollar (2000) try to dispute their critiques and revisited the foreign aid-led growth link. They employed a fresh data set, opinion polls and case studies but failed to find support for the assumption that aid has the same positive impact in every cases regardless of institutional quality. Ram (2004) is that part of the researchers that argues that there is insufficient evidence that foreign aid positively impacts economic growth.

Boone (1996) analyses the effectiveness of foreign aid programs in a total sample of ninety-seven countries. All these countries were under different political regimes. It was found in this research that in elitist governments, which means in a government where the power is handle by only few individuals over the whole majority of the citizenry, foreign aid does not effectively boost or impact economic growth, investment or reduce poverty. Boycko et al. (1996) show that foreign aid or assistance is counterproductive in nations which are characterized by a divided government and

Isham et al. (1995) concluded in their research that nations with stronger human rights and constitution have higher with returns of World Bank funded projects.

Manty (2013) states that, researchers or academics who believe foreign aid has a limiting influence on economic growth have given different explanations to their belief why foreign aid can be detrimental to economic growth. One of their explanations is that foreign aid is serving as a substitute to domestic resources and not a complimentary in the long run. They said this causes the governments of countries that are aid dependent to be relax in efforts to raise tax, promotes corruption and inefficiency in developing countries. This reason is supported by (Griffin & Enos, 1970); (Levy, 1988); (Gupta et al., 2004).

Foreign aid to developing countries may make recipient countries highly aid dependent. Aid dependency ratio for Sub-Saharan African countries are usually higher than other part or region of the world no matter the measurement method (Ilorah & Ngwakwe, 2021). According to Mills (2011), the ratio or portion of aid meant for Africa is expected to grow further as the population of Africa countries is likely to increase by the year 2030. Carruth & Freeman (2021) states that, attempts made by poor and developing countries to see themselves free from poverty are rendered ineffective and futile due to their severe underdevelopment and poor utilization of domestic and foreign resources, poverty exacerbates and reinforces cycle of dependency on foreign aid in these countries. The recipient countries have a huge role

to play to make foreign aid has a positive influence on economic growth (Ilorah & Ngwakwe, 2021).

Askarov & Doucouliagos (2015) determined the level to which foreign aid helps to facilitate in developing countries economic growth and development. Their study shows that, within the sample of countries studied, foreign aid influences economic growth. However, their study also revealed that, efficiency of aid does not necessarily depend on good economic policy which is in contrast with the findings of (Burnside & Dollar, 2000); (Philip, 2004).

Thian-Hee & Evan (2018) investigates the impact of foreign aid on economic growth in developing countries with a panel data of 95 countries from 2005 to 2013. It applies various regression models and finds a U-shaped relationship between foreign aid and economic growth, where foreign aid has a negative impact while ODA squared has a positive impact. The study also includes foreign direct investment (FDI) and population (POP) as control variables to assess the dependency on foreign aid for growth.

Nwude et al. (2023) conducted a study to examine the impact of foreign aid on economic growth of 40 Sub-Saharan African countries. The study classifies the countries according to their colonial history and the level of income. The findings show that, bilateral foreign aids strongly favor the Francophone countries better than the Anglophone countries.

It is stated by Younsi et al. (2019) that the empirical analysis of Nakamura & Mcpherson (2005) indicates that the impact of foreign aid on poverty reduction is insignificant in 49 developing countries including countries in Sub-Saharan Africa. From these empirical findings, it could be argued that the findings match with some of the cited papers in this study which shows that foreign aid has no or insignificant impact on economic growth. In essence, the expected is that when there is growth, that growth may leads to development and when there is development then people living standard or well-being will improve, when living standards improve then poverty rate must reduce. Therefore, an empirical finding that showed foreign aid has an insignificant impact on poverty reduction then that may point to a probability that foreign aid has no positive influence on economic growth or development.

Another study that has a similar or the same finding with Nakamura & Mcpherson (2005) is research by (Ijaiya & Ijaiya, 2004), this research uses a cross-country data analysis, and it studied the impact of foreign aid on poverty reduction in Sub-Saharan African countries. With similar finding to (Ijaiya & Ijaiya, 2004), their empirical study implied that foreign aid has no significant impact on poverty reduction.

In a cross-sectional analysis of 46 countries, Balasubramanyam et al. (1996) studied the correlation between investment, trade openness and economic growth. The result of the study shows that the growth-enhancing effects of FDI are better or stronger in nations that use export-oriented policies that nations who adopted an import substitution policy.

Mallik (2008) cited (World Bank 1998) in their study to examine whether there is any link between economic growth and foreign aid in the six poorest African nations. After spending over one trillion dollars for foreign aid and more than thirty-five (35) years of development assistance, more than one billion people live below the poverty line (World Bank 1998). According to Mallik (2008), this raises questions and doubts about the effectiveness of aid on economic growth in some of the countries that are aid dependent.

(Tang & Bundhoo, 2017), using a dataset of Sub-Saharan Africa's top ten aid recipients over 23 years, concluded that while aid on its own is statistically insignificant, its interaction with strong policy environments yields positive and significant effects on growth. This aligns with Burnside and Dollar's earlier argument that aid is only effective in countries with good policy frameworks.

On the contrary, other studies offer a more critical perspective. For example, (Ekanayake & Chatrna, 2010) revealed that while aid is often aimed at poverty reduction, its effects on growth are mixed and sometimes negligible, especially in regions with high aid dependency and governance challenges. They argue that aid must be strategically targeted and integrated into a coherent development strategy to yield meaningful results.

Furthermore, findings from the Nigerian case study by (Fasanya & Onakoya, 2012) confirm that foreign aid can influence GDP growth positively when combined with domestic investment. However, the study also highlights that political instability and poor public expenditure management can undermine this potential.

Finally, McGillivray (2005), as cited in (Ekanayake & Chatrna, 2010) Ekanayake and Chatrna (2010), found that aid is most effective in environments where governance structures are stable and transparent. In Sub-Saharan Africa, where corruption and institutional inefficiency are prevalent, this implies that aid reforms must be accompanied by institutional strengthening to be impactful.

2.5 Summary of Literature Review: Foreign aid and economic growth

Table 1 below is contains the summary of the literatures which are review in chapter two (2) of the study. The table is compile by the author.

Table 2.1 Summary of Literature Reviews

Author(s) & Year	Title / Study Focus	Key Findings
Chenery (1967)	Foreign exchange and savings gap theory	Foreign aid can bridge savings and foreign exchange gaps to promote growth.
Adusei (2020)	Foreign aid as a growth stimulus	Foreign aid is perceived as a vital factor to bridge the savings gap in poor countries.
Iyoha (2001)	Savings gap and international shocks	Highlights the causes of the savings gap and its impact on investment shortfall.
Ozekhome (2017)	Role of foreign capital inflows	Foreign capital such as aid and FDI can close the investment gap in developing economies.
Burnside & Dollar (2000)	Aid, policies, and growth	Aid positively affects growth only in countries with sound policy and institutional quality.
Minoiu & Reddy (2010)	Types of aid and growth	Development-oriented aid has a significant positive impact on long-term economic growth.

Azam & Feng (2022)	Aid in transition economies	Aid has a positive impact on growth in middle-income countries, less so in low-income ones.
Cungu & Swinnen (2003)	Aid and liberal conditions	Aid-growth relationship is stronger under liberal economic environments.
Hadjimichael et al. (1995)	Aid and growth (1986–1992)	Finds a positive impact of aid on economic growth in a 41-country sample.
Durbarry et al. (1998)	Panel study on aid effectiveness	Confirmed positive impact of aid using panel data of 68 developing countries.
Manty (2013)	Aid in West Africa	Finds a long-run co-integration between aid and growth; effects vary by country.
Easterly et al. (2004)	Reassessment of aid effectiveness	Finds no robust evidence that aid positively affects growth.
Ram (2004)	Aid-growth link	Claims insufficient evidence to support a positive aid-growth relationship.
Boone (1996)	Aid under different regimes	Foreign aid is ineffective in elitist governments.
Boycko et al. (1996)	Political structure and aid	Aid is counterproductive in countries with divided governments.
Isham et al. (1995)	Human rights and aid returns	Countries with better human rights have higher returns from aid projects.
Griffin & Enos (1970)	Aid and resource substitution	Aid may substitute domestic resources and reduce tax effort.
Levy (1988)	Aid inefficiency	Argues aid can promote inefficiency and dependency.
Gupta et al. (2004)	Aid, corruption and inefficiency	Foreign aid can weaken governance and reduce fiscal responsibility.
Ilorah & Ngwakwe (2021)	Aid dependency in Africa	High aid dependency in SSA undermines domestic resource mobilization.
Mills (2011)	Future aid flows to Africa	Predicts rising aid needs due to Africa's growing population.

Carruth & Freeman (2021)	Aid and poverty cycles	Aid dependency hinders self-sufficiency and deepens underdevelopment.
Askarov & Doucouliagos (2015)	Aid efficiency	Aid promotes growth but does not depend on good policy.
Thian-Hee & Evan (2018)	Nonlinear aid-growth link	Finds a U-shaped relationship: low aid levels harm growth, high levels help.
Nwude et al. (2023)	Aid by colonial legacy	Bilateral aid favors Francophone African countries more than Anglophone ones.
Nakamura & Mcpherson (2005)	Aid and poverty	Aid has no significant impact on poverty reduction.
Ijaiya & Ijaiya (2004)	Aid and poverty in SSA	Finds no significant link between foreign aid and poverty reduction.
Balasubramanyam et al. (1996)	FDI, openness, and growth	FDI boosts growth in countries with export-oriented trade policies.

Source: Compile by the Author

Selected Variables and their source:

Table 2 below contain the dependent and all the independent variables those are used in this research. The table indicates the variable names and the source where the variables or data is obtained from.

Table 1.2 Selected Variables

No.	Variable	Source
1	Growth (GDP Growth)	World Development Indicators-World Bank Data Base
2	Official Development Assistance (ODA/Aid)	World Development Indicators-World Bank Data Base
3	Government Effectiveness (Use as Institutional Quality)	Worldwide Governance Indicators

4	Foreign Direct Investment, net inflows	World Development Indicators-World Bank Data Base
5	Trade Openness	World Development Indicators-World Bank Data Base
6	Primary School Enrollment total %	World Development Indicators-World Bank Data Base
7	Government expenditure on education, total (% of GDP)	World Development Indicators-World Bank Data Base
8	Inflation	World Development Indicators-World Bank Data Base
7	Gross Fixed Capital Formation (GFCF)	World Development Indicators-World Bank Data Base
8	Population	World Development Indicators-World Bank Data Base

Source: Compile by the Author

Table 3 below is compile by the author to indicate how the variables used in this research are named in the regression results and their corresponding short names under the econometrics models in chapter three (3).

Table 2.3 Names of Variables as in Methodology Equations and Stata Regression Table

Variable name under the model in Methodology	Variable name under Stata (Regression Tables)
ODA/GDP	ODA per GDP
ODA/GDP * INQ	ODA per GDP*INQ
INQ	Institutional Quality
FDI	Foreign Direct Investment
TradeO	Trade Openness
SEP	Primary School Enrollment

GeoE	Government Expenditure on Education
INF	Inflation
GFCF	Gross Fixed Capital Formation
POP	Log(Population)

Source: Compile by the Author

2.6 The British System and French System in Africa

The quality of institution matter at some point (Acemoglu et al., 2021). According to Acemoglu et al. (2021), different kinds of institutions are created from different types of colonization. Extractive system is set up by European powers just for resource tapping from the African continent. Acemoglu et al. (2021) take Belgium as an example on how they colonized Congo in Africa. The institutions built by Belgium in Africa did not come up with much protection for private property, they do not also provide checks and balances against government expropriation. To transfer resources from Congo was the main reason for the extractive state.

There is clear different between the British governance system and the French governance system. Hayek (1960) states that the British common law system was superior to the French civil law system, which restrain judges from interfering with government policies and during the Napoleonic era, that was when the French civil law was developed. The importance of colonial origin was emphasized by (La Porta et al., 1998). This emphasis is made because the legal origin of current institutions is from the colonial origin, this show that the common law nations and former British colonies have better and developed financial markets and better property rights. Like this argument, Landes (1998) said, former British colonies progressed compared to former

colonies of France because of the good political and economic institutions former British colonies inherited from Britain different from the exploitive nature of the French system on their former colonies. This has laid out a different on the nature on type of institutional quality that are available in former British and former French colonies in Africa and this is consistent with the Worldwide Governance Indicator's data on government effectiveness in the year 2010 to 2022 as presented in the maps from figure 1, 2, 3 and 4 above where we see that Anglophone countries are doing better than Francophone countries in terms of government effectiveness. The maps are clear attestation to the different types of institutions that established by the former colonies in Africa.

CHAPTER III

METHODOLOGY

3.1 Data and Variable Description

This research uses quantitative method of research and the data type that is used are all secondary data obtain from various data based. The data is obtained from the World Bank Group Data based (World Development Indicators) and Worldwide Governance Indicators. The duration for the data is from year 2000 to 2022 which covers a total duration of twenty-three (23) years, the time span could not go beyond twenty-three (23) years due to the unavailability of data especially in large number of African countries. There are fifty-four (54) countries in Africa in total and in this study, we are only able to obtain data for thirty-seven (37) African countries only out of a total of fifty-four (54) countries. This led us to drop seventeen (17) African countries from this research. The study focusses on all African countries where data is available and we categories them into three grounds or division namely: former British colonies, former French colonies and other colonies that neither fall under British nor French colonies.

The countries that are included in this research are eleven (11) former British colonies namely: Botswana, Egypt Arab Rep., The Gambia, Ghana, Kenya, Namibia, Seychelles, Sierra Leone, South Africa, Uganda and Zimbabwe.

The countries in this research that are former French colonies are fourteen (14) countries. And these countries are Benin, Burkina Faso, Central African Republic,

Chad, Comoros, Cote d'Ivoire, Gabon, Guinea, Madagascar, Mali, Mauritania, Niger, Senegal and Tunisia.

Finally any country that does not fall under the category of former English or French colonies is falls in the third (3rd) grouping called (Other Colonies) and the countries under this group are twelve (12) and they are: Angola, Burundi, Cameroon, Eritrea, Ethiopia, Guinea-Bissau, Lesotho, Mauritius, Morocco, Rwanda, Tanzania and Togo. The full list all the countries and their former colonial master's name is provide under Appendix if needed.

3.2 Econometrics Estimation Technique/Approach

This research uses panel data and employs panel data model to analyze the impact of foreign aid on economic growth in African countries. This model is suitable to analyze our research since we are using a panel dataset. The panel data model we use in this research are; the Pooled OLS estimation, Random Effect (RE), and Fixed Effect (FE) estimation models. Series of Panel Data diagnostic test are done to determine the best estimating approach or model for this research.

3.3 Model Specification

Regarding the Econometrics for this study. Three different equations are use in this research and each equation is for a specific target. Below is the derivation of equation one (1), two (2) and equation three (3).

$$Growth = f(X)$$

$$X = \left(\frac{ODA}{GDP} + INQ + FDI + TradeO + SEP + GEoE + INF + GFCF + POP \right)$$

The first model or equation is the Baseline Model. It is the model where we check the Impact of ODA on economic growth without the inclusion of the interaction term of institutional quality on aid (ODA/GDP * INQ). In the baseline model, the econometrics model only contain ODA/GDP, INQ, FDI, TradeO and other control variable **without** the availability of the interacting term or variable (ODA/GDP * INQ). In this Baseline model, our main focus is on the parameter (β_1) we want to know what will be the impact of aid on economic growth if the interaction term is not included in the Baseline model.

$$Growth = \beta_0 + \beta_1 ODA_{it} + \beta_2 INQ_{it} + Other\ Control$$

The first differential of Growth with respect to ODA, all the other terms will go to zero and the result will be $\frac{\partial Growth_1}{\partial ODA} = \beta_1$.

The second model is Baseline model plus another independent variable called the interaction term (ODA * INQ). For instant the interaction model is:

$$Growth = \beta_0 + \beta_1 ODA_{it} + \beta_2 ODA * INQ_{it} + \beta_2 INQ + Other\ Control$$

The first differential of Growth with respect to ODA; the result will be:

$$\frac{\partial Growth_1}{\partial ODA} = \hat{\beta}_1 + \hat{\beta}_2 INQ$$

If $\beta_1 = \hat{\beta}_1$ then $\hat{\beta}_2 = 0$

If $\beta_1 < \hat{\beta}_1$ then $\hat{\beta}_2 < 0$, *meaning INQ ↓ (negative)*

If $\beta_1 > \hat{\beta}_1$ then $\hat{\beta}_2 > 0$, *meaning INQ ↑ (positive)*

EQUATION 1. BASELINE MODEL

$$\begin{aligned} \text{Growth} = & \beta_0 + \beta_1 \frac{\text{ODA}}{\text{GDP}_{it}} + \beta_2 \text{INQ}_{it} + \beta_3 \text{FDI}_{it} + \beta_4 \text{TradeO}_{it} + \beta_5 \text{SEP}_{it} \\ & + \beta_6 \text{GEOE}_{it} + \beta_7 \text{INF}_{it} + \beta_8 \text{GFCF}_{it} + \beta_9 \text{POP}_{it} + v_i + \varepsilon_{it} \end{aligned}$$

NOTE: The baseline model above will be regress on OLS, Fixed Effects and Random Effects. F-test, BP-LM test will be conducted to choose the best estimation model among them.

In the above equation 1 (Baseline Model);

Growth_{it} = total annual growth in country i's Gross Domestic Product at time t. It is the independent variable in all the three equations. β_0 = is the constant parameter which is equal to GDP growth when all the independent variables or factors are zero. $\beta_1, \beta_2, \beta_3, \beta_4, \dots, \beta_n$ are the coefficient of the respective independent variables.

ODA/GDP_{it} = is the total foreign aid receive divide by total Gross Domestic Product of country i at year t. ODA is Net official development assistance and official aid received (constant 2021 US\$) from WDI and GDP is Gross Domestic Product (constant 2015 US\$).

INQ_{it} = is the Institutional Quality index which is Government Effectiveness of country i in time period t. Government Effectiveness is measure in percentile ranging from zero (0) to hundred (100) percentiles. Where 0 percentile means a country with a weak level

of government effectiveness and 100 representing a country with a highest level of government effectiveness.

FDI_{it} = means Foreign Direct Investment of country i in time t. FDI is Foreign direct investment, net inflows (% of GDP).

TradeO_{it} = Trade Openness of country i at time t. Trade Openness is Total Export plus Import % of GDP. **SEP_{it}** = is the total primary school enrollment rate (gross %) of country i at time period t.

GEoE = is total Government expenditure on education, total (% of GDP) of country i at time period t.

INF = is inflation, GDP deflator (annual %) of country i at time period t.

GFCF = Gross fixed capital formation (annual % growth) of country i at time period t. Finally,

POP = total population of country i at time t. **V_i**; captures unobserved time-invariant country-specific effects.

The key independent variable in this model is ODA and INQ while the rest of the variables serve as control variables in the model.

EQUATION 2: INTERACTION MODEL

$$\begin{aligned} \text{Growth} = & \beta_0 + \beta_1 \frac{\text{ODA}}{\text{GDP}_{it}} + \beta_2 \frac{\text{ODA}}{\text{GDP}} * \text{INQ}_{it} + \beta_3 \text{INQ}_{it} + \beta_4 \text{FDI}_{it} \\ & + \beta_5 \text{TradeO}_{it} + \beta_6 \text{SEP}_{it} + \beta_7 \text{GEoE}_{it} + \beta_8 \text{INF}_{it} + \beta_9 \text{GFCF}_{it} \\ & + \beta_{10} \text{POP}_{it} + v_i + \varepsilon_{it} \end{aligned}$$

NOTE: The interaction model above will be regress on OLS, Fixed Effects and Random Effects. F-test, BP-LM test will be conducted to choose the best estimation model among them.

In case the Fixed Effects is the best model on both the Baseline Model and the Interacting model, from there we will compare their β_1 to see what impact ODA has with and without the interaction term in both models.

Colonial Category Analysis

To assess whether the relationship between foreign aid and economic growth varies across countries with different colonial legacies, the sample was divided into three distinct groups based on their colonial history by creating a new column in our data named Colonial_category. This new column is filled with numbers 1, 2 and 3 to represent each country with their respective former colonial masters.

1. British colonies – coded as 1 in the variable Colonial_Category
2. French colonies – coded as 2 in the variable Colonial_Category
3. Other colonies – coded as 3 in the variable Colonial_Category

The variable Colonial_Category was constructed from historical records on African countries' colonial backgrounds. Rather than including these categories as dummy variables in a single pooled regression, the analysis estimated the baseline model separately for each colonial group. This sub-sample approach allows all slope

coefficients and the intercept to differ freely between groups, providing a more flexible assessment of potential heterogeneity in aid effectiveness.

The Fixed Effects estimator was applied in each case or on three separate regression, as the Hausman test indicated it was the most appropriate specification. Estimation was conducted in Stata by restricting the sample to the relevant colonial category using the if condition. The commands used in Stata are as follows:

➤ **British Colonies**

```
xtreg Growth  $\frac{ODA}{GDP}$  INQ FDI TradeO SEP INF GFCF POP if Colonial_Category == 1, fe
```

➤ **French Colonies**

```
xtreg Growth  $\frac{ODA}{GDP}$  INQ FDI TradeO SEP INF GFCF POP if Colonial_Category == 2, fe
```

➤ **Other Colonies**

```
xtreg Growth  $\frac{ODA}{GDP}$  INQ FDI TradeO SEP INF GFCF POP if Colonial_Category == 3, fe
```

This approach enables direct comparison of regression results across colonial groups, thereby identifying whether the magnitude or direction of the estimated coefficients particularly for ODA/GDP differs systematically according to a country's colonial

background. The results from these regressions are presented and discussed in Chapter 4.

3.4 Pre-estimation test

It is important to perform pre-estimation tests to give an overview of the panel data. The pre-estimation test will provide the descriptive statistics of the variables or observations. This will help evaluate the mean, standard deviation, maximum and minimum of the observations.

3.5 Pooled OLS Model

Pooled OLS is a regression technique that is also use in panel data analysis that combines cross-sectional data and time-series data while assuming homogeneity in the relationships across all individuals in the dataset (Wooldridge, 2012). Below is the full equation for the Pooled OLS model:

Baseline model for OLS:

The econometrics equation below represent the baseline model equation for the Pooled OLS Regression.

$$\begin{aligned} \text{Growth} = & \beta_0 + \beta_1 \frac{\text{ODA}}{\text{GDP}_{it}} + \beta_2 \text{INQ}_{it} + \beta_3 \text{FDI}_{it} + \beta_4 \text{TradeO}_{it} + \beta_5 \text{SEP}_{it} \\ & + \beta_6 \text{GEOE}_{it} + \beta_7 \text{INF}_{it} + \beta_8 \text{GFCF}_{it} + \beta_9 \text{POP}_{it} + \varepsilon_{it} \end{aligned}$$

Interaction model for OLS:

This equation is the interaction model that is regressed under Pooled.

$$\begin{aligned}
\text{Growth} = & \beta_0 + \beta_1 \frac{\text{ODA}}{\text{GDP}_{it}} + \beta_2 \frac{\text{ODA}}{\text{GDP}} * \text{INQ}_{it} + \beta_3 \text{INQ}_{it} + \beta_4 \text{FDI}_{it} \\
& + \beta_5 \text{TradeO}_{it} + \beta_6 \text{SEP}_{it} + \beta_7 \text{GEOE}_{it} + \beta_8 \text{INF}_{it} + \beta_9 \text{GFCF}_{it} \\
& + \beta_{10} \text{POP}_{it} + \varepsilon_{it}
\end{aligned}$$

3.6 The Fixed Effects (FE)

After running the Pooled OLS estimation, the fixed effects model estimation will also be use. The fixed effect model is a panel fata estimation technique that controls for unobserved heterogeneity. Below is the fixed effect model:

Baseline model for Fixed Effects:

The econometrics equation below represent the baseline model equation regressed under Fixed Effects.

$$\begin{aligned}
\text{Growth} = & \beta_0 + \beta_1 \frac{\text{ODA}}{\text{GDP}_{it}} + \beta_2 \text{INQ}_{it} + \beta_3 \frac{\text{FDI}}{\text{GDP}_{it}} + \beta_4 \text{TradeO}_{it} + \beta_5 \text{SEP}_{it} \\
& + \beta_6 \text{GEOE}_{it} + \beta_7 \text{INF}_{it} + \beta_8 \text{GFCF}_{it} + \beta_9 \text{POP}_{it} + \mathbf{v}_i + \varepsilon_{it}
\end{aligned}$$

Interaction model for Fixed Effects:

The equation below is the interaction model that is regressed under Fixed Effects.

$$\begin{aligned}
\text{Growth} = & \beta_0 + \beta_1 \frac{\text{ODA}}{\text{GDP}_{it}} + \beta_2 \frac{\text{ODA}}{\text{GDP}} * \text{INQ}_{it} + \beta_3 \text{INQ}_{it} + \beta_4 \text{FDI}_{it} \\
& + \beta_5 \text{TradeO}_{it} + \beta_6 \text{SEP}_{it} + \beta_7 \text{GEOE}_{it} + \beta_8 \text{INF}_{it} + \beta_9 \text{GFCF}_{it} \\
& + \beta_{10} \text{POP}_{it} + \mathbf{v}_i + \varepsilon_{it}
\end{aligned}$$

Where $\mathbf{v}_i$ Controls the country effect in the panel.

3.7 Random effects (RE)

The last method of estimation will be the Random effect model estimator and below is the estimation model:

Baseline model for Random Effects:

The econometrics equation below represent the baseline model equation regressed under Random Effects.

$$\begin{aligned}\text{Growth} = & \beta_0 + \beta_1 \frac{\text{ODA}}{\text{GDP}_{it}} + \beta_2 \text{INQ}_{it} + \beta_3 \frac{\text{FDI}}{\text{GDP}_{it}} + \beta_4 \text{TradeO}_{it} + \beta_5 \text{SEP}_{it} \\ & + \beta_6 \text{GeoE}_{it} + \beta_7 \text{INF}_{it} + \beta_8 \text{GFCF}_{it} + \beta_9 \text{POP}_{it} + v_i + \varepsilon_{it}\end{aligned}$$

Interaction model for Random Effects:

$$\begin{aligned}\text{Growth} = & \beta_0 + \beta_1 \frac{\text{ODA}}{\text{GDP}_{it}} + \beta_2 \frac{\text{ODA}}{\text{GDP}} * \text{INQ}_{it} + \beta_3 \text{INQ}_{it} + \beta_4 \text{FDI}_{it} \\ & + \beta_5 \text{TradeO}_{it} + \beta_6 \text{SEP}_{it} + \beta_7 \text{GeoE}_{it} + \beta_8 \text{INF}_{it} + \beta_9 \text{GFCF}_{it} \\ & + \beta_{10} \text{POP}_{it} + v_i + \varepsilon_{it}\end{aligned}$$

3.8 Other Tests

When working with panel data, choosing between Pooled OLS, Random Effects (RE), and Fixed Effects (FE), requires several diagnostic tests to ensure the most appropriate model is used. That being the case, we are conducted the diagnostic tests below to select the best estimation method for our research.

We conducted the F-test to help us know between the Pooled OLS vs Fixed Effects, the F-Test results suggested the Fixed Effects as the best estimation compared to the Pooled OLS and the results of the F-test can be found under Chapter four (4) Discussion and Analysis or under the Appendix.

To choose between the Random Effects vs Pooled OLS, in this study, we conducted the Breusch-Pagan Lagrange Multiplier (BP-LM) Test. This test shows that the fixed Effects is the better estimation method to our data compared to the Pooled OLS estimation method. This test results can also be found under chapter four (4) on this thesis and under appendix as well.

The F-test suggested Fixed Effects while the BP-LM test suggested Random Effects. Now to choose between Fixed Effects vs the Random Effects, we did a Hausman Test, and this test indicated that the Fixed Effect model is the most appropriate model or estimation technique for our research. The Hausman test results is also in chapter four (4) and under Appendix.

CHAPTER IV

RESULTS AND DISCUSSION

4.1 Descriptive Statistics

The descriptive statistics for the variables used in this empirical analysis are shown in this section. Before performing econometric estimations, descriptive statistics are a crucial first in breaking down the nature and characteristics of the dataset. Measures of central tendency (mean and median), measures of dispersion (standard deviation), and the range of values (minimum and maximum) are among the key characteristics of the data that are summarize under this section.

We can learn a lot about the distribution, variability, and possible outliers in the data by looking at these summary statistics. In panel data analysis, where observations are made across time and countries, this is especially crucial because it makes it easier to spot any trends, anomalies, or discrepancies that might affect the findings of our research.

Table 4.1 below represent the descriptive statistics of all the variable used in this research. The purpose is to give overview of the nature of our data. The table is compile by the author.

Table 2.1 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
GDP Growth rate	803	3.98	4.65	- 36.39	33.63
ODA per GDP	799	0.06	0.06	0.00	0.44
Institutional Quality	814	30.21	21.12	0.95	84.62
Foreign Direct Investment	800	3.16	4.38	- 11.19	56.29
Trade Openness	786	65.68	32.96	17.23	222.18
Government Expenditure on Education	635	4.04	2.00	0.54	13.22
Inflation	803	9.24	31.63	- 22.93	604.95
Gross Fixed Capital Formation	752	10.35	89.57	- 65.69	2357.68
Population	814	19.05	23.00	0.08	125.38
Primary School enrollment	685	99.40	21.21	31.85	156.80
ODA	810	842.97	925.45	- 19.55	7941.39

Source: World Bank Development Indicators, the World Bank

The table above provides a summary of all the variables used in the analysis, the table shows some statistical breakdown which includes the number of observations, mean, standard deviation, minimum, and maximum values. These statistics offer an

initial understanding of the distribution and variability of the data across African countries over the sample period.

GDP growth rate which is the dependent variable for our model has a total of 803 observations. The mean value of GDP Growth is 3.98 which implies that the average GDP growth rate is approximately 3.98%, with a standard deviation of 4.65, indicating moderate variability in economic performance across countries over the years.

The minimum value of -36.39% and the maximum of 33.63% show the presence of extreme economic contractions in some African countries (likely reflecting periods of political instability or recovery) and economic expansion (booms) among the top African countries.

Official Development Assistance as % of GDP: The mean value is 6.43% of GDP, suggesting that foreign aid constitutes a notable share of GDP for many countries in Africa. The variation (Std. Dev = 5.75%) indicates significant differences in aid dependency among countries.

Official Development Aid to African countries has a total number of observations of 810. The mean of ODA is 842 and this indicates that on average, each African nation received a total ODA of 842 million Dollars, but with a very large standard deviation of 925 million, this shows a considerable variation in aid receipts among African countries. The maximum of 7.94 billion dollars suggests that some countries received substantial aid inflows, while other African countries received relatively little or even negative net flows.

Government Effectiveness is used as the measure for institutional quality in African countries. There are a total number of 814 observation for institutional quality. Institutional quality measures in percentile ranging from 0 representing a very low government effectiveness and 100 indicating a country with a very high effective governance. From the descriptive statistics table (table 4.1), institutional quality has a mean value of 30.21 and this means thirty (30) percent of effective governance. This implies that on average, African countries have a very low effective governance and thus most of these countries' governments are not up to halfway effective base on these statistics. The standard deviation of 21.12 indicates the wide differences in governance quality among African countries. This is expected because the level of difference between Francophone (Former French Colonies) who usually have weak ineffective governance compared to Anglophone (Former English Colonies) with better governance in Africa in terms of better governing laws. The minimum value for institutional quality is 0.95 which shows that in Africa, there are some countries that have a very poor effective governments which can be relate to huge number of political instabilities in some African countries. The maximum of 84.62 implies how effective are the government of other countries in Africa. The extremely wide range between the minimum and maximum indicates how far apart are African countries are in terms of government effectiveness.

Foreign Direct Investment (FDI) this data is expressed as the ratio or percentage of total gross domestic product. It is the investment in the economy that comes from the private investors or sector. The mean value of FDI is 3.16 which indicates that on

average, FDI comprise 3% of most African countries total GDP and some with a maximum FDI of 56% which is very high.

Trade Openness has a total observation of 786, it is used as one of the control variables, it comprises exports plus imports as a share of GDP of a respective country according to World Development Indicators (WDI) databased. Trade Openness with a mean of 65.68 shows a good level of movement of goods and services to and from African countries. But the standard deviation shows a substantial variation in trade integration in African countries of 32.96. The minimum and maximum 17.23 and 222.18 respectively implies that while some African countries are relatively close in exchange in terms of trade, other African countries are highly open economies in terms of trade (movement of goods and services).

Government Expenditure on Education is the total amount of expenditure a government made on education expressed in terms of GDP of that particular country. It has a total number of observations of 635 and a mean value of 4%, this means that on average the entire African countries used in this research, their total expenditure on education comprises only 4% of their total GDP. The variability across one country to another is very much minimal or moderate with a standard deviation of 2.0. The maximum of 13.22% and minimum of 0.54% suggest large differences in each country's total expenditure on education. Some countries are spending a very little on education while others are spending what seems to be a well reasonable amount on their education.

There are a total of 803 observation for Inflation. A mean of 9.24% implies a single digit inflation rate for African countries but yet still which is a little bit high. This explains the high production and commodity cost in many African countries. The minimum value of -22.93 reflects a significant deflation in at least one country in a particular year while the extreme maximum of 604.95% points to hyperinflation in a country.

Gross Fixed Capital Formation (GFCF) as a percentage of GDP refers to the portion of a country's economic output (GDP) that is invested in fixed assets. It has a total observation of 752. Average investment rate is 10.35% but the standard deviation of 89.57 implies that is a very high variation on investment rate among African countries.

Population has 814 total observations without a single missing value for any country in any particular year. As expected, Africa is also among the most densely populated regions. According to the descriptive statistics table (Table 4.1), on average the total population of African country is 19 million people. Notwithstanding, a minimum value of 0.08 implies that an African country has a total population of as small as 80,000 people in a particular year and the maximum implies that another country has a total of people of as much as 125 million people. This shows a wide variation among African countries when it comes to total population. The high standard deviation of 22.99 confirms significant population disparities between small and large countries in Africa.

There are 685 observations for School enrollment primary (% gross). This is number of primary school enrollment rate in African countries. A mean of 99.3 implies that the primary school enrollment across African countries is very high on average. The minimum of 31.85 indicates that in some countries, the percentage of the population that has access to education remains limited while some countries have great access to primary school education with a maximum value of 156.8

4.1.1 Government Effectiveness in Africa

The map below (figure 1) is created from data obtained from one of the databases of The World Bank Group called (WGI). The data on the below map only represent Government Effectiveness. We took the mean of the data from the year 2000 to the year 2022 for 37 countries of African countries which is almost 70 percent of African countries. The figures are measured in percentile ranging from 0 to 100 percentile. 0 percentage represent low effective government, and 100 percentiles represent a very effective government in that country. In the map, we used colors to represent the government effectiveness of African countries.

- 0-25 is colors in red.  This represents countries that on average fall from zero (0) to twenty-five (25) percentile and are considered weak in Government effectiveness.
- 25-50 is colors yellow.  Countries that fall in this range are on average within twenty-five (25) percentiles to fifty (50) percentiles. On the map, any country that is colored yellow is considered good in Government effectiveness.

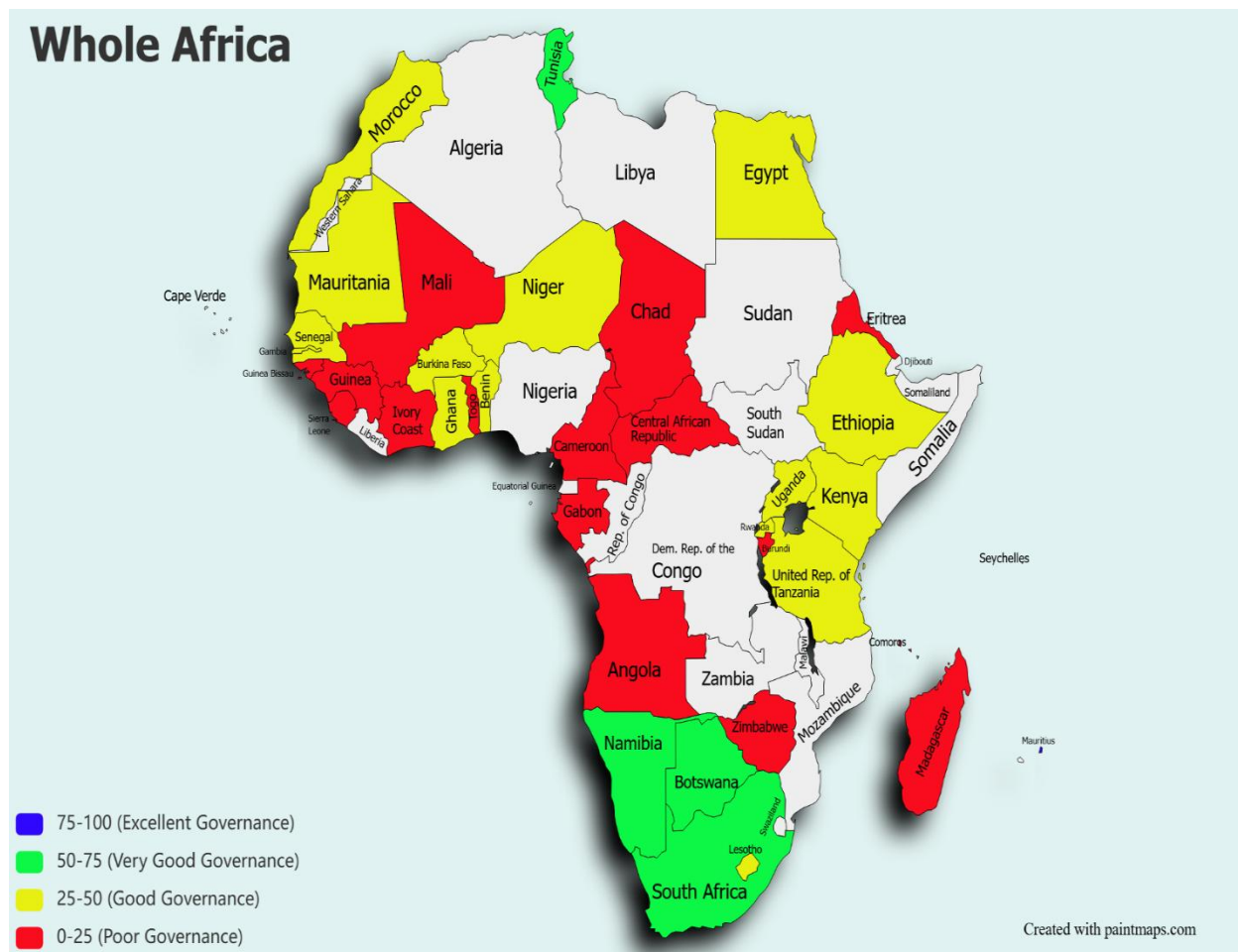
- 50-75 is colored in green.  This represents African countries that fall between fifty (50) to seventy-five (75) percentiles on Government Effectiveness. Countries in this section are considered very-good in Government Effectiveness.
- 75-100 is colored in blue.  This section represents countries that are good well in terms of Government Effectiveness in Africa. This portion represents countries that fall on average between seventy-five (75) percentiles to hundred (100) percentiles. Countries in this portion are term as countries doing excellent in Government Effectiveness.

Looking at the map (figure 1), it can be notice that African countries have different range of government effectiveness. There are countries that are doing very well. For example, some countries in the Southern Part of Africa seems to be doing well, Namibia, Botswana, and South Africa are all in green. This shows that those countries are doing very well in terms of Government Effectiveness. The only country that falls in the category of excellent effective governments is Tunisia and it is in the Northern Part of Africa.

Higher number of African countries are doing very poor with regards to Government Effectiveness. Especially countries that are located within the Central Africa and West Africa. This poor government effective might be link to poor institutional quality of these countries and mostly the fragility of this countries when it comes to government effectiveness. For instance, looking at Ivory Coast, which is a very powerful country in Africa, falls without the poor zone in terms government effectiveness. Countries like Mali, Chad and Central African Republic fall below

twenty-five (25) percentiles. This is not a surprise considering the political climate in these countries and the long political instability that have been going in these counties. A high number of African countries are doing very poor in terms of government effectiveness as seen in the map (figure 1).

Figure 4.1 Government Effectiveness in Africa



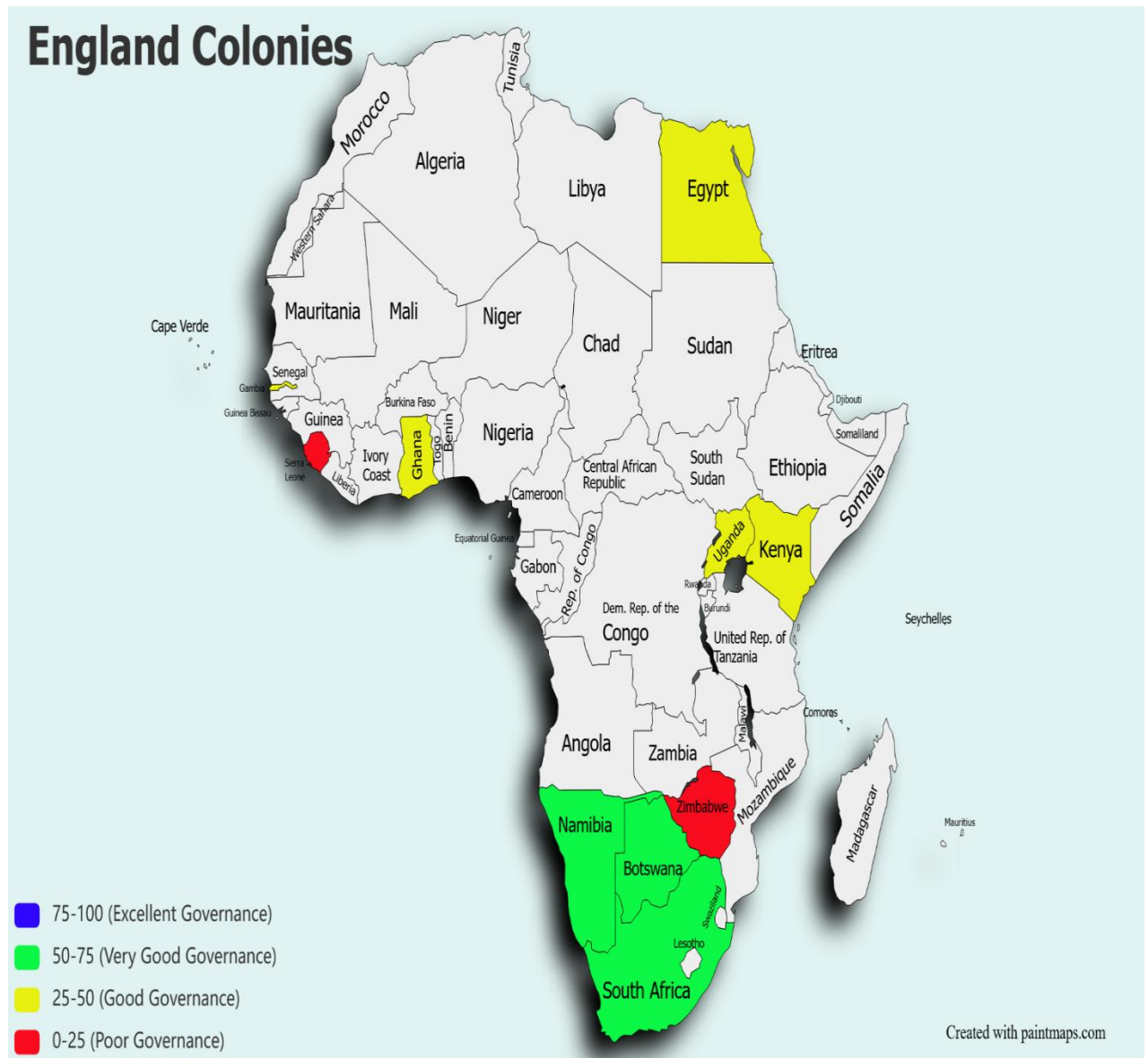
From the map above (figure 1), no country is colored in blue. That implies that on average from the year 2000 to 2022, no African countries attained between fifty-five

(75) to hundred (100) percentiles. This shows that African countries still have more room for improvement in terms of government effectiveness.

4.1.2 Government Effectiveness by Colony Origin.

- A. Figure 2 below shows African countries government effectiveness those were only colonized by Great Britain (United Kingdom). A greater number of African countries those were colonized by Great Britain are found in the Southern part of Africa. Only about 3 countries scored above 50 percentile and the large number of them are below 50 percentiles. Starting from Egypt, Ghana, Kenya, Uganda, and among others are below 50 percentiles. It is only South Africa, Botswana and Namibia who scored between the ranges of fifty (50) to seventy-five (75) percentiles. Out of the England colonies countries, only two of them are within the poor status of government effectiveness. These two countries are Zimbabwe in the South Africa and Sierra Leone in West Africa.

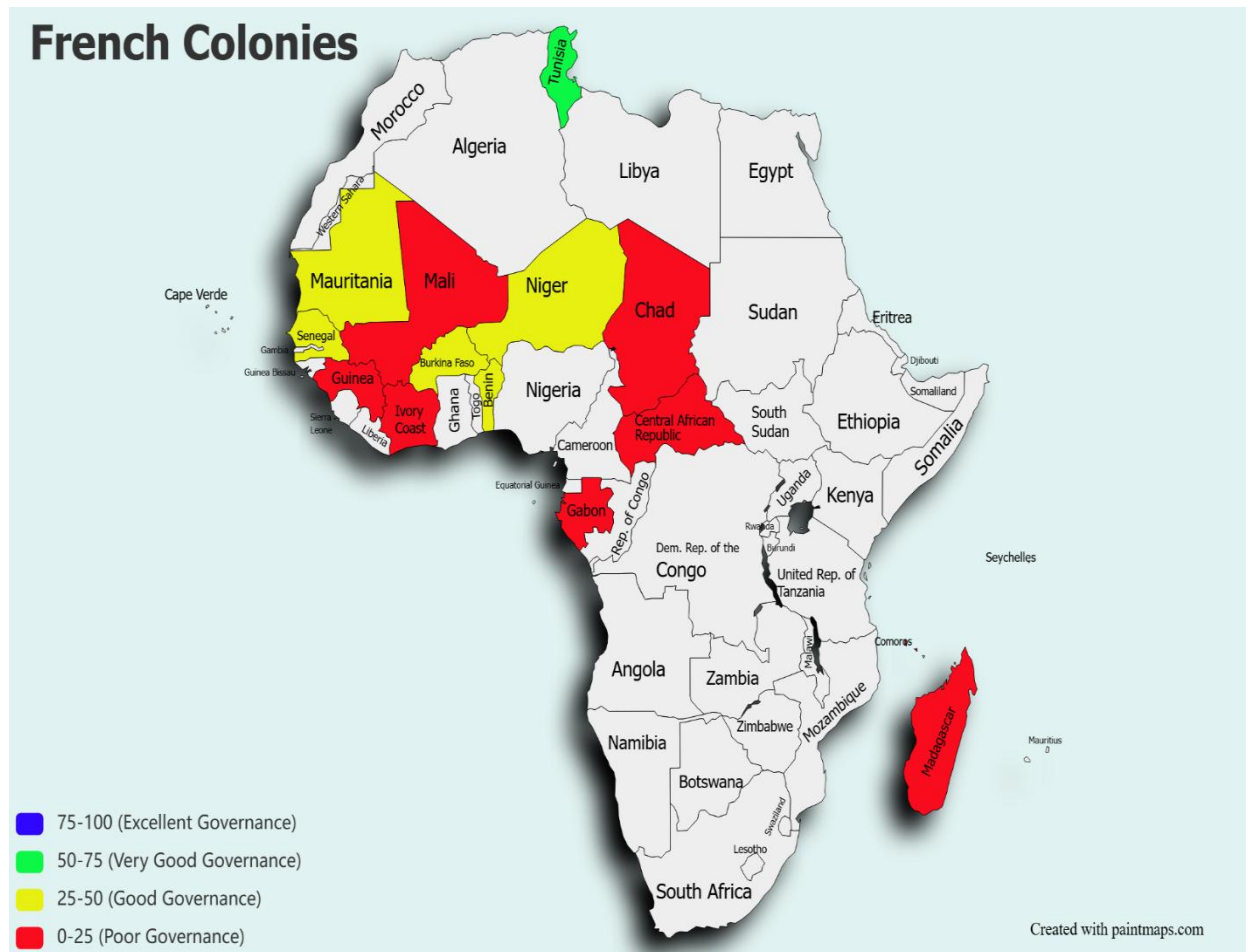
Figure 4.2 Government Effectiveness British Colonies.



B. Compared to the British colonies, French colonies seem to be doing worst when it comes to government effectiveness. French former colonies are higher in Western part of Africa. Other than Tunisia outside the Sub-Saharan Africa, all other French former colonies are performing poorly in terms of Government effectiveness. From the map

below (figure 3), Tunisia is the only country that is showing green. This means it is the only former French colony that is performing better in terms government effectiveness. The rest of French former colonies are ran below fifty (50) percentiles and the high number of the countries are covered with red in the map indicating they have very weak effective governments from the year 2000 to 2022. These countries include Mali, Ivory Coast, Guinea Conakry, Chad, Gabon and Central African Republic. Based on this data, British former colonies are having better government institutions compared to French former colonies. This perhaps can predict that maybe foreign aid can have better impact in British former colonies than French former colonies.

Figure 4.3 Government Effectiveness French Colonies



C. Countries that fall on neither England nor French former colonies are categorized as **other colonies**. The figure below (figure 4) represents the map of such countries. From the look of the map. These countries are not doing as good as former England colonies but also, they are not doing as poor as the former French colonies. Morocco, Tanzania and Ethiopia are average in terms of effective governance but Guinea Bissau and Togo in West Africa, Cameroon and Eritrea and all covered in red by the map. That indicates

that they are doing very poor in government effectiveness according to the World Governance Indicators (WGI) data from the year 2000 to 2022.

Figure 4.4 Other Colonies in Africa

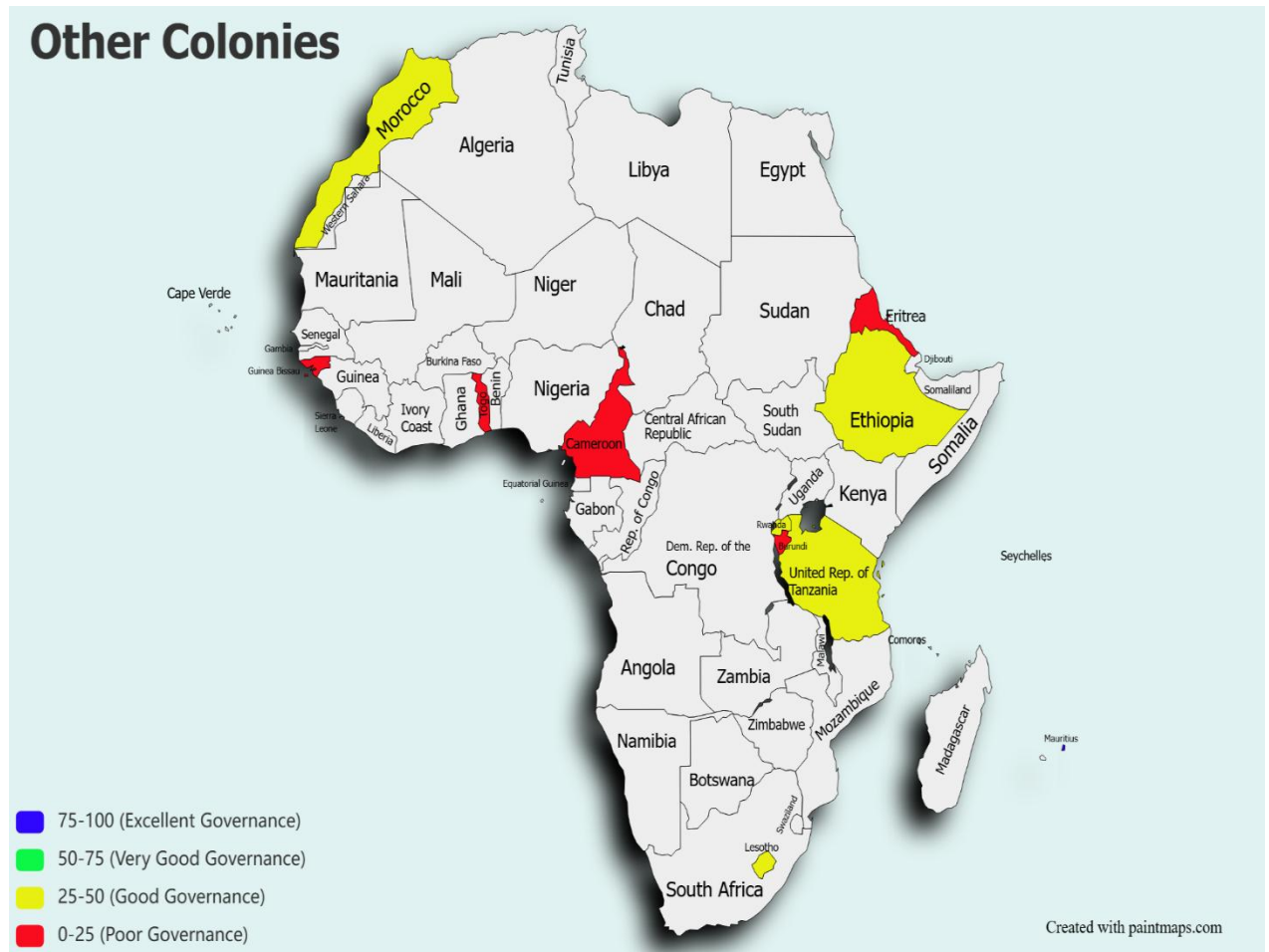


Table 4.2 below shows the diagnostic tests results of the Baseline Model. Through this test, we were able to determine the best estimation method for a data. The table is compile by the author from the results of the Stata.

4.1.3 Analysis of Trends in GDP Growth and ODA

Figure 5 and 6 below are created from our data set. The aim of these figures to look at the movement or trend of average GDP growth and average aid received in the 37 African countries as one bundle. This trend analysis will help give a preview of how the movement relationship is between aid and economic growth in Africa.

Figure 4.5 GDP Growth Trend

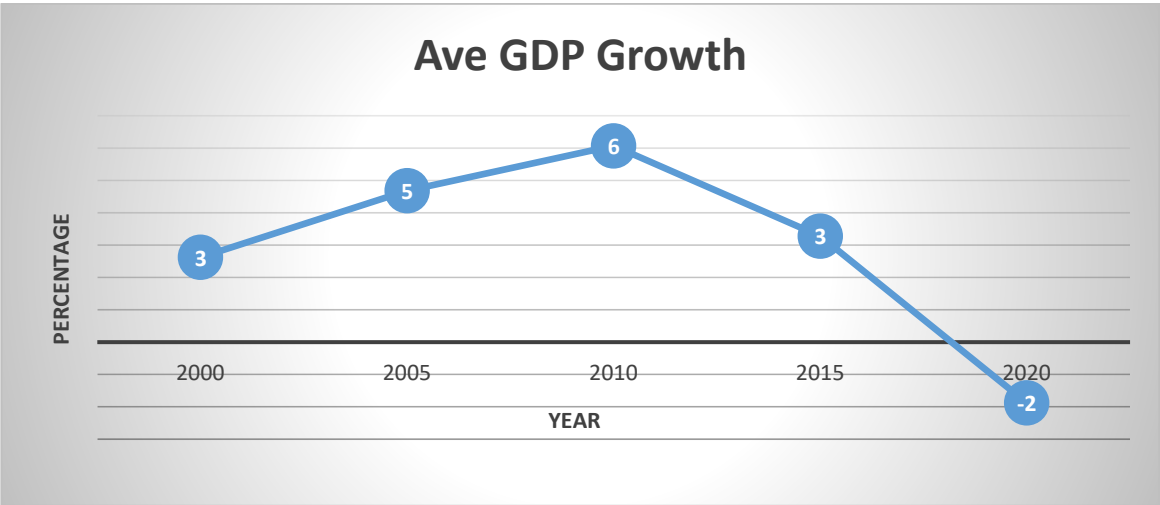


Figure 4.6 Foreign Aid/ODA Trend

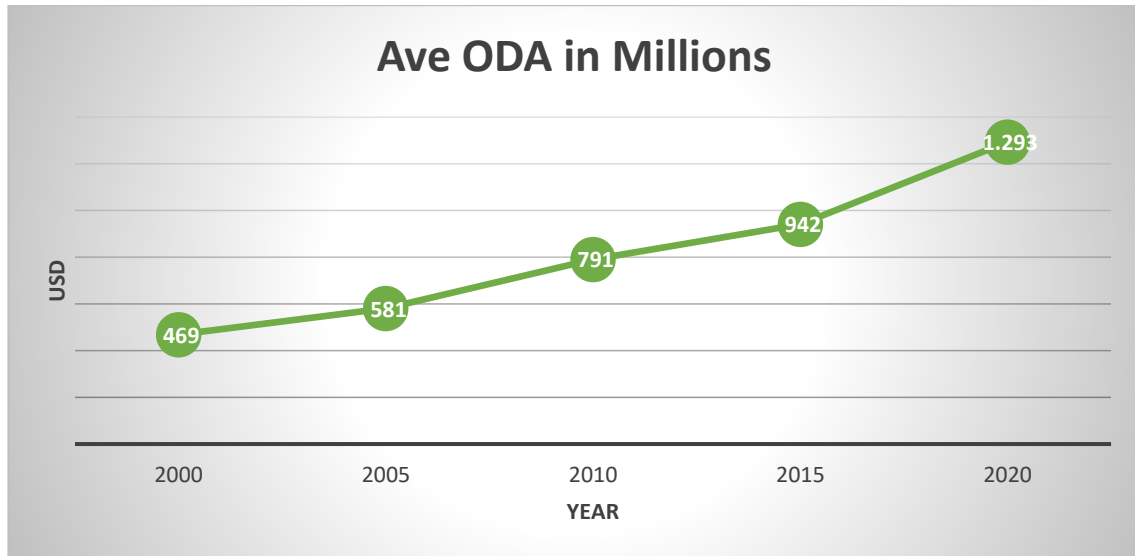


Figure 5 and figure 6 above presents the trends in average GDP growth rates and average Official Development Assistance (ODA) received (in millions of USD) for the 37 sampled African countries over the period 2000–2020. The two decades reveal distinct patterns in the interaction between aid inflows and economic performance.

From 2000 to 2010, GDP growth rose steadily from 3% on average to a peak of 6%. This coincided with moderate but consistent increases in ODA, from USD 469 million in 2000 to USD 791 million in 2010. This parallel rise in growth and aid may suggest that ODA alongside favorable macroeconomic conditions and improved political stability in some countries contributed to supporting economic performance during this decade.

However, after 2010, the relationship appears to weaken. While ODA inflows continued to grow substantially reaching USD 942 million in 2015 and peaking at USD 1.29 billion in 2020, GDP growth slowed to 3% in 2015 and fell to -2% in 2020. The

2020 contraction reflects the severe economic impact of the COVID-19 pandemic, which disrupted global trade, reduced investment flows, and strained domestic fiscal capacity across Africa.

The divergence between increasing aid volumes and declining growth in the latter decade suggests that the relationship between aid and growth is not purely linear. Structural factors such as governance quality, institutional capacity, absorptive ability, and vulnerability to external shocks likely play critical roles in determining aid effectiveness. These factors may also vary according to historical and institutional contexts, such as a country's colonial legacy.

To explore this dimension further, the econometric analysis later in this chapter applies the baseline fixed-effects model to three sub-samples based on colonial category: British colonies, French colonies, and other colonies. This disaggregated approach allows for the identification of whether the aid–growth relationship differs across these historical contexts.

Table 4.2 The Diagnostic Tests

Test Name	Purpose	Results/Significance level	Preferred Model
F-Test	To choose between FE vs OLS	F test that all $u_i=0$: $F(36, 458) = 3.41$ p-value = 0.0000	FE
BP-LM Test	To choose between RE vs OLS	$\chi^2(01) = 20.42$ p-value = 0.0000	RE
heteroskedasticity	Check for heteroskedasticity	$\chi^2(37) = 18057603.00$ Prob > $\chi^2 = 0.0000$	heteroskedasticity is present
Xtoverid Test	To choose between FE vs RE	$\chi^2 = 98.157$ p-value = 0.0000	FE

Source: Author's estimation

To make sure the best analysis or regression model is selected for our Baseline Model. Series of important and necessary diagnostic tests are done to help in selection of the best estimator or approach. The table above (Table 4.2) contains the results of some of the tests conducted and these tests includes (F-test, BP-LM test, heteroscedasticity test and Hausman (xtoverid test)).

To determine the most appropriate estimator for our baseline model (the model without the interacting term of INQ with ODA), series of diagnostic tests were conducted. These tests helped to choose between the pooled OLS, Fixed Effects (FE), and Random Effects (RE) models, and also to check for potential econometric issues such as heteroskedasticity. Below is the summary of these tests and their interpretations.

The purpose of the F-test is to determine whether the Fixed Effects (FE) model is a better fit than the Pooled Ordinary Least Squares (OLS) model. Specifically, it tests the null hypothesis that all individual-specific effects (unobserved heterogeneity) are equal to zero. In essence, it checks whether including country-specific intercepts improves model performance. The p-value of the F-test is 0.0000 which is below 0.05 therefore we reject the null hypothesis, and this implies that the Fixed Effects (FE) model is more appropriate than the Pooled OLS in this case. We conducted further test to see if the fixed effects (FE) is better than the random effects (RE) or if the other way round is better.

The second diagnostic test that is conducted is the Breusch–Pagan Lagrange Multiplier (BP-LM) Test. The BP-LM test helps in to determine between the Random Effects vs Pooled OLS. This test compares the Random Effects model to the pooled OLS model by testing whether the variance of the unobserved country-specific effect is zero. The null hypothesis of the BP-LM says that if the variance of the panel-level effect is (u_i) is zero, the Pooled OLS model is better than the random effects (RE) model. The alternative hypothesis states that if the variance of the panel-level effect is greater than zero, then the RE model is appropriate compared to the Pooled OLS model. From the table above (Table 4.2), the p-value is less than 0.05 with a chi-squared of 20.42. There we reject the null hypothesis because the p-value is highly significant. This means that the RE effects is more appropriate than the Pooled OLS model.

The F-test suggest fixed effects model and BP-LM test suggest Random effects model, we now did another test to determine which model between FE and RE is better model for our regression estimation. Prior to the Hausman test, we did a test for heteroscedasticity. The purpose of this test is to check whether the variance of the residuals is constant across observations. The presence of heteroscedasticity violates the assumptions of classical regression models and can lead to inefficient estimates. The results of our heteroscedasticity test from table 4.2 above reject the null hypothesis of homoscedasticity because the p-value of the test is significant at 0.0000. This means heteroscedasticity is present in the data. To ensure valid statistical inference, robust standard errors are used to correct for this issue in all model estimations.

With the presence of heteroscedasticity on the data. Hausman test could not work for the best model selection between FE and RE model. Therefore, we did (Xtoverid) test to check whether the FE model or the RE model is more appropriate for our estimation. The xtoverid tests whether the individual effects are correlated with the regressors. The null hypothesis is that the preferred model is Random Effects which means no correlation between the regressors. From the test results as presented in the table 4.2 with the results of other tests. The result of the xtoverid is statistically significant, therefore we reject the null hypothesis, and we adopt the fixed effects (FE) as the best estimator for our Baseline model.

Based on the results of the all the conducted diagnostic tests. Both the F-test and the Hausman (xtoverid) test favor the fixed effects (FE) model over the Pooled OLS and random effects (RE) respectively. The BP-LM test suggests that the RE model is be preferred over the Pooled OLS but the Hausman test confirms the FE as ultimately the correct choice due to correlation between regressors (independent variables) and country-specific effects. Given the presence of heteroscedasticity, to ensure reliable inference we applied robust standard errors in the FE estimation and the RE estimation.

4.2 The Results

Table 4.3 contains the Stata Regression results of OLS, FE and RE. In the table, we have the coefficient values, the significant levels and standard errors of respective variables. The table is compile by the author from the Stata Regressions output.

**Table 4.3 The OLS, Fixed Effects and Random Effects results of the baseline
model**

Variable Names	OLS	Fixed Effects	Random Effects
GDP GROWTH RATE			
ODA per GDP	12.16*** (3.871)	-1.493 (6.279)	11.72*** (4.141)
Institutional Quality	0.0242** (0.00962)	0.0722** (0.0311)	0.0242** (0.0114)
Foreign Direct Investment	0.129*** (0.0411)	0.00534 (0.0466)	0.105* (0.0582)
Trade Openness	0.00823 (0.00813)	0.0796*** (0.0184)	0.0147 (0.0095)
Primary School enrollment	0.0183** (0.00815)	0.0600*** (0.0219)	0.0285** (0.0133)
Government Expenditure on Education	-0.289*** (0.102)	-0.312 (0.306)	-0.322** (0.145)
Inflation	-0.000548 (0.0148)	-0.00404 (0.0126)	-0.00145 (0.00942)
Gross Fixed Capital Formation	0.00337** (0.00153)	0.00247 (0.00199)	0.00313* (0.00185)
Log(Population)	0.549*** (0.17)	-1.196 (1.425)	0.648*** (0.224)
_cons-	-8.058** (3.318)	10.98 (23.08)	-10.84** (4.237)
N 504	504	504	504
R-sq 0.079	0.079	0.116	
Standard errors in parentheses * p<0.10, ** p<0.05, *** p<0.01			

Source: Author's estimation

Table 4.3 contains the regression output of the OLS, FE and RE regression. The dependent variable is GDP Growth rate and the independent variables are: Official

Development Assistance as % of GDP, Government Effectiveness represent as Institutional Quality, Foreign Direct Investment (FDI as % of GDP), Trade Openness (Trade as % of GDP (exports + imports)), Primary school enrollment rate (%), Government expenditure on education as % of GDP, Inflation, Gross Fixed Capital Formation, Natural log of total population.

ODA per GDP is obtained by dividing ODA of each country for each year by the GDP (constant) of the same year. This shows the Official Development Assistance each country received as percentage of the total Gross Domestic Product. The coefficient of ODA per GDP is 12.16 under the OLS model which implies that a one percent point increase in ODA will cause GDP growth to increase by 12.16 point holding other variables constant. This is economically large and implies a positive impact of aid on growth. ODA is public investment because it passes through or comes from the central government. This increment effect shows a good sign. And again, the ODA per GDP is significant at all levels because its P value is less than 0.002 which is less than 0.01

In the same table 4.3, random effects results shows that across countries, higher aid-to-GDP causes or correlates with economic growth with every percent increment in ODA per GDP will increase economic growth by 11.72 and on the other hand, fixed effects indicates that changes in aid within countries over time do not correlates to significant economic growth with a negative relationship of 1.493. This implies cross-country differences, not within-country effects, drive the aid-growth relationship (Ram, 2004).

The fixed effects (FE) model reveals a negative and statistically insignificant coefficient for ODA per GDP (-1.49). This is in total contrast with the strongly significant and positive coefficient in both the OLS model (+12.16) and the Random Effects model (+11.72). This contradiction can be due to unobserved country-specific effects that are controlled for in the FE model but not in OLS and RE. OLS and RE models assume that time-invariant characteristics (like governance culture, colonial legacy, or natural resource) are either random or have no influence on the independent variables. In contrast, the FE model controls for all time-invariant unobserved heterogeneity, focusing only on within-country variation over time.

The positive effect of foreign aid observed in the Pooled OLS and Random Effects models supports the findings of (Burnside & Dollar, 2000), who concluded that aid can foster growth in good policy environments. Similarly, (Minoiu & Reddy, 2010) found that developmental aid is positively associated with long-term economic growth. However, the negative or insignificant coefficient in the Fixed Effects model suggests that, after accounting for country-specific effects, the growth-enhancing effect of aid is less clear. This aligns with (Easterly et al., 2004), who argue that aid's impact on growth often disappears after correcting for endogeneity and time-invariant country characteristics.

However, the OLS and RE results, which show positive and significant coefficient, provide partial support for the Two-Gap Model (Chenery, 1967), which assumes that aid can supplement domestic savings and foreign exchange to stimulate growth. The divergence between pooled and fixed-effects results reinforces the

Conditional Aid Effectiveness Hypothesis (Burnside & Dollar, 2000), which emphasizes that the impact of aid depends on the policy and institutional environment.

In the case of African context, foreign aid is often allocated to countries based on historical relationships between the donor and the recipient countries, donor preferences, or fixed geopolitical alignments that do not change over time. The OLS and RE models may be picking up these cross-country patterns, inflating the positive relationship between aid and growth. However, when we use Fixed Effects, we remove these between-country differences and observe only how changes in aid within a country over time affect growth. The negative and insignificant result from FE suggests that within a country, increases in aid over time do not systematically lead to higher growth and may even have a negative effect due to inefficiencies.

The substantial difference between the OLS coefficient (+12.16) and the FE coefficient (-1.49) for ODA per GDP highlights a potential bias in cross-sectional estimation. The OLS estimate is large and statistically significant, suggesting that countries receiving more aid tend to have higher growth rates. However, this could be due to endogeneity or omitted variable bias. For example, countries with better institutions or stronger macroeconomic performance may attract more aid and also tend to grow faster, resulting in an inflated OLS coefficient.

In contrast, the Fixed Effects model strips out time-invariant characteristics of each country and focuses only on within-country variation. The resulting to a negative and insignificant coefficient may indicate that increases in aid over time within a country

are not associated with improved growth, possibly due to problems such as poor aid management, absorptive capacity constraints, or aid volatility.

Therefore, while OLS reflects the general correlation between aid and growth across countries, FE reflects the causal impact of aid changes within a country, and the large gap between the two estimates suggests the presence of unobserved heterogeneity or omitted variables in the OLS model.

Institutional Quality an index representing Government Effectiveness it has a coefficient of 0.0242 and this means that a higher institutional quality which is government effectiveness leads to higher economic growth under the OLS model. When INQ increase by one point, this increases GDP growth by 0.0242 points. This supports the literatures that emphasize that strong institutions enhance economic performance. INQ is highly significant in this model with a P-Value of less than 0.05.

Institutional Quality (INQ) shows a positive correlation to economic growth in both the fixed effects and the random effects. The fixed effects has a higher coefficient of 0.0722 compared to the random effects with a coefficient of 0.0242. INQ is significant on both the fixed effects and the random effects. The stronger impact in fixed effects suggests that internal reforms in governance and institutions are particularly impactful to economic growth.

FDI is Foreign Direct Investment as % of total GDP of country i and time t . Under the OLS model, FDI has a coefficient of 0.129, this implies that a one percentage increase in FDI will increase GDP Growth by 0.129 point. FDI is positively associated

with growth, aligning with standard development theory and looking at its p-value of less than 1% level of significance indicates that it is significant at all levels.

FDI is positively correlated to GDP growth in both the fixed effects and the random effects but positively correlated with a higher magnitude in the random effects with every 1 percent increase in FDI, GDP growth increase by 0.105 and significant at 10% level as stated by (Balasubramanyam et al., 1996). While in fixed effects every 1 percent increase in FDI, GDP growth will have a lesser impact of only 0.00534 and not significant under FE.

Trade Openness is one of the control variables in this regression. Trade openness appears to have a positive impact on GDP growth with a coefficient of 0.00829 statistically insignificant effect because its p-value is greater than 5 % level of significance under the OLS model. Trade Openness is significant at all levels of significance under FE only and not significant in the RE model. This implies that Trade liberalization within a country over time leads to GDP growth (economic growth) but cross-country variation is not statistically significant, showing policy changes matter more than static differences. Both the FE and RE are positively correlated with GDP growth and the coefficient of Trade Openness under FE showed little bit greater impact on GDP growth whereby every percent unit movement in Trade Openness increase GDP growth by 0.0796 on the other hand, under RE a unit point movement in Trade Openness will only increase GDP growth by 0.0147 and it is not statistically significant under any level of significance.

Primary School enrollment is among the measures of what effects human capital development does to economic growth. Total number of primary school enrollment is positively related with GDP growth. One percent increase in primary school enrollment will increase GDP growth by 0.0183 though the increment is not that impactful, but it is statistically significant at 5% level of significant with a p-value of 0.026. This suggests a positive returns to human capital development under the OLS regression model. As expected, primary school enrollment under both FE and RE is positive correlated to GDP growth and highly significant at all levels of significance in FE and significant at 5% under RE. Every point increment in primary school enrollment will increase GDP growth by 0.06 points or units and any point increment in primary school enrollment will increase GDP by 0.0285 points under FE and RE respectively. This implies that, human capital development is a robust determinant of growth. The consistent result across models enhances credibility.

Surprisingly, total government expenditure on educations shows a negative correlation with GDP growth. The negative coefficient of -0.289 implies that any percent increase in government expenditure on education will decrease GDP growth by 0.257 units. This could be cause by many factors, it could be due to inefficient public spending made by governments in Africa or emergency or panic spending in poor performing economies or misallocation or corruption of public funds allocated for education. This negative impact continued to both the FE and the RE. Under both the FE and RE, government expenditure on education shows a negative correlation with GDP growth. In the FE model, every percent increase in government expenditure on

education this will reduce GDP growth by 0.312 while under RE every percent increase in government expenditure on education will reduce GDP growth by 0.322. The negative relationship or impact is slightly lesser under FE but not statistically significant but government expenditure on education is significant under RE model with a p-value of less than 5%. The negative relationship of spending on education with economic growth across countries is possibly due to inefficient spending on education of some or most of the African countries. The lack of significance in FE implies that changes in spending do not immediately yield growth.

Inflation is not statistically significant in the OLS model because it has a high p-value 0.97. Nonetheless, the coefficient of inflation shows that inflation and GDP growth are negatively related. This implies that one percent increase in inflation will decrease GDP growth by 0.000548 unit. This is as expected because inflation is usually a negative agent to economic growth. Furthermore, GDP growth shows a negative reaction from inflation under both FE and RE. The correlation between inflation and GDP growth shows that every percent increase in inflation, GDP growth will fall by 0.00404 under FE which is a negative relationship while under RE, every unit increment in inflation GDP growth will also fall by 0.00145 which shows a negative impact as well. But under either model, inflation does not have statistically significant effect on economic growth.

Gross Fixed Capital Formation (GFCF) which in short means investment in fixed capital by countries. It is positively related with GDP growth. The coefficient of GFCF of 0.00337 indicated that any one percent increment in GFCF, this will increase GDP

growth in that year by a unit of 0.00337. The increment is not much or having big impact and this might be due to inefficient government capital investment. GFCF is significant in this OLS regression with a p-value of 0.027 which is below 5% level of significance. Under the same table (table 4.3), Gross fixed capital formation (GFCF) is statistically significant to GDP growth under the RE model at 10%. With a small impact on growth on either model, the coefficient value under FE shows that every percent increment in GFCF, GDP growth will increase by 0.00247 units while GDP growth will increase by 0.00313 in every point increment under the RE. Investment in capital formation positively drives growth. This is consistent with economic theory.

$\log(\text{Population})$ is natural log of total population of respective countries. The figures were in millions and to make the analysis easy, we expressed total population in natural log form. The OLS regression in table 4.3 shows that total population of countries are highly significant with a p-value of 0.001 and total population is also highly positively related with GDP Growth whereby every percent increment in population will increase GDP growth by 0.549 percent point.

Total population is significant under RE with a coefficient of 0.648. This implies that, RE suggests countries with larger populations tend to grow faster than countries with smaller population. FE shows no statistically significant within country effect on population and furthermore, FE shows that population is negatively correlated to growth. This points to a long-term scale or demographic advantage in larger economies, rather than dynamic changes.

4.3 Variance Inflation Factor (VIF)

We did a variance inflation check after running OLS regression for a Baseline model. The VIF check is important to check if there exist a multicollinearity among our independent variables. The VIF measure to what extends or how much the variance of a regression coefficient is inflated due to correlation between independent variables (multicollinearity).

Table 4.3.1 below shows the Variance Inflation Factor of the independent variables. To assess the robustness of the regression estimates, a Variance Inflation Factor (VIF) test was conducted. The results indicate that all variables have VIF scores well below the critical threshold of 5, with a mean VIF of 1.53. The variable with the highest VIF was Trade Openness (2.76), which is still within acceptable limits. These results confirm that multicollinearity does not pose a significant concern in the model and thus supports the reliability of the regression coefficients.

Table 4.3.1 below is the Variance Inflation Factor of the variable. Its purpose is to help check if there exist a multicollinearity among our independent variables. A VIF of 10 indicates the existence of multicollinearity.

Table 4.4 (VIF)

Variable	VIF	1/VIF
Trade Openness	2.76	0.362204
Log(Population)	2.17	0.459968
Institutional Quality	1.57	0.636489

ODA per GDP	1.49	0.669322
Government Expenditure on Education	1.39	0.720051
Foreign Direct Investment	1.19	0.842804
Primary School enrollment	1.11	0.902754
Inflation	1.03	0.966447
Gross Fixed Capital Formation	1.02	0.976384
Mean VIF	1.53	

Source: Author's estimation.

Table 4.3.2 is the Coefficient Correlation Test. The test is to ensure there is no overlap issue between concerning variables.

Table 4.5 Coefficient Correlation Check

Check for overlap		
	Foreign Direct Investment	Gross Fixed Capital Formation
Foreign Direct Investment	1	
Gross Fixed Capital Formation	0.0464	1
	Primary School enrollment	Government Expenditure on Education
Primary School enrollment	1	
Government Expenditure on Education	0.3294	1

Source: Author's estimation

To ensure that we can have any overlap issue between FDI and GFCF or Primary School Enrollment and Government Expenditure on Education, we did a correlation coefficient check for those variables and the results indicates that there is no overlap issue between them as the correlation between them is 0.04 and 0.03, which is below 0.7.

4.4 The Diagnostic Test

Table 4.3.3 shows the results of four (4) diagnostic tests. Through this test, we were able to determine the best estimation method for a data. The table is compile by the author from the results of the Stata.

Table 4.6 Diagnostic Test Results

Test Name	Purpose	Results/Significance level	Preferred Model
F-Test	To choose between FE vs OLS	F test that all $u_i=0$: $F(36, 457) = 3.42$ p-value = 0.0000	FE
BP-LM Test	To choose between RE vs OLS	$\chi^2(01) = 10.99$ p-value = 0.0005	RE
heteroskedasticity	Check for heteroskedasticity	$\chi^2(37) = 36053.86$ Prob > $\chi^2 = 0.0000$	heteroskedasticity is present
Xtoverid Test	To choose between FE vs RE	Sargan-Hansen statistic 125.900 p-value = 0.0000	FE

Source: Author's estimation

Similar to what is done for the Baseline Model. We also did the same diagnostic tests to determine the most appropriate econometric estimation technique for the

extended or interacting model which includes an interaction term between foreign aid (ODA) and institutional quality (INQ). A series of diagnostic tests were conducted. These tests are critical in panel data analysis as they guide the selection of a model that accounts for the structure and nature of the dataset while ensuring consistency, efficiency, and robustness of the estimated parameters. The following presents a detailed interpretation of the diagnostic test results, explaining the rationale for the final model selection. The F-test shows that the Fixed Effects model is preferred over Pooled OLS for the interaction model with a p-value of 0.0000. The BP-LM suggest that the Random Effect is more appropriate than the Pooled OLS for the Interaction Model. To choose between the FE and the RE, Hausman Test (Xtoverid) is conducted on that purpose. This test also shows The FE the perfect estimation technique for the interacting model.

Test for Heteroskedasticity was also conducted. The result is strongly significant, indicating that heteroskedasticity is present in the model. This violates the assumption of constant variance, meaning that robust standard errors must be used to correct for this issue and ensure that statistical inferences remain valid and reliable. The final preferred model is the Fixed Effects Estimation with Robust Standard Errors.

4.4 OLS, FE and RE Results for the Interaction Model

Table 4.4 below contains the Stata Regression results of OLS, FE and RE for our interaction model. In the table, we have the coefficient values, the significant levels

and standard errors in parenthesis of all the variables. The table is compile by the author from the Stata Regressions output.

Table 4.7 OLS, FE and RE Results for the Baseline plus the Interaction Term

Variable Name	OLS	Fixed Effects	Random Effects
GDP Growth rate			
ODA per GDP	3.378	11.28	7.148
	(5.791)	(11)	(5.223)
ODA per GDP*INQ	0.335**	-0.607*	0.188
	(0.165)	(0.336)	(0.162)
Institutional Quality	0.00908	0.115***	0.0152
	(0.0121)	(0.0321)	(0.0136)
Foreign Direct Investment	0.125***	0.00778	0.108*
	(0.041)	(0.0459)	(0.0581)
Trade Openness	0.00893	0.0760***	0.0139
	(0.00811)	(0.0188)	(0.00989)
Primary School Enrollment	0.0161*	0.0616***	0.0254*
	(0.00819)	(0.0213)	(0.0133)
Government Expenditure on Education	-0.254**	-0.308	-0.297**
	(0.103)	(0.309)	(0.142)
Inflation	-0.000957	-0.00325	-0.00171
	(0.0148)	(0.012)	(0.00962)
Gross Fixed Capital Formation	0.00341**	0.00237	0.00318*
	(0.00152)	(0.00197)	(0.00184)
Log(Population)	0.508***	-1.493	0.609***
	(0.17)	(1.427)	(0.219)
_cons	-6.851**	14.61	-9.680**
	(3.361)	(22.78)	(4.253)
N	504	504	504

R-sq	0.086	0.124	
Standard errors in parentheses			
* p<0.10, **p<0.05, *** p<0.1			

Source: Author's estimation

4.5 Model Overview: Understanding the Interaction

The addition of the interaction term (ODA per GDP $\times$ INQ) allows us to test whether the effect of foreign aid on economic growth depends on the level of institutional quality or not. This is important in light of existing literature that argues aid is more effective in countries with better governance.

When the interaction of INQ on ODA is included in the model, the variable ODA per GDP shows that, aid alone is not statistically significant under any model (OLS, FE or RE). This suggest that, aid alone does not have a robust direct effect on GDP growth once the institutional context is considered in the model.

The interaction term (ODA per GDP $\times$ INQ) from table 4.4, it is negative and statistically significant under the Fixed Effects Model at 10%. This means or implies that, for every one unit change in (ODA per GDP $\times$ INQ), GDP growth will reduce by 0.607 percentage point change in GDP growth. This means, within countries over time, the impact or effectiveness of foreign aid on economic growth reduces as institutional quality increases. This is not the expectation but looking at the coefficient of the (ODA per GDP) under the Fixed Effects under the baseline model when the interaction term is not included in the model and when the interaction term (ODA per GDP $\times$ INQ) is included in the second model. We can see that under the baseline model, the coefficient of ODA per GDP is -1.493 and in the second model, after the introduction of the

interaction term, the coefficient of ODA per GDP is now 11.28 under the Fixed Effects. Looking at the idea or concept of using the baseline model and the interaction model. The idea is to observe the coefficient of ODA per GDP when there is no interaction term and when there is an interaction term. The impression is that when the coefficient of ODA per GDP rise when the interaction term is introduced, that means institutional quality have a positive impact. The other way round, if the coefficient of ODA per GDP falls when the interaction term is introduces, then it means institutional Quality causes a negative effect. Therefore, we can see that the coefficient of foreign aid (ODA per GDP) under the Fixed Effects, increases from -1.493 from the Baseline model to 11.28 when the interaction term is included in the second model. Therefore, based on the coefficient impact, we conclude that the interaction of Institutional Quality of aid causes positive impact this is in line with the findings of (Burnside & Dollar, 2000). Nonetheless, ODA per GDP is not statistically significant in either the Baseline or the interaction (second) model.

This result may appear counterintuitive, but it is not unusual, its possible meaning can be foreign aid maybe more effective in low-institutional settings where external resources or aid substitute for weak institutions Bräutigam & Knack (2004), Conversely, as argued by Burnside and Dollar (2000) it might implies that countries with better institutions may already have alternative growth mechanisms, making aid less impactful. The FE model isolates within-country changes, possibly showing that increasing aid in an already well-governed country does not yield additional growth. In contrast, RE models show no significant interaction effect, meaning that between-

country differences do not reveal a consistent moderating role for institutions on aid effectiveness.

Institutional Quality is still positive with a coefficient of 0.115 under the FE model and statistically significant under all levels of significance. Under the fixed effects model, the larger coefficient of 0.115 confirms that within country improvements in government effectiveness matter substantially for growth. Yet still, INQ is positively correlated to GDP growth under the OLS and Random effects model with a coefficients of 0.009 and 0.0152 respectively. But under OLS and Random Effects, INQ is not statistically significant.

Foreign Direct Investment as a ratio of GDP is positive across all the models and statistically significant under OLS and RE model. Its coefficient under OLS and RE are 0.125 and 0.108 which implies that a one percent increment on FDI will increase GDP growth by 0.125 and 0.108 respectively. Under the FE, any one percent increase in FDI, GDP growth will increase by 0.00778 but this is not significant to GDP Growth.

Trade Openness is positive and significant under FE only. That implies that trade liberalization within countries leads to economic growth. The coefficient of trade openness under FE model is 0.076 and this means that a percent increase in trade will increase growth by 0.076 units, and this is statistically significant to GDP growth under FE model. Though both OLS and RE models shows a positive correlation to GDP Growth but not statistically significant.

As it appeared based on positive correlation and its significant in the baseline model (the model without the interaction term). Total percent of school enrollment is yet still statistically significant and positively correlated to GDP growth. It is significant under 1% under OLS while significant under all levels for FE and 10% under RE. The highest correlation level (higher coefficient) is under the FE with a coefficient of 0.0616 followed by RE with a coefficient of 0.0254 and finally the OLS with a coefficient of 0.0161. The FE has a higher magnitude impact of every point rise in percentage of primary school enrollment, this will increase GDP growth by 0.0616 while any point rise in percentage of school enrollment, under the RE GDP growth will only rise by 0.0254. Therefore, Primary School Enrollment in African countries robustly significant across all models (OLS, FE and RE) thus human capital development is a consistent driver of growth in African countries.

Government Spending on Education is still negative in all the models but only statistically significant under OLS and RE at 5%. This still reaffirms or reflects that misallocation of public funds inefficient investment regarding government expenditures on education in Africa. Under OLS, the coefficient is -0.254, FE is -0.308 which is the highest and -0.297 under the RE. Under both the baseline model and the model with the interaction term of Institutional Quality, total government expenditure on education in African countries shows negative correlation across all the models.

Inflation shows a negative relationship with GDP growth under the OLS, FE and RE model. But statistically inflation is not a significant element to GDP growth according to the model.

GFCF is positive and not under FE but significant under OLS and RE. In the first model (Baseline) it was 10% for RE. This perhaps can imply that long-term structural investment differences matter more than short-term fluctuations.

Total Population is positive and significant in OLS and RE, negative and insignificant in FE. The same as it happened under the baseline model. This likely shows that population size is a huge advantage across African countries.

4.6 The Baseline Regression Analysis for Colonies in separate groups

Fixed Effects regression analysis is done for African countries based on colonial origin. The countries are divided into three colonial groups namely (England Colonies, French Colonies and Other African nations Colonies). A column is created in the form of Colonial-Category, African countries that are categories as former England colonies are represented with number one (1), former French colonies are represented with number two (2) and number three (3) is representing other countries who are neither colonies by England nor by the French.

The table below contains the regression output based on colonial categories. The first column represents the fixed effects regression output for England colonies, followed by the second column which is for French colonies, and the final column contains the fixed effects regression output for other colonies.

Table 4.5 contains the Stata Regression results of FE only for each colonial group. In the table, we have the coefficient values, the significant levels and standard errors

of respective variables for the English, French and other colonies. The table is compile by the author from the Stata Regressions output.

Table 4.8 Fixed Effects for England, French and other colonies

	(Eng Colonies)	(Fra Colonies)	(Other Colonies)
GDP Growth rate			
ODA per GDP	-1.07	-15.19*	13.36*
	(15.48)	(7.554)	(6.312)
Institutional Quality	0.130*	0.0486	-0.0123
	(0.0613)	(0.0355)	(0.0393)
Foreign Direct Investment	-0.0175	-0.113	-0.0389
	(0.0752)	(0.0798)	(0.073)
Trade Openness	0.128**	0.0133	0.0710**
	(0.044)	(0.0247)	(0.0315)
Primary School Enrollment	0.0335	0.0934**	0.0641***
	(0.062)	(0.0367)	(0.0155)
Government Expenditure on Education	-0.434	-0.314	0.137
	(0.439)	(0.211)	(0.26)
Inflation	0.0146	-0.033	-0.0329
	(0.0129)	(0.0639)	(0.0422)
Gross Fixed Capital Formation	0.000559	0.0984***	0.0778**
	(0.00181)	(0.0315)	(0.0273)
Log(Population)	-0.535	-0.00531	0.593
	(3.498)	(1.898)	(1.32)
_cons	-3.766	-4.536	-18.77
	(55.57)	(29.2)	(21.51)
N	144	204	156
R-sq	0.156	0.301	0.291
Standard errors in parentheses			
* p<0.10, ** p<0.05, *** p<0.01			

Source: Author's estimation

4.7 Objective of the Separated Analysis

The objective or the idea behind this analysis as highlighted under the methodology of the research, is to examine whether the impact of foreign aid (ODA) and other growth determinants varies across different colonial backgrounds or settings. Colonial history and effect on African countries has left persistent imprints on African institutions, legal systems, educational structures and human and administrative capacity. All of these can in one way or the other influence how foreign aid translate into economic growth. The regression for the colonial groups is done with the Baseline Model only as from the data on government effectiveness, we already show that the British colonies have better governance system than the Former French colonies and as supported by (Acemoglu et al., 2021)

Comparative Analysis among Colonial Categories:

Effect on Foreign Aid on GDP Growth:

1. England Colonies: ODA per GDP has a negative and statistically insignificant effect on GDP growth in English colonies. Furthermore, the correlation between ODA and economic growth is negative with a coefficient value of -1.07 this implies that for English colonies, an increase in foreign aid do not lead to improvement in economic over time. The coefficient on ODA per GDP being negative and statistically insignificant, suggesting that in this group, aid's impact on growth is minimal. This

result resonates with the argument in (Acemoglu et al., 2021) that variations in colonial institutions have had lasting effects on economic performance.

2. French Colonies: Compared to the English colonies, a stronger negative coefficient - 15.19 is found for French colonies. ODA per GDP is statistically significant to growth under 10% but indicting a possible trend of aid ineffectiveness in French colonial countries. Every unit increase in foreign; this will cause I negative decline on GDP growth by 15.19 units which is far more than the decline recorded by the English colonies. The higher negative coefficient indicates a pattern that supports the view that institutional quality shapes the effectiveness of foreign aid, as discussed in (Burnside & Dollar, 2000).
3. Other Colonies: the ODA per GDP for other colonies shows a positive and large coefficient of 13.36, though statistically significant at 10% level in the model. This might be hinting to a potentially different dynamic compared to Anglophone and Francophone countries. For the other colonies category, the large impact of the coefficient may reflect greater heterogeneity in governance systems and policy environments, which can influence the absorptive capacity for aid. Overall, the observed differences across colonial categories are consistent with the institutional legacy perspective outlined in Chapter 2, which emphasizes that historical governance structures continue to influence contemporary economic outcomes and the role of aid in fostering growth.

Implication: While ODA is statistically not significant under England colonies, these directional patterns may reflect historical-institutional differences:

Former British colonies typically had common law systems and indirect rule, fostering somewhat better institutions compared to former French colonies with a disadvantage colonial law (Acemoglu et al., 2021).

French colonies were often subjected to centralized and direct rule, which may have stifled local institutional development and the huge negative correlation of foreign aid on growth might be because of such bad system on French Colonies.

Other colonies (e.g., Portuguese, Belgian, or independent African countries) might exhibit stronger and independent institutional environments, making aid more contextually effective in some of these countries.

Effect of Institutional Quality of Economic growth:

Institutional Quality is not statistically significant across all the colonial groups except under England colonies which is significant at 10% level of significance. This gives the suggesting or implication that within country changes in institutional performance are not robust drivers of economic growth when colonial grouping is help constant under French colonies. English and French colonies show a positive correlation while other colonies show a negative coefficient. This result may reflect deeper structural constraints inherited from colonial institutions that affect how institutions evolve and function.

Effect on Foreign Direct Investment on Growth:

Foreign Direct Investment which is investment from the private sector or individual to the state. It has similar characteristics with ODA. It is also not statistically significant

in any of the colonial groups and even negative for all the colonies. This implies that FDI does not contribute to economic growth to these African nations. We know that political instability or ineffective regulatory undermines FDI impact or better still institutional factors dilute the growth effect of FDI on the economy.

Effect of Trade Openness on Economic Growth:

Trade Openness is also another variable that is positively correlated to economic growth and statistically significant to economic growth under England colonies and other colonies. Again, it is not significant under French colonies or other African colonies. Trade openness under British colonies has the highest level of impact to GDP growth with a coefficient of 0.128 which implies that under British colonies, every single unit increase in trade openness this will increase economic growth by 0.128 units. The second-best region beside the British colonies are the other countries that do not fall on neither England nor French colonies. Under the other colonies, GDP growth will a total of 0.710 units for every increase in trade openness holding all other factors constant. The correlation between trade openness and economic growth is least impactful under French colonies with the lowest level of coefficient level of 0.0133, this implies that trade openness under French colonies only impact economic growth by 0.00133 units with every single unit increase and this is not even statistically significant to the model. This shows that better and greater integration into the world market or economy supports economic growth, but this positive benefit does not extend equally across colonial groups in Africa. This could be because of the reason that French colonies in Africa have worst institutions in Africa compared to the England

and other colonies who have better trade infrastructure and market friendly policies as lamented by (Acemoglu et al., 2021).

Effect on total number of primary school enrollment to economic growth:

Primary school enrollment is strongly significant and positively correlated to GDP growth under French and Other colonies in Africa. Yet still it is positive and not statistically significant under England colonies. Education contributes robustly to growth in French colonies and other African colonies regions perhaps due to easy access to education or higher returns to new investment in education. Under French and other colonial countries or region in African countries, GDP growth will increase by 0.0934 and 0.0641 units for each unit increase in primary school enrollment respectively. Human capital formation and development through basic education is strongly a wheel for growth in French and other colonies but not significant under England colonies might be lower marginal returns.

The Effect on Total Government Expenditure on Education Economic Growth:

In contrast to primary school enrollment, expenditure of education by African countries shows a surprising and negative impact to growth. Insignificant to all the three groups and again negatively correlated to growth for both England colonies and French colonies. Just slightly positive under other African colonies. The highest negative impact correlation recorded by African countries under the category of England colonies with a coefficient of -0.434 and French colonies with a coefficient of -0.314. This implies that, an increase in government spending on education under the England

colonies or the French colonies, this will not lead to growth but rather GDP growth will go the other way round by declining by 0.434 and 0.314 under England and French colonies respectively. This in a nutshell points to inefficiencies in public spending on education or partial or total misallocation of public funds meant for boosting education in some of the African countries.

Effect of Inflation on Economic Growth:

Inflation is only statistically significant and negative on French and Other colonies with an inverse correlation of 0.0330 and 0.0329 respectively, it also shows a negative correlation in French colonies but not significant under no level. This implies higher vulnerability to price instability on those African colonies and macroeconomic instability negatively affects economic growth. In England colonies, inflation does not seem to affect economic growth significantly. Possibly this is reflecting better and stronger monetary policy in former British colonies.

The Effect of Gross Fixed Capital Formation (GFCF) to Economic Growth:

GFCF is highly significant under 1% and 5% level of significant in French colonies and other colonies in Africa. Under England colonies, GFCF is statistically not significant. Nonetheless, it is positively correlated to economic growth for all the regions. French colonies and other colonies show higher impact to economic growth with any point increase in GFCF, GDP growth will rise by 0.984 points and 0.0778 points respectively. This implies that investment in Capital is a key economic growth driver and French and other colonies shows productive utilization of capital. Though

GFCF is not statistically significant under England colonies but shows a positive correlation of every unit increase in GFCF, GDP growth will increase by 0.000559 units.

Effect of Total Population to Growth:

Total population based on colonial category is not statistically significant in any group. However, correlation pattern or signs differ. Impact of population to growth is negative in both England and French colonies and positive in other region. This may be due to difference in demographic pressure or efficiency in productivity level.

Model Fit:

R-squared is highest under French colonies of 30.1% variation in the GDP growth (dependent variable) is explained by the independent variables within-country and 29.1% of variation in GDP growth is explained by the independent variables under other colonies. England colonies have the lowest R-squared of only 15.6% of the total variation in the dependent variable (GDP growth) are explained by the independent variables.

CHAPTER V

CONCLUSION AND RECOMMENDATION

In this chapter we provide a comprehensive conclusion to this research. This chapter synthesizes the main empirical findings presented in Chapter four (4) of this research (Findings and Discussions) and reflects on their broader implications. In this chapter, we also discuss how the findings contribute to existing literature, outlines key policy recommendations, and highlights the limitations of our study as well as areas for further research. The primary aim of our research was to investigate the extent to which foreign aid impacts economic growth in African countries and how institutional quality proxy by government effectiveness modulates the relationship between foreign aid and economic growth.

5.1 Summary of Our Key Findings

The results presented in chapter four (4) of the empirical analysis provided mixed but insightful conclusions regarding the impact of foreign aid on economic growth and the interactive role played by government effectiveness. Descriptive statistics revealed that while African countries receive substantial levels of aid as a percentage of GDP, they exhibit substantial variation in institutional quality and macroeconomic performance.

From the baseline OLS model, foreign aid (ODA per GDP) was found to have a strong and statistically significant positive relationship with GDP growth. The coefficient indicated that a 1 percentage point increase in aid relative to GDP was

associated with a 12.16 percentage point increase in economic growth. This large magnitude, however, necessitated caution given the potential for omitted variable bias or cross-sectional dependence.

Beside from the OLS estimates, fixed effects (FE) and random effects (RE) models offered wider view. While the RE model continued to show a positive and significant link between aid and growth, the FE model revealed a negative and statistically insignificant coefficient. This discrepancy suggests that the positive association observed in OLS and RE models may be driven by cross-country differences rather than within-country changes over time.

Institutional Quality on its individual impact shows that within-country improvement in governance have a better and meaningful effect on development. But the issue is majority of African countries are doing quiet poor when it comes to the effectiveness of their governance. On average, many African nations fall far too low in terms of good governance, and this opens door for more corruption and mismanagement of public funds.

Looking at what moderating role government effectiveness played on aid impact to growth in our results, this shows a more insight to this research. In the fixed effects (FE) model, this interaction was negative and statistically significant, suggesting that the marginal effect of aid on growth diminishes as institutional quality increases. However, this was accompanied by a reversal of the aid coefficient from negative in the baseline fixed effects (FE) model to strongly positive in the interaction model,

indicating that institutional quality plays an important conditioning role to the impact that aid does to economic growth.

In the separate or subgroup analysis based on the colonial history of the countries. This subgroup findings revealed differences based on what impact foreign aid has from one colony to another. Foreign aid indicates a strongly negative and significant impact in French colonies in Africa. On the contrary, British shows insignificant but a very weak negative effect of foreign aid to growth. This might confirm the claim of (Acemoglu et al., 2021) that British colonies inherit better governing institution from their former colonial masters than the French colonies who are left with weak institution by the French system of governance. This support the idea that the effectiveness of foreign aid is influence by the structures of historical institutions. But surprisingly, in terms of colonial backgrounds. African countries who neither fall on British or French seems to be doing very well in terms how impactful aid does to their economic growth. This may be due many factors, and the factors are including good institutions that governs some of these countries.

Beside to foreign aid, this research shows that there are other development factors that contribute or could be essential in contributing to economic growth. African countries should also utilize should factors to see a balance economy rather than the two much dependency on the outside world to develop. There is need to expand the trade openness as this factor is a developing agent of growth and to increase the literacy rate as education is one of the most efficient driving factors of growth.

5.2 Policy Recommendations

Despite the high levels of Official Development Assistance (ODA) received by African countries over the decades, economic growth across the continent remains modest and uneven. Many Sub-Saharan African nations continue to face structural economic weaknesses, widespread poverty, limited industrialization, and heavy dependence on external funding. This paradox of substantial foreign aid inflows alongside low or stagnant economic performance calls for a re-evaluation of how aid is utilized and integrated into national development strategies.

This study's findings reinforce the importance of improving the quality of institutions and aligning foreign aid with effective governance to maximize its impact. The interaction effect between institutional quality and aid suggests that aid is more likely to contribute positively to growth when countries have stronger institutions. Therefore, any long-term development strategy in Africa should prioritize both internal reforms and strategic aid utilization.

The sad reality is the inefficient utilization of most foreign aid that are sent to African countries for the purpose of development. This and many other factors raise alarm to high level of corruption in most African governments. Witnessing the cut or huge reduction of foreign aid to developing countries. How will the cripple African countries that are mostly foreign aid dependent. There is a big expectation that many African countries will learn a big lesson and be aid independent and not aid dependent

for their own development. There are a lot of things or factors those African nations should improve on to realized development. These factors are not only limited to:

1. Enhance Institutional Quality: Strengthening public institutions and empowering private investors, reducing corruption, and improving bureaucratic efficiency should be a priority policy in African countries as government effectiveness showed a significant positive correlation to growth.
2. Aid utilization: The empirical results of this study reveal a mixed impact of foreign aid on economic growth in Africa. This suggests that the effectiveness of foreign aid is not uniform and may depend on institutional and country-specific factors. To enhance the developmental impact of foreign aid, governments should strengthen institutional structures that oversee aid utilization. Specifically:
 1. Trustworthy and autonomous agencies should be established to manage foreign aid, ensuring that funds are allocated and implemented transparently.
 2. Aid effectiveness is highly contingent on institutional quality, as shown in the interaction term between ODA and institutional quality. Therefore, governments must commit to good governance, policy coherence, and institutional reform as prerequisites for aid effectiveness.
 3. Donor agencies should also adopt conditional aid disbursement mechanisms, linking aid to verifiable governance benchmarks, transparency, and measurable development outcomes.

4. Additionally, donors should implement monitoring and evaluation frameworks to ensure that disbursed funds are not diverted or misused but are aligned with the stated development goals.
3. **Improve Educational Spending Efficiency:** As revealed by the findings of this research, government expenditure on education in respective African countries shows to be having negative impact in the economy. Though increase in primary school enrollment shows positive but all this indicates misallocation of public funds meant for education development in African countries or total inefficiency in public fund handling. To ensure that education budgets are transformed to actual improvement in learning and skills development in African countries, public finance reforms are needed. Without public finance reforms, it will be difficult to ensure effective utilization and implementation of education funds and projects in African nations.
4. **Promotion of Trade Integration and Encouragement of Productive Investment:** In most of our model, trade openness positively impacts economic growth. Policymakers should promote infrastructure development and invite higher trade capacity with our partners, and they should reduce or remove trade barriers and create favorable links to ease import and export to integrate African economies into global markets. Another line of improvement can be African governments should channel resources into public infrastructures and encourage and foster private sector or foreign direct investment. This will help in stimulating industrial development and more job creation for the employed population.

5.3 Research Contribution

This research contributes to the empirical studies on aid impact in so many ways. This research incorporate interaction between institutional quality and foreign aid; this provides more robust and understanding of the conditional effect of foreign aid on growth. The findings of this research challenge the assumption that foreign aid always produce good outcome, and it suggest that foreign aid impact is shape by institutional settings.

Another contribution is that this study extends the literature by conducting a colonial background or group specific analysis. The study highlights how inherited colonial settings continue to influence institutional functions and economic performance in Africa.

5.4 Study Limitation

While this study presents valuable findings, it is not without limitations. To begin with, although fixed effects (FE) models control for time-invariant unobserved heterogeneity, but they do not account for all forms of endogeneity, such as reverse causality between aid and growth. Future research might employ instrumental variable (IV) approaches or generalized method of moments (GMM).

Second, the measure of institutional quality used (government effectiveness) this captures only one aspect of institutional function. Other dimensions like rule of law, corruption control, and political stability could also influence aid outcomes and deserve

further study which future researchers can use to have more overview on institutional quality.

Third, data availability limited the number of countries and years included, and issues such as missing data could bias estimates. Perhaps future researchers can also increase the time span of the data to capture more African countries and do more analyses based on different geographical locations across Africa.

5.5 Final-Conclusion

This research finds that while foreign aid has the potential to support economic growth in Africa countries, its effectiveness is also conditional on institutional quality. Government effectiveness amplifies the impact of aid, depending on country context. The positive association between aid and growth observed in pooled models is not always sustained in fixed-effects analyses, underlining the importance of internal institutional dynamics.

REFERENCES

- Acemoglu, D., Johnson, S., & Robinson, J. A. (2021). The colonial origins of comparative development: An empirical investigation. *American Economic Review*, 91(5), 1369–1401. <https://doi.org/10.1257/aer.91.5.1369>
- Adebayo, T. S., & Beton Kalmaz, D. (2020). Ongoing debate between foreign aid and economic growth in Nigeria: A wavelet analysis. *Social Science Quarterly*, 101(5), 2032–2051. <https://doi.org/10.1111/ssqu.12841>
- Adusei, E. (2020). The impact of foreign aid on economic growth in sub-Saharan Africa: The mediating role of institutions. *Journal of African Development*, 22(2), 45–67.
- Alesina, A., & Dollar, D. (2000). Who gives foreign aid to whom and why? *Journal of Economic Growth*, 5(1), 33–63. <https://doi.org/10.1023/A:1009874203400>
- Anderson, J. B. (2008). Faith and U.S. foreign assistance policy. *The Review of Faith & International Affairs*, 6(3), 21–24. <https://doi.org/10.1080/15570274.2008.9523349>
- Arndt, C., Jones, S., & Tarp, F. (2010). Aid, growth, and development: Have we come full circle? *Journal of Globalization and Development*, 1(2). <https://doi.org/10.2202/1948-1837.1121>
- Askarov, Z., & Doucouliagos, H. (2015). Development aid and growth in transition countries. *World Development*, 66, 383–399. <https://doi.org/10.1016/j.worlddev.2014.08.014>
- Azam, M., & Feng, Y. (2021). Does foreign aid stimulate economic growth in developing countries? Further evidence in both aggregate and disaggregated samples. *Fudan Journal of the Humanities and Social Science*, 56(2), 533–556. <https://doi.org/10.1007/s11135-021-01143-5>

- Balasubramanyam, V. N., Salisu, M., & Sapsford, D. (1996). Foreign direct investment and growth in EP and IS countries. *The Economic Journal*, 106(434), 92.
<https://doi.org/https://doi.org/10.2307/2234933>
- Berthault Moreira, S. (2005). Evaluating the impact of foreign aid on economic growth: a cross-country study. *Journal of Economic Development*, 25(2).
- Boone, P. (1996). Politics and the effectiveness of foreign aid. *European Economic Review*, 40(2), 289–329. [https://doi.org/10.1016/0014-2921\(95\)00127-1](https://doi.org/10.1016/0014-2921(95)00127-1)
- Boycko, M., Shleifer, A., & Vishny, R. W. (1996). Second-best economic policy for a divided government. *European Economic Review*, 40(3–5), 767–774.
[https://doi.org/10.1016/0014-2921\(95\)00087-9](https://doi.org/10.1016/0014-2921(95)00087-9)
- Bräutigam, D. A., & Knack, S. (2004). Foreign aid, institutions, and governance in Sub-Saharan Africa. *Economic Development and Cultural Change*, 52(2), 255–285.
<https://doi.org/https://doi.org/10.1086/380592>
- Burke, P. J., & Ahmadi-Esfahani, F. Z. (2006). Aid and growth: A study of South East Asia. *Journal of Asian Economics*, 17(2), 350–362.
<https://doi.org/10.1016/j.asieco.2006.02.006>
- Burnside, C., & Dollar, D. (2000). Aid, policies, and growth. *American Economic Review*, 90(4), 847–868. <https://doi.org/10.1257/aer.90.4.847>
- Carruth, L., & Freeman, S. (2021). Aid or exploitation?: Food-for-work, cash-for-work, and the production of “beneficiary-workers” in Ethiopia and Haiti. *World Development*, 140, 105283. <https://doi.org/10.1016/j.worlddev.2020.105283>

- Chenery, H. B. (1967). Foreign assistance and economic development. In *Capital Movements and Economic Development* (pp. 268–292). Palgrave Macmillan UK.
https://doi.org/10.1007/978-1-349-15238-4_9
- Crosswell, M. J. (1998). *The development record and the effectiveness of foreign aid*. U.S. Agency for International Development.
https://books.google.co.id/books?hl=en&lr=&id=A5JNAQAAMAAJ&oi=fnd&pg=PA1&dq=Crosswell+1998+foreign+aid&ots=9S5mzQtoVO&sig=VvXrVt8SKNOSbKSXJVMg1TyuSmc&redir_esc=y#v=onepage&q=Crosswell%201998%20foreign%20aid&f=false
- Cungu, A., & Swinnen, J. (2003). The impact of aid on economic growth in transition economies: an empirical study. In *Katholieke Universiteit Leuven, LICOS Centre for Transition Economics, Leuven* (LICOS Discussion Paper No. 128).
<https://hdl.handle.net/10419/74858>
- Domar, E. D. (1946). Capital expansion, rate of growth, and employment. *Econometrica*, 14(2), 137. <https://doi.org/10.2307/1905364>
- Durbarry, R., Gemmell, N., & Greenaway, D. (1998). New evidence on the impact of foreign aid on economic growth. *Center for Research in Economic Development and International Trade*.
- Easterly, W., Levine, R., & Roodman, D. (2004). Aid, Policies, and Growth: Comment. *American Economic Review*, 94(3), 774–780.
<https://doi.org/10.1257/0002828041464560>
- Ekanayake, E. M., & Chatrna, D. (2010). The effect of foreign aid on economic growth in developing countries. *Journal of International Business and Cultural Studies*.

- Fasanya, I. O., & Onakoya, A. B. O. (2012). Does foreign aid accelerate economic growth? An empirical analysis for Nigeria. *International Journal of Economics and Financial Issues*, 2(4), 423–431. www.econjournals.com
- Griffin, K. B., & Enos, J. L. (1970). Foreign assistance: Objectives and consequences. *Economic Development and Cultural Change*, 18(3), 313–327. <https://doi.org/10.1086/450435>
- Gupta, S., Pivovarsky, A., & Tiongson, Er. R. (2004). *Foreign aid and revenue response: Does the composition of aid matter?* International Monetary Fund. [https://books.google.co.id/books?hl=en&lr=&id=kF4YEAAAQBAJ&oi=fnd&pg=PP1&dq=Gupta,S.,+Clements,+B.+and+Pivovarsky,+A.+\(2004\),+Foreign+Aid+and+Revenue+Response+:+Does+the++Composition+of+Aid+matter+%3F+In+:+Gupta+,S.,+Clements+,B.+and+Inchauste+,G.+\(ed.\)+Helping+Countries++Develop:+The+role+of+Fiscal+Policy,+International+Monetary+Fund.&ots=IVYrtHXHG4&sig=qRJfX9C4vjfv9-54wmdGggF7nTY&redir_esc=y#v=onepage&q&f=false](https://books.google.co.id/books?hl=en&lr=&id=kF4YEAAAQBAJ&oi=fnd&pg=PP1&dq=Gupta,S.,+Clements,+B.+and+Pivovarsky,+A.+(2004),+Foreign+Aid+and+Revenue+Response+:+Does+the++Composition+of+Aid+matter+%3F+In+:+Gupta+,S.,+Clements+,B.+and+Inchauste+,G.+(ed.)+Helping+Countries++Develop:+The+role+of+Fiscal+Policy,+International+Monetary+Fund.&ots=IVYrtHXHG4&sig=qRJfX9C4vjfv9-54wmdGggF7nTY&redir_esc=y#v=onepage&q&f=false)
- Hadjimichael, M. T., Muehleisen, Ucer, & Nord, R. (1995). *Sub-Saharan Africa: growth, savings, and investment, 1986-93*. International Monetary Fund.
- Harrod, R. F. (1938). Scope and method of economics. *The Economic Journal*, 48(191), 383–412. <https://doi.org/https://doi.org/10.2307/2225434>
- Hayek, F. A. (1960). *The constitution of liberty*. The Institute of Economic Affairs. <https://iea.org.uk/sites/default/files/publications/files/Hayek%27s%20Constitution%20of%20Liberty.pdf>
- Ian, M., & Sam, H. (2025, February 11). *Which countries are most exposed to US aid cuts; and what other providers can do*. Center for Global Development.

<https://www.cgdev.org/blog/which-countries-are-most-exposed-us-aid-cuts-and-what-other-providers-can-do>

Ijaiya, G. T., & Ijaiya, M. A. (2004). Foreign aid and poverty reduction in sub-Saharan Africa: a cross-country investigation. *South African Journal of Economic and Management Sciences*, 7(3), 542--552.

Ilorah, R. I., & Ngwakwe, C. C. (2021). Foreign aid and economic development in sub-Saharan Africa: The mediating role of governance effectiveness. *Managing Global Transitions*, 307–326. <https://doi.org/10.26493/1854-6935.19.307-326>

Imray, G. (2025, February 28). *Trump's ending of 90% of USAID foreign aid contracts slams programs around the world*. AP News. <https://apnews.com/article/trump-usaid-aid-cut-doge-musk-dba0e89d72938caabee8251f7dfb4a7>

Isham, J., Kaufmann, D., & Pritchett, L. (1995). *Governance and returns on investment: An empirical investigation*. [https://books.google.co.id/books?hl=en&lr=&id=DtmzAq4--dgC&oi=fnd&pg=PA8&dq=Isham,+J.,+Kaufmann,+D.+and+Pritchett,+L.\(1995\),+%E2%80%9CGovernance+and+Returns+on+Investment:+An++Empirical+Investigation+%E2%80%9D.+World+Bank+Policy+Research+Working+Paper,+No.+1550.+&ots=SMAqli_8dN&sig=P4Xn0bCKzi-C54Rg-RfgqrhG5tw&redir_esc=y#v=onepage&q&f=false](https://books.google.co.id/books?hl=en&lr=&id=DtmzAq4--dgC&oi=fnd&pg=PA8&dq=Isham,+J.,+Kaufmann,+D.+and+Pritchett,+L.(1995),+%E2%80%9CGovernance+and+Returns+on+Investment:+An++Empirical+Investigation+%E2%80%9D.+World+Bank+Policy+Research+Working+Paper,+No.+1550.+&ots=SMAqli_8dN&sig=P4Xn0bCKzi-C54Rg-RfgqrhG5tw&redir_esc=y#v=onepage&q&f=false)

Ismail, K. M. (2020). *Impact of foreign aid on economic growth in Tanzania*. The University of Dodoma.

Jena, N. R., & Sethi, N. (2020). Foreign aid and economic growth in sub-Saharan Africa. *African Journal of Economic and Management Studies*, 11(1), 147–168. <https://doi.org/10.1108/AJEMS-08-2019-0305>

- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and Finance. *Journal of Political Economy*, 106(6), 1113–1155. <https://doi.org/10.1086/250042>
- Landes, D. S. (1998). *The wealth and poverty of nations*. Abacus Little Brown Book Group. https://books.google.co.id/books?hl=en&lr=&id=Oo25BwAAQBAJ&oi=fnd&pg=PT9&dq=Landes,+David+S.+The+wealth+and+poverty+of+nations:+Why+some+are+so+rich+and+some+so+poor.+New+York:+W.W.+Norton+%26+Co.,+1998&ots=sNlvBJMbbB&sig=yt71wBVfg27u15EpsQCaKRhM5Jo&redir_esc=y#v=onepage&q&f=false
- Levy, V. (1988). Aid and growth in Sub-Saharan Africa: The recent experience. *European Economic Review*, 32(9), 1777–1795. [https://doi.org/10.1016/0014-2921\(88\)90085-2](https://doi.org/10.1016/0014-2921(88)90085-2)
- Lucas, R. E. (1988). On the mechanics of economic development. *Journal of Monetary Economics*, 22(1), 3–42. [https://doi.org/10.1016/0304-3932\(88\)90168-7](https://doi.org/10.1016/0304-3932(88)90168-7)
- Mallik, G. (2008). Foreign aid and economic growth: A cointegration analysis of the six poorest African countries. *Economic Analysis and Policy*, 38(2).
- Manty, Y. (2013). *Testing the foreign aid-led growth hypothesis in West Africa* (50361). <https://mpira.ub.uni-muenchen.de/50361/>
- Mbah, S., & Amassoma, D. (2014). The linkage between foreign aid and economic growth in Nigeria. *International Journal of Economic Practices and Theories*, 4(6). www.ijept.org
- McKenna, A. (2024, November). *List of African countries*. Encyclopedia Britannica. <https://www.britannica.com/topic/list-of-African-Countries-Independence-Dates>

- Mills, G. (2011, October 9). Urban youth can save Africa or sink it. *Network for Youth in Transition*. <https://networkforyouthintransition.org/profiles/blogs/urban-youth-can-save-africa-or-sink-it/>
- Minoiu, C., & Reddy, S. G. (2010). Development aid and economic growth: A positive long-run relation. *The Quarterly Review of Economics and Finance*, 50(1), 27–39. <https://doi.org/10.1016/j.qref.2009.10.004>
- Moyo, D. (2009). Why foreign aid is hurting Africa. *Wall Street Journal*. (Eastern Edition), 21(1–2), 1–5. https://dn790007.ca.archive.org/0/items/acemoglu-institutions-as-a-fundamental-cause-of-long-run-growth/PS%20241%20ereserves%20Winters/Moyo%2C%20Dambisa_Essay_Why%20Foreign%20Aid%20Is%20Hurting%20Africa.pdf
- Murthy, V. N. R., Ukpolo, V., & Mbaku, J. M. (1994). Foreign aid and economic growth in Cameroon: evidence from cointegration tests. *Applied Economics Letters*, 1(10), 161–163. <https://doi.org/10.1080/135048594357916>
- Nakamura, T., & Mcpherson, M. F. (2005). Is foreign aid effective in reducing poverty? *Wellesley College Department of Economics*. <https://www.researchgate.net/publication/228452208>
- Nathan Andrews. (2009). Foreign aid and development in Africa: What the literature says and what the reality is. *African Journal of Political Science and International Relations*, 1(1), 008–015.
- Nwude, E. C., Ugwuegbe, S. U., & Adegbayibi, A. T. (2023). Impact of income level and foreign aid on economic growth in Sub-Saharan Africa: the case of Anglophone and

- Francophone countries. *Economic Research-Ekonomska Istrazivanja*, 36(2).
<https://doi.org/10.1080/1331677X.2022.2142826>
- Okon, E. O. (2012). Five decades of development aid to Nigeria: The impact on human development. *Journal of Economics and Sustainable Development*, 3(1), 32–41.
www.iiste.org
- Ouedraogo, R., Sourouema, W. S., & Sawadogo, H. (2021). Aid, growth and institutions in Sub-Saharan Africa: New insights using a multiple growth regime approach. *The World Economy*, 44(1), 107–142. <https://doi.org/10.1111/twec.12968>
- P. Frimpong, B. (2008). *School of graduate studies department of economics, foreign aid and economic growth in Ghana (1970-2005)*. Kwame Nkrumah University of Science & Technology.
- Papanek, G. F. (1973). Aid, foreign private investment, savings, and growth in less developed countries. *Journal of Political Economy*, 81(1), 120–130.
<https://doi.org/10.1086/260009>
- Pettinger, L. (2016). *Work, consumption and capitalism*. Palgrave Macmillan.
https://books.google.co.id/books?hl=en&lr=&id=aCRHEAAQBAJ&oi=fnd&pg=PR2&dq=pettinger+2017+economic+growth&ots=hWz8UcQyzN&sig=VD_yWy4FnJ3cv_az8IeOUzb20lw&redir_esc=y#v=onepage&q=pettinger%202017%20economic%20growth&f=false
- Philip, D. (2004). Policy, aid and growth: A threshold hypothesis. *Journal of African Development*, 6(1), 1–21.

- Ram, R. (2004). Recipient country's 'policies' and the effect of foreign aid on economic growth in developing countries: additional evidence. *Journal of International Development*, 16(2), 201–211. <https://doi.org/10.1002/jid.1071>
- Romer, P. M. (1986). Increasing returns and long-run growth. *Journal of Political Economy*, 94(5), 1002–1037. <https://www.jstor.org/stable/1833190>
- Sachs, J. (2008). Foreign aid and economic growth. *The Journal of Development Studies*, 44(4), 1–10.
- Sen, A. (2004). *How does culture matter*. Stanford University Press. [https://books.google.co.id/books?hl=en&lr=&id=4kGJ86s8MB4C&oi=fnd&pg=PA37&dq=Sen+A+\(2004\).+How+Does+Culture+Matter.+In+Vijayendra+R+and+Michael+W+eds.,+Culture+and+Public+Action.+Stanford+University+Press,+Stanford,+California+\(1999\).+Development+As+Freedom.+Anchor+Books,+New+York.&ots=nxDPOtlq2w&sig=Htz1S2c8nskAoKnXBumujm3O9N0&redir_esc=y#v=onepage&q&f=false](https://books.google.co.id/books?hl=en&lr=&id=4kGJ86s8MB4C&oi=fnd&pg=PA37&dq=Sen+A+(2004).+How+Does+Culture+Matter.+In+Vijayendra+R+and+Michael+W+eds.,+Culture+and+Public+Action.+Stanford+University+Press,+Stanford,+California+(1999).+Development+As+Freedom.+Anchor+Books,+New+York.&ots=nxDPOtlq2w&sig=Htz1S2c8nskAoKnXBumujm3O9N0&redir_esc=y#v=onepage&q&f=false)
- Solow, R. M. (1956). A contribution to the theory of economic growth. *The Quarterly Journal of Economics*, 70(1), 65. <https://doi.org/10.2307/1884513>
- Tang, K.-B., & Bundhoo, D. (2017). Foreign aid and economic growth in developing countries: Evidence from sub-Saharan Africa. *Theoretical Economics Letters*, 07(05), 1473–1491. <https://doi.org/10.4236/tel.2017.75099>
- Thian-Hee, Y., & Evan, L. (2018). Economy, international relations/trade, economic development. *Fundacja Centrum Badań Socjologicznych*.
- Wooldridge, J. M. (2012). *Introductory econometrics: A modern approach (5th ed.)*. Cengage Learning.

- World Bank Report. (2017). *Accelerate economic growth, build human capital, foster resilience: End extreme poverty, boost shared prosperity*. worldbank.org/annualreport
- Younsi, M., Khemili, H., & Bechtini, M. (2019). Does foreign aid help alleviate income inequality? New evidence from African countries. *International Journal of Social Economics*, 46(4), 549–561. <https://doi.org/10.1108/IJSE-06-2018-0319>
- Žižmond, E., & Novak, M. (2006). Impact of price-deregulation on market outcomes: The case of chimney sweep services in Slovenia. *Prague Economic Papers*, 15(4), 350–363. <https://doi.org/10.18267/j.pep.292>

Appendix

Appendix 1: African Countries with their former colonial masters.

The table below shows all the African countries used in this research and their former colonial masters. This list is obtained from (McKenna, 2024), the list contains thirty seven (37) African countries of which eleven (11) are former British colonies fourteen (14) are French colonies and twelve (12) countries neither colonies by British or French colonial masters.

No.	Country Name	Former Colonial Master
1	Botswana	England
2	Egypt, Arab Rep.	England
3	Gambia, The	England
4	Ghana	England
5	Kenya	England
6	Namibia	England
7	Seychelles	England
8	Sierra Leone	England
9	South Africa	England
10	Uganda	England
11	Zimbabwe	England
12	Benin	France
13	Burkina Faso	France
14	Central African Republic	France
15	Chad	France
16	Comoros	France
17	Cote d'Ivoire	France
18	Gabon	France
19	Guinea	France
20	Madagascar	France
21	Mali	France
22	Mauritania	France
23	Niger	France
24	Senegal	France
25	Tunisia	France
26	Angola	Other
27	Burundi	Other
28	Cameroon	Other
29	Eritrea	Other
30	Ethiopia	Other
31	Guinea-Bissau	Other
32	Lesotho	Other

33	Mauritius	Other
34	Morocco	Other
35	Rwanda	Other
36	Tanzania	Other
37	Togo	Other

Compile: by Author

Appendix 2: Descriptive statistics table

Variable	Obs	Mean	Std. Dev.	Min	Max
GDP Growth	803	3.97962	4.64988	-36.392	33.6294
ODA per GDP	799	0.06433	0.05749	-0.0026	0.44087
Institutional Quality	814	30.2098	21.1153	0.94787	84.6154
Trade Openness	786	65.6836	32.9646	17.2251	222.178
Government Expenditure on Education	635	4.03636	2.00287	0.54477	13.2196
Inflation	803	9.24356	31.6329	-22.932	604.946
Gross Fixed Capital Formation	752	10.3535	89.5663	-65.689	2357.68
Primary School Enrollment	685	99.399	21.2144	31.8469	156.802
Foreign Direct Investment	800	3.16235	4.38252	-11.192	56.2883
Population	814	19.0478	22.9977	0.08113	125.384

Appendix 3: OLS Regression for the Baseline Model

Source	SS	df	MS	Number of obs	=	504
				F(9, 494)	=	4.69
Model	541.410978	9	60.1567753	Prob > F	=	0
Residual	6337.11144	494	12.8281608	R-squared	=	0.0787
				Adj R-squared	=	0.0619
Total	6878.52242	503	13.6749949	Root MSE	=	3.5816

GDP Growth rate	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]

ODA per GDP	12.15672	3.871103	3.1	0.002	4.550868	19.76258
INQ	0.024224	0.009616	2.5	0.012	0.005331	0.043117
FDI	0.128915	0.041125	3.1	0.002	0.048113	0.209718
Trade Openness	0.008228	0.008132	1	0.312	-	0.0077489
Primary School Enrollment	0.018251	0.00815	2.2	0.026	0.0022393	0.034264
Government Expenditure on Education	-0.28872	0.102086	-3	0.005	-	0.4892906
Inflation	-0.00055	0.014801	-0	0.97	-	0.0296294
GFCF	0.003375	0.001526	2.2	0.027	0.0003775	0.006372
Log(Population)	0.548643	0.169609	3.2	0.001	0.2153977	0.881887
cons	-8.05784	3.318364	-2	0.016	-14.57769	-1.538

Appendix 4: Variance Inflation Factors (VIF) Baseline Model

Variable	VIF	1/VIF
Trade Openness	2.76	0.362204
Log(Population)	2.17	0.459968
INQ	1.57	0.636489
ODA per GDP	1.49	0.669322
Government Expenditure on Education	1.39	0.720051
FDI	1.19	0.842804
Primary School Enrollment	1.11	0.902754
Inflation	1.03	0.966447
GFCF	1.02	0.976384
Mean VIF	1.53	

Appendix 5: Fixed effects regression for the baseline model

Fixed-effects (within) regression	Number of obs	=	504
Group variable: country_id	Number of groups	=	37
R-sq:	Obs per group:		
within = 0.1157	min	=	1
between = 0.0561	avg	=	13.6
overall = 0.0000	max	=	22
	F(9,36)	=	6.23

corr(u _i , X _b) = -0.9313		Prob > F		=	0.0000	
GDP Growth rate	Coef.	Robust Std. Err.	t	P>t	[95% Conf.	Interval]
ODA per GDP	-1.493483	6.27882	0.24	0.813	-14.22752	11.24056
INQ	0.072226	0.03105	2.33	0.026	0.0092473	0.1352048
FDI	0.0053371	0.04657	0.11	0.909	-0.0891167	0.0997909
Trade Openness	0.0795815	0.01837	4.33	0	0.0423243	0.1168386
Primary School Enrollment	0.0599545	0.02185	2.74	0.009	0.0156355	0.1042735
Government Expenditure on Education	-0.3122098	0.30607	1.02	0.314	-0.9329391	0.3085195
Inflation	-0.0040363	0.01257	0.32	0.75	-0.0295286	0.021456
GFCF	0.0024685	0.00199	1.24	0.223	-0.001569	0.0065059
Log(Population)	-1.196414	1.42504	0.84	0.407	-4.08652	1.693692
_cons	10.98485	23.0789	0.48	0.637	-35.82137	57.79107
sigma u	5.4319564					
sigma e	3.302854					
Rho	0.73007928	(fraction of	variance due	to	u _i)	

Appendix 6: Random effects regression for the baseline model

Random-effects GLS regression	Number of obs	=	504
Group variable: country_id	Number of groups	=	37
R-sq:	Obs per group:		
within = 0.0537	min	=	1
between = 0.2052	avg	=	13.6
overall = 0.0736	max	=	22
	Wald chi2(9)	=	31.83
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0002

GDP Growth rate	Coef.	Robust Std. Err.	z	P>z	[95% Conf.	Interva
ODA per GDP	11.72038	4.140551	2.83	0.005	3.605048	19.835
INQ	0.0242435	0.0114094	2.12	0.034	0.0018815	0.0466

FDI	0.104849	0.05817	1.8	0.071	-	0.0091621	0.2188
Trade Openness	0.0146659	0.009504	1.54	0.123	-	0.0039616	0.0332
Primary School Enrollment	0.0284756	0.0133168	2.14	0.032	-	0.0023752	0.0545
Government Expenditure on Education	-0.322023	0.1452655	2.22	0.027	-	0.6067381	-
Inflation	-0.0014548	0.0094244	0.15	0.877	-	0.0199263	0.0170
GFCF	0.0031267	0.001848	1.69	0.091	-	0.0004953	0.0067
Log(Population)	0.6484997	0.223551	2.9	0.004	-	0.2103477	1.0866
cons	-10.83621	4.236609	2.56	0.011	-	-19.13981	-2.5320
sigma_u	0.81261698						
sigma_e	3.302854						
Rho	0.05707801	(fraction	of	variance	due	to	u_i)

Appendix 7: heteroskedasticity test baseline model
Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

$H_0: \sigma(i)^2 = \sigma^2$ for all i

chi2 (37) = 18057603.00
Prob > chi2 = 0.0000

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model
$H_0: \sigma(i)^2 = \sigma^2$ for all i
chi2 (37) = 18057603.00
Prob > chi2 = 0.0000

Appendix 8: Breusch and Pagan Lagrangian multiplier test for random effects

Breusch and Pagan Lagrangian multiplier test for random effects
GDP Growth[country_id,t] = $Xb + u[\text{country_id}] + e[\text{country_id,t}]$

Estimated results:				
		Var	sd	sqt(Var)
	GDP Gro~h	13.67499		3.697972
	e	10.90884		3.302854
	u	0.6603464		0.812617
Test:	Var(u) =	0		
		chibar2(01)	=	20.42
		Prob > chibar2	=	0.0000

Appendix 9: Hausman test baseline fe and re model

Test of overidentifying restrictions: fixed vs random effects
Cross-section time-series model: xtreg re robust cluster(country id)
Sargan-Hansen statistic 98.157 Chi-sq(9) P-value = 0.0000

OLS REGRESSION FOR THE INTERACTION MODEL

Source	SS	df	MS	Number of obs	=	504
				F(10, 493)	=	4.66
Model	594.092956	10	59.4092956	Prob > F	=	0
Residual	6284.42946	493	12.7473214	R-squared	=	0.0864
				Adj R-squared	=	0.0678
Total	6878.52242	503	13.6749949	Root MSE	=	3.5703

GDP Growth	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
ODA per GDP	3.377671	5.791361	0.58	0.56	-8.00112	14.75646
ODA per GDP*INQ	0.335254	0.164912	2.03	0.043	0.011237	0.65927
INQ	0.009081	0.01214	0.75	0.455	-0.01477	0.032933
FDI	0.125388	0.041032	3.06	0.002	0.044768	0.206007
Trade Openness	0.008926	0.008113	1.1	0.272	-0.00702	0.024866
Primary School Enrollment	0.016088	0.008193	1.96	0.05	-9.52E-06	0.032186
Government Expenditure on Education	-0.25364	0.103215	-2.46	0.014	-0.45644	-0.05085
Inflation	-0.00096	0.014756	-0.06	0.948	-0.02995	0.028035
GFCF	0.00341	0.001521	2.24	0.025	0.000421	0.006398
Log(Population)	0.507666	0.170271	2.98	0.003	0.173119	0.842213

cons	-6.8511	3.360731	-2.04	0.042	-13.4542	-0.24797
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Appendix 10: Fixed effects regression for the interaction model

Fixed-effects (within) regression	Number of obs	=	504		
Group variable: country_id	Number of groups	=	37		
R-sq:	Obs per group:				
within = 0.1239	min	=	1		
between = 0.0704	avg	=	13.6		
overall = 0.0007	max	=	22		
	F(10,36)	=	5.61		
corr(u_i, Xb) = -0.9448	Prob > F	=	0.0001		
		(Std. Err. adjusted for 37 clusters in country_id)			
		Robust			
GDP Growth rate	Coef.	Std. Err.	t	P>t	[95% Conf. Interva
ODA per GDP	11.27675	11.00015	1.03	0.312	-11.03259 33.586
ODA per GDP*INQ	-0.6068687	0.3355223	-1.81	0.079	-1.28734 0.0736
INQ	0.1146868	0.0320923	3.57	0.001	0.0496007 0.1797
FDI	0.007778	0.0458628	0.17	0.866	- 0.0852362 0.1007
Trade Openness	0.0759778	0.0188357	4.03	0.000	0.0377773 0.1141
Primary School Enrollment	0.0615885	0.0213318	2.89	0.007	0.0183257 0.1048
Government Expenditure on Education	-0.3077303	0.3086274	-1.00	0.325	- 0.9336558 0.3181
Inflation	-0.0032465	0.0120324	-0.27	0.789	- 0.0276494 0.0211
GFCF	0.0023676	0.0019678	1.20	0.237	- 0.0016233 0.0063
Log(Population)	-1.493297	1.427314	-1.05	0.302	-4.388024 1.4014
cons	14.61409	22.77803	0.64	0.525	-31.58188 60.810
sigma_u	6.0473536				
sigma_e	3.2910772				
rho	0.77150197	(fraction	of variance due	to u_i)	

Appendix 11: Heteroskedasticity test interaction model model

`. xttest3`

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: $\sigma(i)^2 = \sigma^2$ for all i

chi2 (37) = 36053.86
Prob > chi2 = 0.0000

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model			
H0: $\sigma(i)^2 = \sigma^2$ for all i			
chi2 (37) = 36053.86			
Prob > chi2 = 0.0000			

Appendix 12: Random effects (re) regression for the interaction model

Random-effects GLS regression	Number of obs	=	504
Group variable: country_id	Number of groups	=	37
R-sq:	Obs per group:		
within = 0.0464	min	=	1
between = 0.2499	avg	=	13.6
overall = 0.0815	max	=	22
	Wald chi2(10)	=	36.09
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0001

GDP Growth	Coef.	Robust Std. Err.	z	P>z	[95% Conf. Interval	Interval
ODA per GDP	7.148371	5.223193	1.37	0.171	-3.088899	17.3856
ODA per GDP*INQ	0.1881819	0.1621491	1.16	0.246	-0.1296246	0.50598
INQ	0.015188	0.0136001	1.12	0.264	-0.0114678	0.04184
FDI	0.1083566	0.0580794	1.87	0.062	-0.005477	0.22219

Trade Openness	0.0139087	0.0098947	1.41	0.160	-	0.0054846	0.03330
Primary School Enrollment	0.0253701	0.0132962	1.91	0.056	-	0.0006899	0.05143
Government Expenditure Education	-0.2973983	0.1419747	-2.09	0.036	-	0.5756637	-0.0191
Inflation	-0.0017076	0.0096224	-0.18	0.859	-	0.0205672	0.01715
GFCF	0.0031751	0.0018388	1.73	0.084	-	0.0004288	0.00677
Log(Population)	0.6093553	0.2191962	2.78	0.005	-	0.1797385	1.03897
cons	-9.679502	4.252895	-2.28	0.023	-	-18.01502	-1.3439
sigma u	0.70016638						
sigma e	3.2910772						
rho	0.04330136	(fraction	of	variance	due	to	u i)

Appendix 13: Breusch and Pagan Lagrangian multiplier test for random effects

Breusch and Pagan Lagrangian multiplier test for random effects						
GDP Growth[country_id,t] = Xb + u[country_id] + e[country_id,t]						
Estimated results:						
		Var	sd	sqrt(Var)		
	GDP_Gro~h	13.67499		3.697972		
	e	10.83119		3.291077		
	u	0.490233		0.700166		
Test:	Var(u) =	0				
		chibar2(01)	=	10.99		
		Prob > chibar2	=	0.0005		

Appendix 14 Colonies Results

FIXED EFFECTS FOR ENGLAND COLONIES

Fixed-effects (within) regression	Number of obs	=	144
Group variable: country_id	Number of groups	=	13
R-sq:	Obs per group:		
within = 0.1562	min	=	1
between = 0.0287	avg	=	11.1

overall = 0.0006	max	=	22		
	F(9,12)	=	16.54		
corr(u _i , Xb) = -0.9621	Prob > F	=	0		
		(Std. Err. adjusted for 13 clusters in country_id)			
		Robust			
GDP Growth	Coef.	Std. Err.	t P>t	[95% Conf.	Interval
ODA per GDP	-1.07028	15.47694	-0.07 0.946	-34.79164	32.6510
INQ	0.1298539	0.0612659	2.12 0.056	-0.003633	0.26334
FDI	-0.017464	0.0751783	-0.23 0.820	-0.1812635	0.14633
Trade Openness	0.1276401	0.0439676	2.90 0.013	0.0318429	0.22343
Primary School Enrollment	0.0335411	0.0620163	0.54 0.599	-0.1015809	0.16866
Government Expenditure Education	-0.4338425	0.4393505	-0.99 0.343	-1.391105	0.52341
Inflation	0.0145963	0.0128557	1.14 0.278	-0.0134139	0.04260
GFCF	0.0005587	0.0018099	0.31 0.763	-0.0033848	0.00450
Log(Population)	-0.5346762	3.497754	-0.15 0.881	-8.155627	7.08627
cons	-3.765895	55.56643	-0.07 0.947	-124.8347	117.303
sigma_u	9.0023292				
sigma_e	3.8284771				
rho	0.84684049	(fraction	of variance due	to u _i)	

FIXED EFFECTS FOR FRENCH COLONIES

Fixed-effects (within) regression	Number of obs	=	204	
Group variable: country_id	Number of groups	=	14	
R-sq:	Obs per group:			
within = 0.3011	min	=	3	
between = 0.1744	avg	=	14.6	
overall = 0.0509	max	=	22	
	F(9,13)	=	16.48	
corr(u _i , Xb) = -0.7524	Prob > F	=	0	
		(Std. Err. adjusted for 14 clusters in country_id)		

		Robust				
GDP per Growth	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval
ODA_GDP	-15.18703	7.553878	-2.01	0.066	-31.50619	1.13212
INQ	0.0485692	0.0355482	1.37	0.195	-0.028228	0.12536
FDI	-0.1133803	0.0798433	-1.42	0.179	-0.2858713	0.05911
Trade Openness	0.0132857	0.0247124	0.54	0.600	-0.0401021	0.06667
Primary School Enrollment	0.0934032	0.036748	2.54	0.025	0.0140139	0.17279
Government Expenditure Education	-0.3135874	0.2106609	-1.49	0.160	-0.7686927	0.14151
Inflation	-0.0330001	0.0639474	-0.52	0.614	-0.17115	0.10514
GFCF	0.0984475	0.0315326	3.12	0.008	0.0303255	0.16656
Log(Population)	-0.0053117	1.897607	-0.00	0.998	-4.104842	4.09421
cons	-4.535546	29.20233	-0.16	0.879	-67.62333	58.5522
sigma_u	2.9150418					
sigma_e	2.9838702					
rho	0.48833361	(fraction	of variance due	to	u_i)	

FIXED EFFECTS FOR OTHER COLONIES

FIXED EFFECTS FOR OTHER COUNTRIES

Fixed-effects (within) regression	Number of obs	=	156
Group variable: country_id	Number of groups	=	12
R-sq:	Obs per group:		
within = 0.2911	min	=	1
between = 0.0077	avg	=	13
overall = 0.0348	max	=	22
	F(9,11)	=	67.35
corr(u_i, Xb) = -0.5756	Prob > F	=	0

		(Std. Err. adjusted for 12 clusters in country_id)					
		Robust					
GDP Growth	Coef.	Std. Err.		t	P>t	[95% Conf.	Interva
ODA per GDP	13.36109	6.312149		2.12	0.058	-0.531854	27.254
INO	- 0.0122949	0.039256		0.31	0.760	-0.098697	0.0741

FDI	- 0.0389351	0.0730335		0.53 0.605		-0.199681	0.1218
Trade Openness	0.0710354	0.0314846		2.26 0.045		0.0017383	0.1403
Primary School Enrollment	0.0641278	0.0154826		4.14 0.002		0.0300507	0.0982
Government Expenditure Education	0.1365489	0.2604687		0.52 0.611		-0.436739	0.7098
Inflation	- 0.0329288	0.0421586		0.78 0.451		-0.125719	0.0598
GFCF	0.0778409	0.0272814		2.85 0.016		0.017795	0.1378
Log(Population)	0.5929299	1.319736		0.45 0.662		-2.311789	3.4976
_cons	-18.76629	21.51302		0.87 0.402		-66.11614	28.583
sigma_u	3.3459605						
sigma_e	2.5161689						
rho	0.6387707	(fraction	of	variance due	to	u_i)	