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THE EFFECT OF FOREIGN AID ON ECONOMIC GROWTH: THE CASE OF
SUB-SAHARAN AFRICAN COUNTRIES

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TOFIK MUME YUSUF

ADDIS ABABA, ETHIOPIA

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Addis Ababa University

School of Graduate Studies

This is to certify that the thesis prepared by Tofik Mume Yusuf, entitled: **The effect of Foreign Aid on Economic Growth: The Case of Sub-Sahara African Countries** and submitted in partial fulfillment of the requirements for the Degree of Masters of Science in Economics (Economic Policy Analysis) complies with regulations of the University and meets the accepted standards with respect to originality and quality

Signed by Examining Committee:

Examiner: Atlaw Alemu Signature: [Signature] Date: 14/08/2025
(internal)

Examiner: Dasalegn... Signature: [Signature] Date: 14/08/25

Advisor: Annafu G/meske Signature: [Signature] Date: 14/08/25

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List of Acronyms

DAC	Development Assistance Committee
FDI	Foreign Direct Investment
GGDPP	Growth of GDP per capital
GMM	Generalized Method of Moments
LDC	Least Developed Countries
ODA	Official Development Assistance
OLS	Ordinary Least Square
SSA	Sub Sahara Africa
UN	United nation
WB	World Bank
MDG	Millennium development goal
OECD	Organization for Economic Cooperation and Development
EDA	Effective development assistant
WDI	World development indicator
TD	Traditional donor
NTD	Non-traditional donor
UNMDG	United Nation Millennium Development Goal

Abstract

This thesis assesses the impact of foreign aid on Sub-Saharan African Economic growth. Its objective is to explain the trend of foreign Aid and assess the effect of foreign Aid on Sub-Saharan African economic growth (GDPPC growth) as measured by GGDP per capital. In order to fulfill its objective, the studies used panel data from 33 SSA countries for 24 years (2000-2024) and using Generalized method of moment (GMM) regression model, this study assess the impact of foreign assistant on economic growth in Sub-Saharan African (SSA). The main variables in this study is GGDP per capita (constant 2021\$US) as dependent variable, Labor force participation rate (L), Capital Formation (K), Government Consumption Expenditure (GC), Foreign direct investment (FDI), Trade (T) and Foreign aid (Aid) as Explanatory variable (Independent Variable). The study finds indicate that foreign aid has positive and significant effect on SSA economic growth. The study result also suggests that there is diminishing return of aid as the volume of aid increase in the same countries under the study. As the study finds indicate the effect of foreign aid on Sub-Saharan African Economic growth is very low. Therefore, the countries shall reduce aid dependency and focus on their home economy. Additionally, large set of variable for all Sub-Saharan African countries and including the conditions on which foreign aid may depend for effectiveness like government effectiveness, economic policy and institutional quality is important for the future researchers and policy makers.

CHAPTER ONE: INTRODUCTION

1.1. Background of the study

Foreign aid (assistance) is transfer of resources from more developed countries to less developed countries, usually with the intention of assisting with development projects or offering emergency relief (WB). Grants, loans, and merchandise are all examples of foreign aid. More precisely, resources sent from one country to another with the goal of enhancing living conditions in the recipient country can also be referred to as foreign aid (Lancaster, 2007, p. 9). The World Development Indicators (WDI, 2015) define foreign aid as the transfer of resources, grants and loans from one country to another. More specifically, the OECD (2014) defines ODA as "government aid designed to promote the economic development and welfare of developing countries

With the launch of the Marshall Plan by the United States, which sought to reconstruct the war-torn economy of Western Europe, the idea of foreign aid came into being at the end of World War II. LDC countries often require higher capital than they can get through domestic savings when compared to their developed nation. To solve this capital limitation, they depend on foreign aid from developed countries and international organization.

The main objective of foreign aid is to help GDP growth and enhance social development in LIC (OECD, 2014). These countries often face resource limit particularly in terms of capital, which hinder their ability to finance development independently. To solve this resource limit gap, they depend on external financial inflows, with foreign aid serving as a key source. In recent years, however, global events most notably the war in Ukraine have had a significant effect on the distribution and flow of Official Development Assistance (ODA), diverting resources and reshaping aid priorities. Development Assistance Committee member countries gave USD 223.3 billion in official aid development in year 2023, a historically high, when we compare with when the OECD first started collecting its aid statistics. This amount represented 0.37% of their total national income. According to the OECD, global aid in 2023 was US\$223.7 billion up by 1.8% from the year before (2022). Donor nations contributed 0.37% of their growth national product as aid, according to the Development Assistance Committee (DAC). US\$59.7 billion or

26.8% of overall aid was withheld in 2023 for African nations. In 2023, LIC get 16.2% of total aid, next by lower-middle-income countries (23.3%), followed by upper-middle-income countries (21.8%), and high-income countries (0.2%). Sectors Health received US\$35.5 billion, or 15.5% of total aid in 2022, humanitarian aid accounted for US\$30.4 billion, or 13.3% of total aid. The top four African nations that received the most aid were Ethiopia (2.2 billion USD), Egypt (1.4 billion USD), Nigeria (1.15 billion USD), and Somalia (1.14 billion USD) (OECD, 2022).

In September 2000, the United Nations (UN) established the Millennium Development Goals (MDGs) which serve as a symbol of the collaboration between rich and poor nations in order to fulfill a shared commitment to improve living standards generally (UN, 2009). As a nation's economy grows, living standards can also improve. Since the MDGs were started in 2000, their main objectives have been to cut global poverty in half by the year 2015.

In addition to reducing poverty, these objectives also include ensuring universal access to primary education, empowering women and advancing gender equality, decrease infant mortality by two-thirds, maternal health and preventing disease, maintaining sustainability of environmental and creating a partnership for global development (United Nations, 2009). Therefore, Foreign aid has considered as a crucial tool in combating poverty, which is a basic sign of underdevelopment by UN.

There is no conclusion on the effect of foreign aid on Economic growth in LIC. Despite ongoing debate, there is consensus that foreign aid has an overall positive effect, although its success often depends on specific conditions. According to scholars like Mustafa E. et al. (2018) and Clemens et al. (2004), the effectiveness of foreign aid depends on a number of variables, including the policy environment, institutional capability, and the quality of governance. On the other hand, other scholars argue that foreign aid impact growth without a favorable policy environment. The overall impact of aid on economic growth in various countries has been the subject of numerous studies, including Clemens et al. (2004), Mustafa E. et al. (2018), Haile (2015), Larsen (2016), Ahmed (2014), and Mbah & Amassoma (2014), with different

conclusion. Therefore, this study will assess whether foreign aid has been positive effect in accelerating economic growth of Sub-Saharan African countries and add to existing literature.

1.2. Hypothesis

To fulfill the objective of the study, the impact of foreign aid on GDP per capital growth of Sub-Saharan African countries will investigate. The null hypothesis of the study states that foreign aid (assistant) has no positive and significant impact on the economic growth of SSA countries. While the alternative hypothesis is, foreign aid has a positive and significant impact on economic growth of SSA countries. Therefore, this study will try to falsify the null hypothesis.

1.3. Problem Statement

Foreign aid has big role by filling the financial gap for developing nations to accelerate economic growth. Foreign aid's impact on developing nations' economic progress is still debatable. Beginning with the Millennium Development Goals in 2000, rich countries and global organizations called for double aid for developing nations in order to address the capital shortage in low-income nations and foster economic growth (UNAIDS, 2005).

Since 2000, (MDG) foreign aid for developing countries has grown reaching 166.8bill USD in 2016, with Africa accounting for the majority of total aid (Organization for Economic Corporation and Development, 2007). Sub-Saharan Africans (SSAs) are among the nations in Africa that received the most aid worldwide. However, SSA is one of the world's least developed nations, despite receiving the highest amounts of foreign aid. Therefore, today the main debatable topic among scholars in developmental economics is the relationship between foreign aid (Assistant) and economic growth in LIC countries.

Traditional donors have controlled the aid flow to poor nations since 1960, however since 2000; the aid flow landscape has shifted as non-traditional aid has introduced. Many literatures have done on these subjects, with different conclusions. Some of these literatures indicate the significant and positive effect of foreign aid on economic growth of developing countries. However, other literatures shown that foreign assistant has insignificant effect on economic growth. However, under favorable economic policy conditions, some of these literatures indicate the significant and positive effect of foreign aid on economic growth of developing countries. However, other literatures shown that foreign assistant has insignificant effect on economic

growth. As a result, the effect of foreign aid on economic growth in developing nations have mixed conclusion.

The empirical literature on the relationship between foreign aid and economic growth has also produced contradictory results. While some have found a positive correlation (Levy (1988); Gounder (2001); Hansen & Tarp (2001); McGillivray (2006); Loxley & Sackey (2008); Gomanee, Girma, and Morrissay (2005); Nilsson (2013); Karras (2006); Tra (2014); Asteriou (2009)), others have found a negative impact of foreign aid (Boone (1996); Mallik (2008); Easterly (2003); MM (2016); Alemayehu (2011), Tendongho (2016); Rajan et al. (2008); Rao et al. (2020)). Theoretically, the aid-growth relationship could be affected by omitted variables due to unobserved factors that influence both aid and growth (Herzer, 2015; Herzer and Morrissey, 2013).

A bivariate causality approach used in the majority of panel data analyses is insufficient to capture the aid-growth causal relationship when such mediating factors are present. In order to reduce omitted variable bias and accurately determine the direction of causation between aid and growth, this study, employs a multivariate approach by adding significant mediating factors in the aid growth regression.

In general, the critical research gaps in the aid–growth nexus rest on using an appropriate econometric approach to account for the problem of omitted variable bias as well as taking into account from both official donor groups (TDs and NTDs), with a focus on Sub-Saharan Africa, where its significance is very critical. The findings will help scholars and policymakers comprehend the rapidly shifting global aid landscape since 2000.

Therefore, this study will address three main issues: first, what are the main effects of foreign aid on Sub-Saharan African economic growth? Second, this study will fill the research gap that was missed in previous studies, primarily using recent year's panel data and appropriate method from 2000 to 2024. Third, it will explain what alternative policy is and add to existing literature.

1.4. Objective of the Studies

1.4.1. General Objective

The general objective of the study is to assess the effect of foreign aid on economic growth in Sub-Saharan African countries from 2000-2024.

1.4.2. Specific objective

The specific objective of this study is to assess the effect of foreign aid on economic growth in Sub-Saharan African countries. This study has the following specific objectives.

- i. To empirically assess the effect of foreign aid on economic growth in Sub-Saharan African countries from 2000-2024.
- ii. To show the trend of foreign aid in Sub-Saharan African countries.

1.5. Research Question

In the literature of economics, there is a lot of discussion over how foreign aid affects economic growth. According to Lancaster (1999), the region that receives the most foreign aid is Sub-Saharan Africa (OECD, 2010). Nevertheless, despite being among the world's most aid-receiving regions, the region is among the poorest (Chen and Ravallion, 2012; World Bank, 2012). This calls into doubt the efficacy of foreign aid in the SSA region. Consequently, the following fundamental questions are the focus of this investigation.

- i. What is the impact of foreign aid on economic growth in Sub-Saharan African Countries?
- ii. What are the trends of foreign aid inflow looks like in Sub-Sahara African countries?

1.6. Scope of the Study

The main objective of this study is to examine the impact of foreign aid on economic growth in Sub-Saharan African nations during a 24-year period, from 2000 to 2024. This study begins by explaining the trend of foreign aid inflows and empirically assesses the effect of aid inflow in SSA region.

1.7. Significant of the Study

Sub-Saharan economic growth is mostly dependent on foreign aid (Rajan and Subramanian, 2005). Numerous studies have already done on this subject. However, there are no conclusions on the impact of foreign aid on sub-Saharan African economic growth. There are studies, which indicate the significant effect of foreign aid on economic growth of SSA economic growth.

There are, however, literature that show insignificant effects in the same area. Other literatures provide mixed conclusion. Thus, this research will contribute to the body of existing literature and help the formulation of policies on the effect of foreign assistant on the economic growth of Sub-Saharan Africa.

1.8. Limitation of the Study

The limitations of this study include the effectiveness of the government, the quality of the institutions, and the scarcity of data for every variable in these nations. This study's regression is restricted to the SSA region's foreign aid recipient nations. Each country's current level of institutional quality and government efficacy varies, which may have an impact on the anticipated outcome.

1.9. Organization of the Study

This research is design as follow. Chapter one: Background of the study, chapter two related literature review, chapter three method of the study, chapter four Empirical result, analysis and discussions and chapter five is Conclusion and policy Implication

CHAPTER TWO: REVIEW OF THEOROTICAL LETERATURE AND IMPIRICAL EVEDANCE

2.1. Conceptual Literature

2.1.1. Definitions

Until the end of 1969 that formal definition of foreign aid was not developed, and they have since been regularly improved (Führer 1994). According to Daniel and colleagues (2017), aid is the transfer of resources on concessional terms from one foreign government to another in an effort to achieve a foreign policy objective of the government providing the aid. Two primary dimensions were provided for this definition. The first is that they included aid from a variety of sectors, including military and humanitarian aid. Second, they took into account aid flows that came through several routes, such as monetary transfers and transfers of material resources like in-kind, but also aid that came in the form of services and training provided by donors.

According to the Organization for Economic Cooperation and Development's (OECD) ODA is any grant or loans that a developed countries or international organization provides to a LIC in order to support social welfare and economic development. Foreign aid, according to Inanga and Mandah (2008), is the international aid transfer or funds, products, or different services for the use of other countries. Assistance could be provided in a number of ways, including grants, loans, capital transfers, cash or in kind, Military support in the form of equipment or training consultants, as well as technical assistance and training, typically in the form of funding in the form of technical equipment and human resources.

Official assistance and official flows are two ways that the idea of aid for developmental assistance manifests. Official development finance and official development aid have various meanings. Official development funding includes the grant component as a subset (WB, 1998). In a broader sense, ODA include technical assistance, project and program aid, food and emergency help, debt forgiveness not previously reported as ODA, and related administrative costs.

2.1.2. Motives and Rationale purposes of foreign aid.

Foreign assistant is driven by two primary motives: humanitarian motive and strategic motive (Katarina Y., 2013 and Subhayu B). The humanitarian motive is to improve living condition in

recipient countries or to provide relief during crises such as natural disasters, health epidemics, or food shortages. This type of aid is often directed toward addressing immediate human needs and supporting long-term development goals. According to Rostow (1960), foreign aid can also be intended to finance productive investments and support countries during the early stages of economic development particularly during their "take-off" phase. In contrast, strategic motives reflect the donor country's expectation of tangible returns. As Leonard and Claude (1976) note, aid provided under strategic motives may serve to open new markets for the donor's exports or secure political alliances. In many cases, donor countries aim to influence the economic or political trajectory of the recipient nation to align with their own strategic interests. This type of motive has become increasingly prevalent in recently (Subhayu B. & Katarina Y., 2013).

Reducing poverty, raising domestic savings, increasing investment, and accelerating the rise of the Gross National Product (GNP) in developing nations are the usual economic aim of foreign aid. As Todaro (1989) points out, evidence suggests that donor countries rarely provide aid over long periods without anticipating some form of reciprocal benefit whether political, economic, or military. This misalignment of interests often hinders the achievement of foreign aid's intended developmental outcomes.

2.1.3. Arguments on foreign aid

Regarding the function of foreign aid, there are two main schools of thought. One group highlights how important it is to help LDCs in order to promote social welfare and economic prosperity.

The opposing view argues that foreign aid often serves as a tool for neo-imperialism, suggesting that LDCs should instead prioritize addressing their internal challenges rather than relying on external assistance.

Proponents of foreign aid highlight its economic rationale, particularly its role in bridging the gap between domestic savings and investment. Most LDCs experience chronic budget deficits and face substantial resource constraints (Mustafa E. et al., 2018). These conditions often result in macroeconomic imbalances, including trade deficits, where imports significantly exceed exports, leading to a foreign exchange gap. To address this, external capital inflows—through concessional loans, development assistance, or private foreign investment can play a crucial role.

Such inflows allow these countries to invest beyond their domestic saving capacity, thereby stimulating economic growth. Additionally, foreign aid helps ease resource constraints by enabling LDCs to import goods and services that would otherwise be unaffordable with their limited resources, thus supporting both production and consumption in key sectors of their economies.

2.2. Harrod-Domar growth model

Before the middle of the 19th century, empirical literature on the relation between foreign aid and economic growth had done using growth theories, which claimed that capital accumulation was a required for the growth process. One of the main factors influencing economic growth was investment. Because of their low per capita income, developing nations have low saving rates. It was thought that the only thing preventing these developing nations from growing was their inability to save, which is essential for investing. Solow broke down growth into three parts: labor, capital, and total factor production, also known as the Solow residual, in order to account for factors other than capital and labor that determine output. Because the estimate shows the portion of measured GDP growth that cannot be accounted for by the weighted-average measured increase of the elements of production (labor and capital), it is known as the residual. Solow employed the Cobb-Douglas production function in the following manner:

$$Y = (A, L, K) \dots\dots\dots (1)$$

Where Y is Output

L: represents Labor

K: Capital

And A Technological Advancement

Using the Cobb-Douglas production function, Solow expressed this equation as follows:

$$Y = AK^{\alpha}L^{1-\alpha} \dots\dots\dots (2)$$

The following is how the Harrod-Domar separated growth into investment and consumption categories using the Keynesian aggregate demand model:

$$Y_d = C + I \dots\dots\dots(3)$$

Where Y_d is total demand

C : Consumption

I : Investment.

According to the Harrod-Domar model, saving is equivalent to investing, so
 $I = S$ (4)

When I: represent investment and S: represent saving

Savings can produce domestically or funded from abroad. Therefore, to close the savings gap that exists in developing nations, foreign aid in particular or a foreign capital inflow is crucial. They can expand more quickly with foreign assistance than they could with only their own resources.

2.3. Theoretical literature Review

Theoretically, the foreign aid and growth relationship started at the end of World War II development economics, specifically the Harrod-Domar model and its development into the financing-gap models, most notably the two-gap model of the 1960s and the three-gap model of the 1990s. These models have been the leading frameworks for understanding how aid contributes to growth in developing countries since the 1960s. The fundamental idea is that economic growth in these countries is limited not only by a lack of domestic investment (the savings gap), but also by a lack of foreign exchange (the foreign exchange gap) and government revenues (the fiscal gap) (Bacha, 1990; Chenery and Strout, 1966).

According to this perspective, foreign aid is essential to bridge these gaps, enabling higher investment and increased productive public spending, which in turn fosters economic growth. These financing-gap models complement standard growth theories by providing a more direct explanation for how aid can enhance growth. Since help fills in the resource gaps that impede development in aid-receiving nations, they specifically assert a positive causal link between aid and growth.

Nonetheless, this theoretical relationship is not straightforward. As Herzer and Morrissey (2013) note, the aid-growth nexus is complex and influenced by numerous factors that affect both growth and the effectiveness of aid. The impact of aid may differ significantly across contexts and affected economic growth through various channels.

In this regard, the financing-gap framework identifies three primary transmission mechanisms through which foreign aid can contribute to economic growth: (1) investment by increasing capital formation, (2) imports by easing foreign exchange constraints to purchase essential

goods, and (3) public consumption by allowing governments to fund necessary expenditures in health, education, and infrastructure. These channels demonstrate how aid can potentially stimulate growth, although the extent of its effectiveness remains conditional on policy environment and institutional quality in recipient countries.

Aid and investment limited growth: aid increase investments

The two-gap model developed by Strout and Chenery (1966) indicates foreign aid plays a complementary role in addressing two key resource constraints in LIC: the saving gap and the trade (Foreign exchange) gap. Fill these gaps should to meet the investment and import needs required for sustained and accelerated economic growth. According to the model, aid promotes growth through two main channels: by supplementing domestic savings to close the investment gap, and by solving foreign exchange constraints to support essential imports. The investment channel is considered the primary pathway through which aid contributes to economic growth. The model outlines a two-step causal relationship: first, aid enhances domestic investment by supplementing national savings; second, increased investment leads to higher economic growth. Even if not all studies examine causality, there is body of literatures which supports the view that investment is a crucial mechanism linking aid to growth in recipient countries (e.g., Alemu and Lee, 2015; Clemens et al., 2012; Galiani et al., 2017; Gomanee et al., 2005; Herzer and Morrissey, 2013; Juselius et al., 2014; Lof et al., 2015).

Aid and Trade limited growth (aid increase import of capital inputs)

The second resource gap in the two-gap model is known as the "trade-limited growth" or "exchange rate gap," which indicates that LIC have a limited ability to export in order to generate the necessary foreign exchange to import manufacturing goods and machinery in order to support the investment process for rapid and sustained growth. In this sense, aid boosts import of capital goods needed for public investment and provides a supply of foreign exchange. Therefore, aid has a significant impact on recipient nations' growth by producing foreign exchange, which can utilize to boost imports of capital goods and technology, which in turn spur public investment and capital accumulation for growth maintenance. This implies that aid boosts development when it raises net imports through state spending (Temple and Van de Sijpe, 2017).

Aid and Budget constrained growth (Aid increase public budget spending)

The three-gap model as introduced by Bacha (1990) expands on the traditional two-gap framework by emphasizing fiscal constraints as a critical barrier to growth in developing countries. According to this model, it is not merely savings and foreign exchange shortages that limit growth, but also fiscal limitations specifically, the governments restricted ability to finance public spending and investment. In this context, foreign aid plays a crucial role by narrowing fiscal deficits, thereby increasing government revenues and enabling higher public consumption and investment. This increase in consumption, particularly when directed toward productive social sectors (such as education, health, and infrastructure); can contribute significantly to economic growth (Arndt, 2015; Juselius, 2014; Temple and Van de Sijpe, 2017). Thus, government consumption becomes an additional channel via which foreign aid positively influence growth.

From this perspective, the theoretical debate on the causal relationship between aid and economic growth has evolved into two dominant schools of thought. The aid-effectiveness thesis asserts that aid has played a constructive role in promoting and sustaining economic growth in low-income countries. This view is largely grounded in financing-gap models, which argue that aid facilitates growth by addressing investment, foreign exchange, and fiscal gaps through the transmission channels discussed.

Conversely, the aid-ineffectiveness thesis contends that aid may have adverse effects on growth, particularly when it fails to operate effectively through these channels due to issues such as misallocation, corruption, or dependency. Despite the ongoing controversy surrounding the aid-growth nexus, financing-gap models have remained the dominant analytical framework for evaluating aid's role in economic development since the 1960s.

Notably, the international donor community continues to be influenced by this framework, maintaining the belief that foreign aid has been instrumental in supporting growth in developing countries (Doucouliagos and Paldam, 2011). This belief continues to shape the broader aid-effectiveness debate, reinforcing the notion that aid, when properly utilized, can contribute meaningfully to economic development.

2.4. Empirical Literature Review

The gap model, which was made by Cheery and Strout in 1966, states that emerging nations struggle to save enough money and earn enough from exports to cover the level of investment level required to reach the targeted rate of economic development. A foreign assistance influx is required to boost a nation's economic growth if it is unable to close this gap with its own resources. Hoda (2013) According to Roosevelt S. (2018), Carol et al. believe that foreign aid is helpful and effective in resolving Africa's development issues. They contend that foreign aid has benefited African nations by promoting social services, maintaining development, lowering poverty, enhancing social services, and establishing democratic governance.

Using Malawi as a case study, Mwanamanga (2015) examined the debate over whether or not foreign aid boosts the economy from the 1960s to 2012. He used OLS time series analysis to conduct an empirical investigation. The findings demonstrated that aid significantly and negatively affected economic development. He supported his findings with three distinct models, all of which agreed that aid promotes more government spending rather than investment. Additionally, the study found that factors including political will, policy, and governance structure affect how successful help is.

Mustafa E. et al. (2018) used time-series data from 1980 to 2015 to examine the connection between economic growth and foreign aid in the context of Sudan. The autoregressive distributive lag model (ARDL) bound test for cointegration was used for the analysis. This study indicates that foreign aid significantly and favorably affects Sudan's economic growth over the long term. In his research, he also discovered that the relationship between aid and corruption in public institutions has a detrimental and substantial short-term impact, which lowers the potential contribution to economic growth. The report concludes by arguing that help contributes to economic development by increasing productivity and human capital.

Ahmed (2014) investigated how foreign aid affected economic growth in Sub-Saharan African nations. According to the study's findings, help did not significantly boost economic growth. It also implied that addressing corruption on both the donor and recipient sides would have effects that are more beneficial.

Using a cross-country scenario to assess the influence of foreign help on economic growth, Moreira (2005) discovered that aid had a smaller short-term impact than the long-run period. When conducting the case study, the aid-growth time lag was taken into account. In contrast to Harold Domar's custom, the dependent variables were taken into account using their per capita forms. Brautigam et al. (2004) has demonstrated how the quality of governance in Sub-Saharan Africa is weakened by significant amounts of aid. She discovered that substantial aid offers little impetus for the nation to enhance the quality of its administration, resulting in lenient budgetary restrictions and an increase in opportunities for rent seeking. She also demonstrated how aid might encourage corrupt practices.

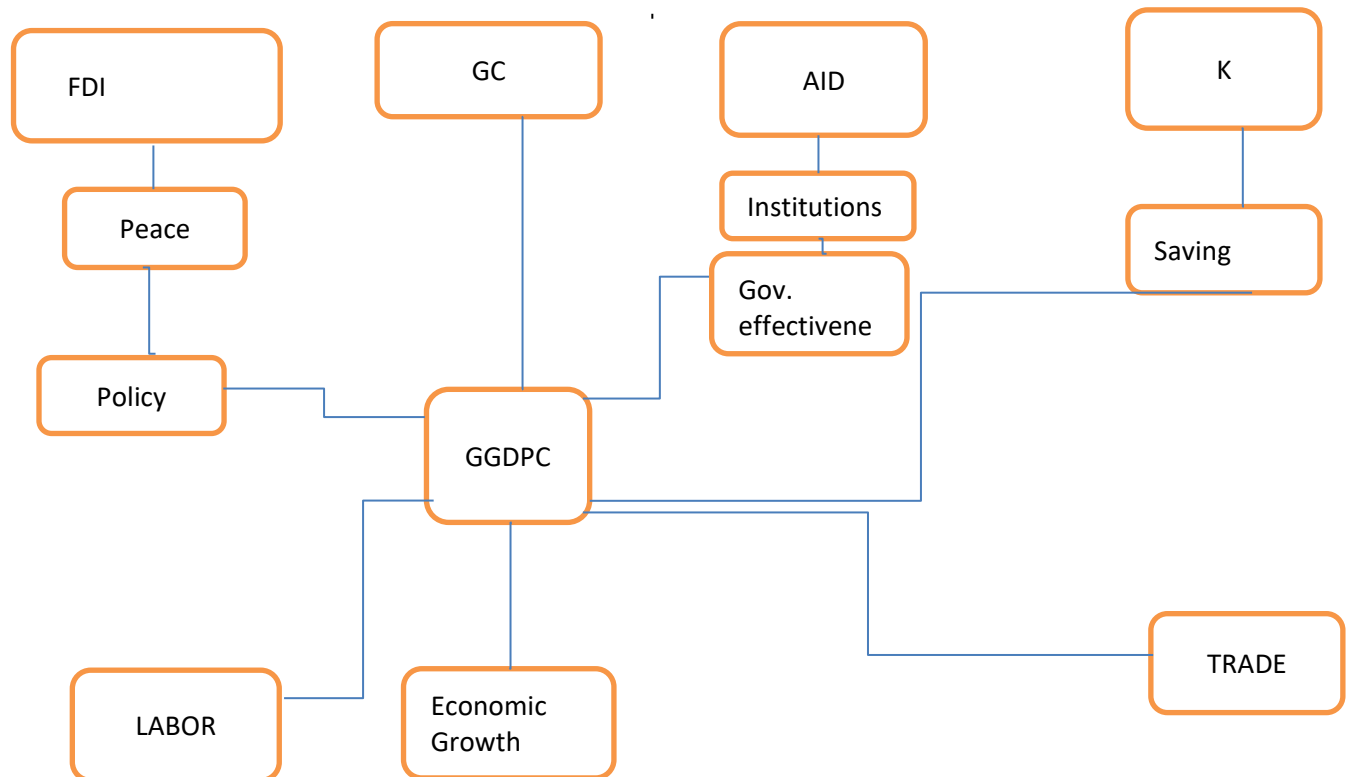
According to Whitaker (2006), foreign aid has positive impact on economic growth especially in countries, which have sound policy and operate economy and trade at a large. Burnside also supports this and Dollar (2000), Farah (2009) and Durbarray et al., (1998) which suggests foreign aid leads to Economic growth if good fiscal policies and strong institutions are in place. Another literature disagrees with the above literature foreign aid has a negative effect on Economic growth because it encourages corruption, encourages rent-seeking behaviors and erodes bureaucratic Institutions.

Ali and Isse (2005) also showed that aid has bound by decreasing marginal return, which is explaining another way in which development assistant can negatively affect economic growth. Similarly, Boone (1995) found that while foreign aid as a percentage of GDP was rising, aid-intensive African nations did not see economic development in the 1970s and 1980s. Similarly, Boone (1995) found that while foreign aid as a percentage of GDP was rising, aid-intensive African nations did not see economic development in the 1970s and 1980s. In a similar vein, Knack (2001) maintained that more foreign aid degrades institutional and bureaucratic quality, raises corruption, and promotes rent-seeking behavior. According to the analysis, the poverty-efficient allocation of aid and the actual allocation differ significantly.

Addison et al. (2005) specifically, from 1960 to 2012 examine trends in official aid to Africa, and SSA. Similarly, a study conducted by Tait et al. (2015) on 25 SSA nations from 1970 to 2012 shows that aid significantly boosts per capita GDP development across the study period.

In their study on Uganda, Bwire et al. (2017) also use a Cointegrated Vector Autoregressive Model with quarterly data from 1997 to 2014 and annual data from 1972 to 2008 to examine the dynamic link between aid and domestic fiscal aggregates. According to the study, aid has been a key component of long-term fiscal stability, linked to higher public spending and taxation as well as lower domestic borrowing.

2.5. Conceptual Framework



2.6. Evaluation of Theoretical and Empirical Literature Review

There are theories which indicate how aid could affect economic growth as we see in the above theoretical literature review. This could be linked with post second world war Harrod–Domar and its extension, two-gap model in 1960 and 3 gap model in 1990. These theories indicate positive and significant of aid on economic growth. According to these theories, such positive effect can occur if foreign aid follows targets effective transmission like investment, import and consumption.

The literature mentioned above demonstrates that many academics have arrived at differing conclusions regarding the impact of foreign aid on economic growth.

As we see from the above evidence, there were the literatures, which indicate the positive and significant effect of foreign aid on economic growth in LIC. However, other studies have shown that foreign aid has a detrimental impact on LIC's economic development. This obviously makes it difficult to draw conclusions about how foreign aid affects a nation's economic development.

Most studies focus on Traditional aid (TAD) which is continue since 1960. But starting from 2000 aid landscape is changed due to the introduction of Non Traditional aid (NTAD). Therefore, this study will take in to account both TAD AND NTD to conclude Weather aid have significant effect on Economic growth or not using recent paned data. This study will contribute to exiting literature in filling this research gap and initiates other studies.

CHAPTER THREE: METHOD OF THE STUDY

3.1. Research Design

A research design is a thorough structure that describes the steps and techniques required to collect and process the data required for a study. The goals that researchers hope to accomplish determine which research design is best (John, 2007). According to Kothari (2004), the purpose of explanatory research is to assess the causal relationships between independent and explanatory variables. Both qualitative and quantitative research methodologies are employed in the study. A qualitative research method is used to explain results and potential interpretations, as well as to gather data in a methodical manner to delve deeply into study issues.

The quantity and scope of the effects of foreign aid on economic growth in Sub-Saharan African nations on the other hand are measured and analyzed numerically using quantitative research methodologies. Its objective is to determine how foreign aid affects the economic growth of sub-Saharan Africa. The impact of foreign aid is evaluated using panel data from WDI data for 33 Sub-Saharan African nations from 2000 to 2024.

3.2. Description of Variables

Table 1: Description of variables

Explanatory variables	Description of Variables
Dependent variable GGDP per capital	Growth GDP Per capital
Foreign Aid	Foreign Aid is official development assistant and official aid received. Its official aid which given to Sub Saran – African countries from developed countries, government and non-governmental international organization
Initial GDP per capita (lag of GDPPC)	Lag of GGDP per capital refers to the time delay and backward looking perspective used when analyzing how past value of GGDPPC influence current or future value.
Capital formation	Capital formation is a total investment in new and improved fixed asset with in a country excluding land and existing asset.it includes machinery equipment construction of buildings and improvement to land.

Trade	Trade is the same of import and export of good and services measured as a percentage of GDP.
Government expenditure	All government current expenditure for purchase of good and services
Foreign direct investment	FDI is defined as a net inflow of capital used to purchase a long-term management stake in a business that operates in a foreign economy. This covers both short-term and long-term capital, such as equity capital and reinvested earnings.
Labor force participation rate	The percentage of people of working age who provide labor for the production of goods and services over a given time period.

3.3. Data Source

The countries of Sub-Saharan Africa make up the study's population. 33 SSA countries are chose for this study based on the availability of data relevant to the flow of foreign aid and statistics pertaining to their GDPPC growth throughout the study period. This countries is selected depends on the availability of data on the inflow of foreign aid and growth of GDPP capital over period of 24 years starting from 2000-2024. The sample countries include 6 countries from Central Africa (Dem Rep of Congo, Congo Rep, Cameroon, Central African Rep, Gabon and Chad), 9 countries from Eastern Africa (Rwanda, Comoros, Madagascar, Mauritius, Sudan, Burundi, Kenya, Tanzania, and Uganda), 6 countries from Southern Africa (South Africa, Mozambique, Angola, Botswana, Namibia, and Zimbabwe) and 12 countries from Western Africa (Sierra Leone, Gambia, Ghana, Togo, Mauritania, Guinea, Guinea-Bissau, Mali, Niger, Burkina Faso, Benin and Senegal). These countries selected for this study as they provide a good sample of moderately to heavily aid-dependent developing countries with dubious quality of governance. The empirical model will be estimated using annual data from 33 Sub-Saharan nations between 2000 and 2024. The nations were only selected based on the availability of adequate data for study.

The explanatory variables of the model are described as follows:

Table 1.Descriptions of variables and its source

Variables	symbols	Definition/Measure	Source
Dependent Variable	GGDPPC (Economic Growth)	The log difference of GGDP per Capital	WDI
Independent Variable			
Official Development aid	ODA	Official development assistant and official aid received	WDI
Foreign direct investment	FDI	Foreign Direct Investment is the net inflow of investment as a % of GDP	WDI
Capital Formation	K	Net accumulation of Capital Goods as a % of GDP	WDI
Government final Consum expenditure	GC	Final Government consumption expenditure as a of %GDPC	WDI
Trade	T	Trade between countries as a %GDP	WDI
Labor force participation rate	L	Total (% of total population ages 15-64) who give their labor for the production of good and services.	WDI
Initial GGDP per capital	l.GDPPC	Its log of initial GGDP per Capital	WDI

Instrumental Variables

Instrumental variables are variables that serve as an instrument for indigenous explanatory variables. Endogeneity arises when an explanatory variable is connected with disruptions due to omitted variables that are correlated with the included explanatory variables, or when an explanatory variable is determined concurrently with the dependent variable. They might also directly affect things, but they cannot be measured (data is not available). Foreign Direct Investment (FDI) and Official Development Assistants (ODA) are selected as instrumental variables for this model. While FDI is influenced by a country's peace and stability, the quality of its government, conditions that encourage investment, and its economic policy, ODA may be impacted by the relationship between the donor and the recipient as well as corruption.

3.4. Model Specification

The model specifications used to evaluate the connection between economic growth and foreign aid are covered in this section. The model is based on Solow's fundamental neoclassical growth model, which adds foreign aid as an input alongside labor and capital. Different panel data estimation is used for the empirical analysis. The Generalized Method of Moment, fixed effect, and random effect are all applied. The Generalized Method of Moment (GMM) is the primary estimation technique used in this work.

GMM works well, particularly when analyzing panel data. Arellano and Bond (1991) used the GMM model to assist prevent inconsistent results and inaccurate growth parameter magnitude and meaning, which arise from failing to take into account the causality between foreign aid, income and economic growth. One benefit of the GMM model is its ability to estimate a differentiated equation, which helps to prevent a fixed effect. By adding instruments to model which increase efficiency and changing the instruments to become uncorrelated with the fixed effect, the system GMM also aids in endogeneity correction.

The Bond (Bond, 2001) rule is applied to select between system, difference GMM models the coefficient from lagged dependent variable from both one-step and two-step difference GMM estimation is compared with the coefficients from the fixed effect and pooled OLS model. We employ the dependent variable's lag as an independent variable when regress the three models, in contrast to the fixed and random regressions that were previously addressed.

Accordingly, if the lagged value of both one and two step Difference GMM is less than or close to fixed effects estimate this suggests that the former estimate is downward biased because of weak instrumentation and the system GMM estimator preferred (Bond, 2001). However, if the coefficient of lagged dependent variable of both one and two step Difference GMM is greater than fixed effect and close to pooled OLS coefficient, using System GMM is less important (Bond, 2001).

$$gdp_{it} = \beta_1 aid_{it} + \beta_2 aid2_{it} + \beta_3 (\Delta aid_{it}) + \beta_4 (\Delta aid2_{it}) + \beta_5 k_{it} + \beta_6 l_{it} + \beta_7 t_{it} + \beta_8 gc_{it} + \beta_9 fdi_{it} + t_i + w_{it} \dots \dots \dots 5$$

Where i indexes is countries and t indexes time. GGDPC is the GDP per capita growth rate and is the dependent variable. LGGDP is the logarithm of initial real GDP per capita and captures the conditional convergence effects of the growth theory (Hansen and Tarp; Collier and Dollar; Ram). K represents the gross capital formation as a percentage of GDP. LABOR represents the increase in labor force participation rate from total population. AID represent official development assistance and official aid received while GC is government final consumption expenditure as GDP%. TRADE represent the respective countries trade as a percentage of GDP. FDI is the country's Foreign direct investment as a percentage of GDP.

3.5 Model Representations

The empirical description of fixed and random effects model is written as follow:

$$gdp_{it} = \beta_1 aid_{it} + \beta_2 aid2_{it} + \beta_3 (\Delta aid_{it}) + \beta_4 (\Delta aid2_{it}) + \beta_5 k_{it} + \beta_6 l_{it} + \beta_7 tre_{it} + \beta_8 gc_{it} + \beta_9 fdi_{it} + t_i + w_i \dots \dots \dots 6$$

Where gdp_{it} : GDPPC growth rate.

Aid : Official assistant and aid received

ΔAid : Change in official development assistant

Fdi : Foreign direct investment as a percentage of GDP

K : Capital formation

L : Labor force participation rate

gc : Government expenditure

tre : Trade

$\Delta aid2_{it}$: Change in aid square

$aid2_{it}$: Aid square

t : Time

GMM Model is empirically representing as follow

$$gdp_{it} = \beta_1 gdp_{it-1} + \beta_2 aid_{it} + \beta_3 aid_{it}^2 + \beta_4 (\Delta aid_{it}) + \beta_5 (\Delta aid_{it}^2) + \beta_6 k_{it} + \beta_7 tre_{it} + \beta_8 gc_{it} + \beta_9 fdi_{it} + \beta_{10} l_{it} + t_i + w_{it} \dots \dots \dots 7$$

Where $w_{it} = \mu_i + \epsilon_{it}$

Where gdp_{it} :Per capita GDP growth rate for countries

gdp_{it-1} : Log of initial gdp

Aid: official assistant and aid received

ΔAid : Change in official development assistant

Fdi : Foreign direct investment as a percentage of GDP

K : Capital formation

L : Labor force participation rate

gc : Government expenditure

tre : Trade

Δaid^2_{it} : Change in aid square

aid^2_{it} : Aid square

3.6. Method of the estimation

This study makes use of panel data from 33 Sub-Saharan African countries for the period of 24 years (2000-2024) giving 825 observations. The estimation period is chosen to use 24 years of panel data observations in each country in order to maximize the cross-sectional dimension of the panel to 33 Sub Saharan African countries. To achieve our objective, the effect of foreign aid on economic growth on Sub Saharan economic growth, this study will make use of models and estimation methods richer than the basic (OLS). Method such as pooled OLS, fixed-effects, random-effects, one-step deference GMM estimator and two-step deference GMM Estimators is used.

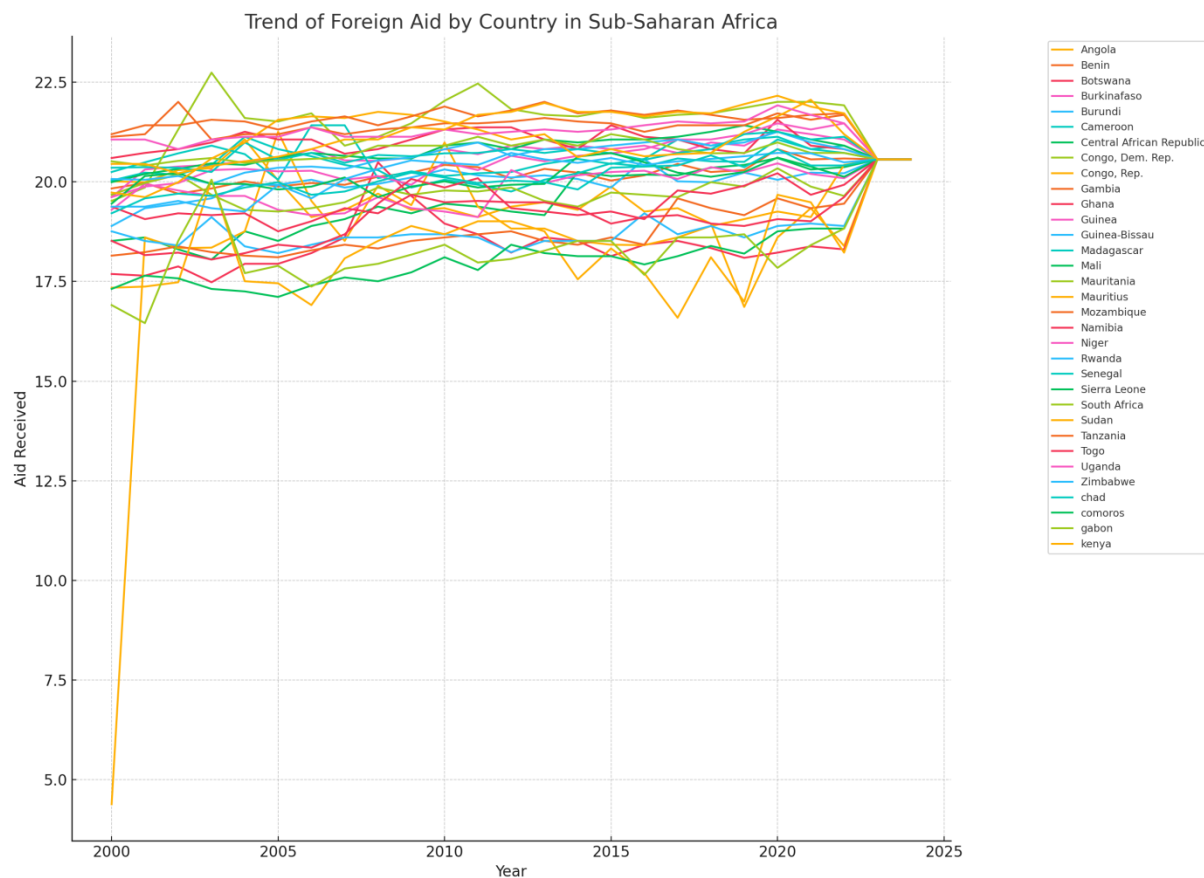
CHAPTER FOUR: ANALYSIS, RESULTS AND DISCUSIONS

The distribution of the variable is found in annex appendix I. The total number of observations, the number of groups, the mean, the standard deviation, the within and between effect, the maximum and minimum values of each variable are displayed.

4.1 Trends on the Flow of Foreign Aid in SSA

The economic, political, and social conditions that SSA nations are facing influence the patterns of aid that they receive. When a country has economic, political, or social instability, the amount of aid it receives increases; when it is more stable. The figure below shows the ODA flow trend graphically.

Figure 4.1: Trend of Foreign Aid in Sub-Saharan African



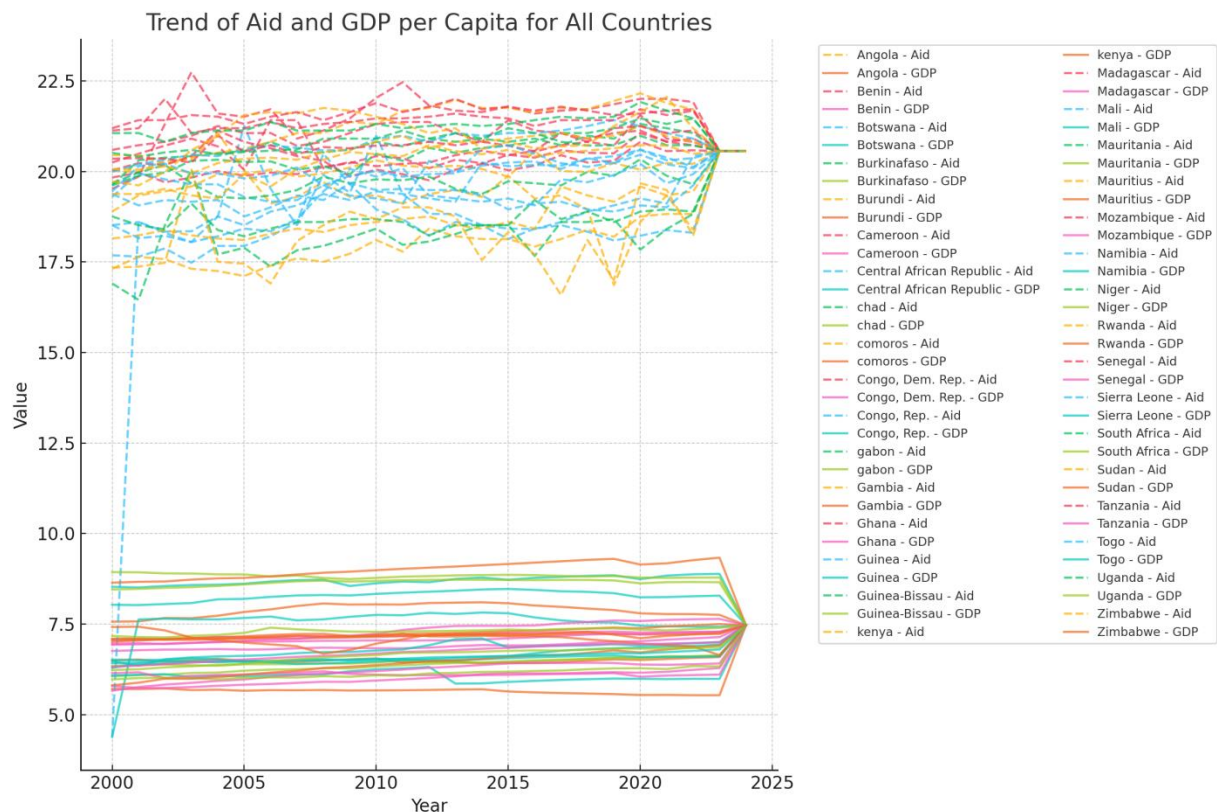
Source: the author's statistical calculation

With the exception of South Africa, Kenya, the Democratic Republic of the Congo, and Sudan, the data from 2000 to 2024 indicates that the official development assistance that flows to SSA nations follows a roughly similar trend. Tanzania, Congo Democratic Republic, Mozambique, Kenya and Uganda have received higher level of aid across the year. The countries aid flow increased highly starting from early year of analysis (2000). South Africa, Mauritius, Kenya, Sudan and Congo republic showed a higher fluctuation for aid they received. Beginning from 2000, aid to South Africa and the Congo Republic increased, but by 2005, it had drastically decreased. Following 2005, the aid flow for these nations begins to resemble the other nations in the research more closely. Like most of the countries in the study, Ghana started the analysis year with a steady pattern and a lower rate of increase. With a few exceptions, foreign aid (ODA) flows to Sab-Saharan African nations generally follow the same pattern throughout the year.

4.2 Relationship between Foreign Aid and GDPPC Growth

The aid flow and economic growth rate trends for each nation are plotted on the same graph in Figure 4.2. The picture illustrates how, over the course of the study period, aid and economic growth followed comparable patterns for Benin, Burkina Faso, Burundi, Chad, Mali, Rwanda, Senegal, and South Africa. Similar trends have been seen in Cameroon, Ghana, Uganda, Zimbabwe, and Niger, with the gap closing in recent years. There was significant variation and divergence in Angola, Botswana, Gabon, Mauritius, Congo Democratic Republic, and Congo Republic. On the other hand, Sudan, Tanzania and Genie Bissau had diverging flows in recent years. The flow of foreign aid and GDPPC growth rate indicate that they have the same and stable trend in all the analysis period. Generally, the trend indicates that there is a trend to the flow of foreign aid and GDPPC confirming that they have a significant relationship. However, for the left the countries the trend of AID and GGDPPC are similar through entire study.

Figure 4-2: Trend of Foreign Aid and GDPPC growth in Sub-Saharan African Countries



Source: the author's statistical calculation

4.3 Empirical regression results

4.3.1 Unit root test

For results to be non-spurious, the variables should be stationery, meaning that their variance, covariance and mean must all be constant. The existence of the unit root is one example of a non-stationary path. Unit roots are neither autoregressive moving average (ARMA) nor stationary autoregressive (AR) time serious processes, which might have a trend or an intercept. The Harris-Tzavalis unit-root test is used to create unit-root tests. This test includes an alternate hypothesis that the series is stationary and a null hypothesis that all panels contain the unit root. At the 1% level of significance, we reject the null hypothesis that all panels contain unit roots, based on the Harris-Tzavalis unit-root test results shown in appendix V. At a significance level of 1%, the following variables are stationary: growth domestic product per capital (GGDPPC), foreign direct investment (FDI), government consumption (GC), Trade (T), Capital formation

(K), Aid (AID), change in AID, and its square. Additionally, following the first deference, labor (L) is steady at the 1% significance level.

4.3.2 Fixed effect regression model

The fixed effect regression result indicates that the within effect is 25.97% variation on GDPPC growth rate in time and within all countries with an overall result is of 16.59% of variation. The correlation result also indicates that 19.57% of the variances which due to difference in the panels. The results of fixed effect regression show that foreign aid has a positive impact on the increase of GGDP per capita. With all other factors, held equal, a country's GGDP per capital increased by an average of 0.38% over time for every unit increase in foreign aid, indicating the beneficial effect of AID on GGDP per capital. At 1%, the AID coefficient is statistically significant, and the 95% confidence interval for its true value is between 0.2838082 and 0.4796545.

In relation to foreign aid (AID), a one-unit increase in foreign direct investment (FDI) causes a country's GGDP per capital to decline by 0.11 over time on average, when other factors remain constant. Its 95% confidence interval is from -0.1872121 to -0.032124, and its coefficient is statistically significant at 1%. Citrus paribus, a 1% rise in Capital (K) results in an average increase in GGDP per capital of 0.03; which suggests that K has a positive effect on GGDP per capital. Its coefficient is insignificant, and the 95% confidence interval for its true value of the coefficient of capital is between 0.0701322 and 0.1838707. GGDP per capital is positively affected by government spending as well. If all thing else remain constant, a 1% increase in GC increase a country's GGDP per capital by an average of 0.04 over time. At the 1% significant level, the GC coefficient is statistically insignificant, and its 95% confidence interval between -0.0244884 and 0.1142476.

Labor has a negative effect on GGDP per capital, just like foreign direct investment does. Citrus paribus, a 1% increase in labor lowers a nation's GDPPC growth rate by 0.91 on average over time. Its 95% CI ranges from -1.213678 to -0.6073472, and its coefficient is statistically significant at 1%. GDPPC growth is positively affected by trade, as well. When all things remain constant, a 1% increase in Trade results in an average increase of 0.24 in GDP per capital growth. At the 1% level, its coefficient is statistically significant, and its 95% confidence interval

falls between 0.1162822 and 0.312759. However, the GDPPC growth rate is negatively affected by the square of AID and changes in AID.

A 1% increase in both square of AID and change in AID leads to decrease of growth GDPPC on average 0.14 and 0.19 respectively, *ceteris paribus*. The coefficients of both variables are significant at 1%. The true value of both square of AID and change in AID is between -0.1904251 and -0.0913623 for square of AID and -0.2696548 and -0.1043144 for change of AID. However, change in aid square has positive impact on growth of GDPPC. A 1% increase in change in square of foreign aid leads to increase of growth GDPPC by 0.08 on average, *ceteris paribus*. With a significant coefficient at 1%, its true value is between from 0.0370218 to 0.1210997. If all explanatory variables were set to zero, the growth GDPPC for a specific country would be 8%.

The fixed effect model is written as follows:

$$ggpc_{it} = 8 + 0.38aid_{it} - 0.14aid2_{it} - 0.19(\Delta aid_{it}) + 0.08(\Delta aid2_{it}) + 0.03k_{it} - 0.91l_{it} + 0.24t_{it} + 0.04gc_{it} - 0.11fdi_{it} + e_{it} \dots \dots \dots 8$$

Table 2: Result for fixed effect regression model

ggdpc	Coef	Std. Err.	Z	P>z	[95% Conf.	Interval]
K	0.02909	0.02819	1.03	0.302	-0.0262	0.08443
Aid	0.38173	0.04989	7.65	0	0.28381	0.47965
Gc	0.04488	0.03534	1.27	0.204	-0.0245	0.11425
Trade	0.23762	0.03808	6.24	0	0.16286	0.31238
Labor	-0.9105	0.15444	-5.9	0	-1.2137	-0.6073
Fdi	-0.1097	0.0395	-2.78	0.006	-0.1872	-0.0321
aid2	-0.1409	0.02523	-5.58	0	-0.1904	-0.0914
chaid2	0.07906	0.02142	3.69	0	0.03702	0.1211
Chaid	-0.187	0.04211	-4.44	0	-0.2697	-0.1043
_cons	7.9922	0.72604	11.01	0	6.56699	9.41741
Sigma_u	0.78685					
Sigma_e	0.235206					

Rho	0.91290867					
R2	0.2597					
Between	0.1837					
Within	0.2597					
Overall	0.1659					
F(9,783)	30.52					
hauschi2	0					

Source: the author's statistical calculation

4.3.3. Random effect regression model

According to the random effect model, the variation in explanatory factors over time and between SSA countries is 25.94% of the variation in GDPPC growth rate. According to the interclass correlation result, the standard deviation of residuals or the overall error term is to blame for the variance in GDP growth rate, not differences between panels. The outcome demonstrates that, when all other factors are held constant, foreign aid increase GDPPC growth rates by an average of 0.38 when raised by 1% over time and between countries. With a 95% confidence interval, its true value falls between 0.2831173 and 0.4808883, and its coefficient is statistically significant at 1%. FDI has a negative impact on the GDPPC growth rate. Citrus paribus, GGDPPC fall by 0.12 on average when FDI rise by 1% over time and between nations, indicating a negative effect. The 95% confidence interval for the FDI coefficient is between -0.1933428 and -0.0368447 and its coefficient is statistical significance. Capital has a positive effect on GDP per capital growth rate. Other things remain constant, a 1% increase in capital (K) results in an average 0.03 increase in GDPPC growth rate. The coefficient of capital is statistically insignificant at the 1% significant level, and its true value falls between 0.0281839 and 0.0833228 with a 95% confidence range.

With the statistical insignificance coefficient at the 1% significance level, a 1% increases in government spending over time and between counties raises the GDPPC growth rate by an average of 0.05 other thing remain constant. The 95% confidence interval for the true value of the government spending is between -0.0180928 and 0.1211385.

GDP per capital growth is positively affected by trade as well. If all things remain constant, a 1% increase in trade raises GGDP per capital by an average of 0.25. Its true value ranges from 0.1750753 to 0.3251398, and its coefficient is statistically significant at 1%. Labor, however, has a negative impact on GGDP per capital. If everything else stays the same, a 1% increase in labor (L) results in a 0.96 fall in GGDP per capital. At the 1% level of significance, the coefficient of labor is significant, and its true value is within the 95% confidence interval of -1.252583 to -0.6594453.

However, square of AID and changes in aid has negative effect on GDP per capital growth. *Citrus paribus*, growth GDPPC decreases by an average of 0.14 and 0.19 for every 1% increase in both the square of AID and change in AID respectively. At 1%, both variables' coefficients are significant. The square of AID and the change in AID have real values that fall between -0.1932566 and -0.0932389 for AID square and between -0.2705001 and -0.1035239 for change of AID. Nonetheless, the GDPPC's growth is positively affected by changes in aid square. On average, growth GDPPC increases by 0.08 for every 1% increase in change square of foreign aid *citrus paribus*.

Its coefficient is significant at 1%, its true value is between 0.0373249, and 0.1222343. If all independent variables are zero, GDPPC growth rate will be 8.2 for a given country. The random effect model is written as follow:

$$ggpc_{it} = 8.2 + 0.38aid_{it} - 0.14aid^2_{it} - 0.19(\Delta aid_{it}) + 0.08(\Delta aid^2_{it}) + 0.03k_{it} - 0.96l_{it} + 0.25t_{it} + 0.05gc_{it} - 0.12fdi_{it} + e_{it} \dots \dots \dots 9$$

Table 3: Result for random effect regression model

Ggdpc	Coef.	Std. Err.	Z	P>z	[95% Conf.	Interval]
K	0.0275695	0.028446	0.97	0.332	-0.0282	0.08332
Aid	0.3820028	0.050453	7.57	0	0.28312	0.48089
Gc	0.0515229	0.035519	1.45	0.147	-0.0181	0.12114
Trade	0.2501075	0.038282	6.53	0	0.17508	0.32514
Labor	-0.9560141	0.151313	-6.32	0	-1.2526	-0.6594
Fdi	-0.1150938	0.039924	-2.88	0.004	-0.1933	-0.0368
aid2	-0.1432477	0.025515	-5.61	0	-0.1933	-0.0932
chaid2	0.0797796	0.021661	3.68	0	0.03732	0.12223
Chaid	-0.187012	0.042597	-4.39	0	-0.2705	-0.1035

_cons	8.224655	0.720296	11.42	0	6.8129	9.63641
sigma_u	0.61950366					
Sigma_e	0.2352062					
Rho	0.87401251					
Within	0.2594					
Between	0.2059					
Overall	0.184					
Wald chi2(9)	275.94					
Prob > chi2	0					

Source: the author's statistical calculation

4.3.4 Housman test

By comparing two distinct estimating model parameters, the Hausman tests check for econometric model misspecification. Under the null hypothesis, the Housman test assumes that the model specification is correct and that both estimators are compatible with the actual model parameters. Under proper specification, repressors are independent of specific effects and both the random and fixed effect models are consistent. Under the presumption of individual particular impact, random effect estimating is effective, and the difference between the random and fixed effect estimators will be minimal. The fixed effect estimator stays consistent but the random effect estimator becomes inconsistent if the assumption is not met and the model is appropriately described. This widens the estimators' difference. We employ the null hypothesis that the random effect model is inappropriate for the Hausman test. Since the probability chi-square is less than 0.01 based on the results, the fixed effect estimation model is suitable and the null hypothesis cannot be rejected.

4.3.5 One Step Difference GMM

Stata used 792 of the 825 observations, with the year serving as the time variable and 33 nations as the group variable. With 309 instruments and a Wald value of 1636.34, the lowest, maximum, and average number of observations is 24. We are unable to deny the validity of the instruments as the Hansen test equals 1. Since the value of AR2 is 0.0277 indicates that there is no serial correlation.

The outcome of the one-step difference indicates that if all else equal, a 1% increase in the GDPPC growth rate's lag results in an average rise of 0.86% in the GDPPC growth rate's present value. At 1%, the lag GDP growth rate coefficient is significant.

Foreign aid has also positive impact on GGDP per capital. A 1% increase in Aid leads to 0.25 increase in GGDP per capital other things remain constant. The coefficient of Aid is significant at 1%. Trade has also positive affect on GDP per Capital Growth. A 1% increase in trade increase GDP per Capital growth by 0.27 on average other thing remain constant. The coefficient of trade is also significant at 1% level of significance. Like trade, Government consumption expenditure (GC) has also positive impact on GDPPC growth. A one-unit increase GC results in to 0.11 increases in GDP per capital growth on average, other thing remains constant. The coefficient of GC is significant at 1%. On the other hand, Labor (L) affects GDPPC growth negatively. A 1% increase in Labor (L) results in to 0.28 decrease in GDP per capital growth respectively on average other thing remain constant. Its coefficient is significant at 5% level. Squared aid and change of aid affect GDP per capital growth negatively. A 1% increase in both Square of aid and change of aid leads to decrease to GDP per capital by 0.17 and 0.11 on averages other thing remain constant. The coefficient of both square of aid and change of aid are significant at 1%. Unlike square of aid and its change, change in aid square has positive effect on GDP per capital growth. A 1% increase in change in aid square leads to increase in GDP per capital growth by 0.12 on average other thing remains constant. Its coefficient is significant at 1%. If all independent variables were Zero GDP per capital, growth would be 2.62. One-step difference GMM could be empirically presented as

$$\Delta gdp_{it} = 2.62 + 0.86gdp_{it-1} + 0.25aid_{it} - 0.17aid_{it}^2 - 0.11(\Delta aid_{it}) + 0.12(\Delta aid_{it}^2) + 0.03k_{it} - 0.28l_{it} + 0.27t_{it} + 0.11gc_{it} + 0.04fdi_{it} + e_{it} \dots\dots\dots 10$$

Table 4: Result For One Step Difference GMM regression

Ggdpc	Coef.	Std. Err.	Z	P>z	[95% Conf.	Interval]
Ggdpc						
L1.	0.8641901	0.0315	27.43	0	0.80245	0.92593
K	0.0300132	0.02256	1.33	0.183	-0.0142	0.07423
Aid	0.2502919	0.03152	7.94	0	0.18851	0.31208
Gc	0.1126075	0.0269	4.19	0	0.05988	0.16534
Trade	0.26584	0.02898	9.17	0	0.20905	0.32263
Labor	-0.282467	0.13602	-2.08	0.038	-0.5491	-0.0159
Fdi	-0.0357281	0.02655	-1.35	0.178	-0.0878	0.01631
aid2	-0.1704422	0.01601	-10.65	0	-0.2018	-0.1391
chaid2	0.1182708	0.0132	8.96	0	0.09239	0.14415

Chaid	-0.111787	0.02591	-4.31	0	-0.1626	-0.061
_cons	2.619879	0.65546	4	0	1.33519	3.90457
Number of observations		792				
Number of instrument		309				
Number of group		33				
Wald chi2(10)		1636.34				
Hansen		1				
Arellano-Bond test for AR(2)		0.0277				

Source: the author's statistical calculation

4.3.6. Two-step difference GMM

Stata took 759 observations out of 825 observations for the two-step difference GMM estimation. The minimum, maximum, and average observations for the two-step difference GMM estimation are 23 with 77 instruments and Wald value of 6306.99. The Arellano-Bond estimation results are 0.0277, the Hansen test value is 1, indicating that there is no serial correlation, and that the instruments are valid. All variables are statistically significant for the two-step difference GMM. The relationship between GDP per capital growth rate and its lag value is positive; a 1% increases in the lag of GDPPC growth rate increases its future value, on average, by 0.87%, other things being equal.

Other thing remains constant, a 1% increase in foreign aid (AID) raises GDP per capital growth rate by an average of 0.22%. At the 1% significance level, its coefficient is statistically significant. Growth in GDP per capital is positively affected by trade. When all else is held constant, a 1% increase in trade leads to an average GDP growth rate of 0.26%. At the 1% significance level, its coefficient is significant.

A 1% increases in GC results, on average 0.08% increase in GDPPC growth rate indicate positive impact of Government Consumption(GC) citrus Paribas. Its coefficient is statistically significance level at 1%.FDI has negative impact on GGDP per capital. A 1% increase in FDI leads to decrease in GDP per capital growth by 0.02 on average other thing remains constant. The coefficient of FDI is significant at 10% significance level. Capital (K) has also negative impact on GDP per capital growth. When Capital increases by one unit, GDP per capital growth increases on average by 0.03%, other things remaining constant. Its coefficient is significant at 10% significance level. Like GC trade have positive impact on GGDP per capital. A1% increase

in trade leads to 0.26 increases in GGDP per capital on average other thing remain constant. Its coefficient is significant at 1%. Square of aid and change of aid have also affected negatively GDP per capital growth rate. A 1% rise in both Square of aid and change of aid leads to decrease in GDP per capital by 0.13 and 0.12 on averages other thing remain constant. The coefficient of both square of aid and change of aid are significant at 1%. Unlike square of aid and its change, change of aid square has positive impact on GDP per capital growth. A 1% rise in change in aid square leads to increase in GDP per capital growth by 0.09 on average other thing remains constant. Its coefficient is significant at 1%. If all the dependent variables are zero, GDPPC growth rate will 1.2. The two step difference GMM is written as follow:

$$\Delta ggpc_{it} = 1.2 + 0.87gdp_{it-1} + 0.22aid_{it} - 0.13aid_{it}^2 - 0.12(\Delta aid_{it}) + 0.09(\Delta aid_{it}^2) - 0.03k_{it} - 0.19l_{it} + 0.26t_{it} + 0.08gc_{it} - 0.02fdi_{it} + e_{it} \dots \dots \dots 11$$

Table 5: Result Of Two Step Difference GMM regression

Ggdpc	Coef.	Std. Err.	Z	P>z	[95% Conf. Interval]
Ggdpc					
L1.	0.8743585	0.04729	18.49	0	0.78166 0.96705
L2.	0.0072466	0.02277	0.32	0.75	-0.0374 0.05188
K	-0.0315415	0.01835	-1.72	0.086	-0.0675 0.00442
Aid	0.2208502	0.03266	6.76	0	0.15683 0.28487
Gc	0.0772623	0.02464	3.14	0.002	0.02896 0.12556
Trade	0.2592077	0.0253	10.25	0	0.20963 0.30879
Labor	-0.1944318	0.10889	-1.79	0.074	-0.4078 0.01898
Fdi	-0.0186784	0.01017	-1.84	0.066	-0.0386 0.00126
aid2	-0.1263442	0.0142	-8.9	0	-0.1542 -0.0985
chaid2	0.0880786	0.0106	8.31	0	0.0673 0.10886
Chaid	-0.1213361	0.02254	-5.38	0	-0.1655 -0.0772
_cons	1.20656	0.6033	2	0.046	0.02412 2.389
Number of observation		759			
Number of instrument		77			
Number group		33			
Hansen		1			
Arellano-Bond test for AR(2)		0.0277			

Source: the author's statistical calculation

4.3.7 Choosing between difference and system GMM models

To choose between difference and system GMM, the coefficient of the lagged dependent variable from the two-step difference GMM estimation is compared with the coefficients from the pooled OLS and fixed effect model. We use the lag of dependent variable as an explanatory variable while conducting the regression.

Accordingly, if the lagged value of both one and two step Difference GMM is less than or close to fixed effects estimate this suggests that the former estimate is downward biased because of weak instrumentation and the system GMM estimator preferred (Bond, 2001). But if the coefficient of lagged dependent variable of both one and two step Difference GMM is greater than fixed effect and close to pooled OLS coefficient, using System GMM is less important (Bond, 2001). Therefore, if we see the Coefficient of lagged dependent variable of one and two steps Difference GMM, the coefficients are more than fixed affect or close to pooled OLS Coefficient. Therefore, in this case using System GMM is less important.

Table 6: Coefficients for the lag of GDP

Estimators	Coefficient of lagged GDP
Pooled OLS	0.92
Fixed effect	0.78
One Step Diff GMM	0.86
Two Step Diff GMM	0.87

Source: the author's statistical calculation

CHAPTER FIVE: CONCLUSION AND POLICY IMPLICATION

5.1. Conclusion

The objective of this study is to evaluate the impact of foreign aid on Sub-Saharan African economic growth by using panel data of 33 selected Sub-Saharan African countries from 2000 to 2024. In order to achieve better accuracy, the researcher used different methodology and most recent data from 2000 to 2024. Regression was conducted using the GMM to increase efficiency and decrease endogeneity and multicollinearity by adding more instruments to the model. The results of the study show that foreign aid significantly and positively affects the economic growth of SSA nations. The study's empirical findings also imply that when evaluating the effect of foreign aid on the economic growth of SSA countries, endogeneity of foreign aid, country heterogeneity, and diminishing returns to increasing aid flow should be taken into consideration. Evidence of diminishing returns to aid is found using the squared aid variable.

The results would have been better if the study had been not limited, particularly due to the data's accessibility. The results of the study also suggest that future research should use a larger sample size to represent all of Sub-Saharan Africa. Better findings might be obtained by including a wider range of factors that capture the economic policies, institutional quality, and government efficacy of the aid recipient nation. For better policymaking, it is also advised to use a dataset with an adequate amount of data that enables the analysis of aid effectiveness over a longer time. The results of this study can be improved, and policymakers will benefit, if the above recommendations are taken into consideration.

5.2. Policy Implication

The result of this study shows that foreign aid has positive and significant effect on economic growth of Sub-Saharan African Economic growth. However, it has diminishing return as the amount of foreign aid increases. Even if aid has a positive influence, its effects on economic growth of SSA are of little magnitude. Therefore, SSA countries shall decrease their dependence on foreign aid.

5.3. Suggestions for Future Researchers

The study finds indicate that including large set of variable for all Sub Saharan African countries for a long time and including the conditions on which foreign aid may depend for effectiveness like government effectiveness, economic policy and institutional quality conditions is important for the future studies.

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Appendixes

Appendix I: distribution of variables

Variable		Mean	Std. Dev.	Min	Max	Observations
country	Overall	17	9.52768	1	33	N = 825
	Between		9.66954	1	33	n = 33
	Within		0	17	17	T = 25
year	Overall	2012	7.21548	2000	2024	N = 825
	Between		0	2012	2012	n = 33
	Within		7.21548	2000	2024	T = 25
K	Overall	3.00249	0.464	0.09241	4.38573	N = 825
	Between		0.31866	2.18673	3.57543	n = 33
	Within		0.34163	0.78705	3.98663	T = 25
Aid	Overall	20.0497	1.24747	4.38573	22.7382	N = 825
	Between		0.99935	18.1361	21.5301	n = 33
	Within		0.76588	5.7608	22.629	T = 25
ggdpc	Overall	7.02952	0.86956	4.38573	9.33426	N = 825
	Between		0.84005	5.71611	8.9462	n = 33
	Within		0.26648	3.91352	8.78173	T = 25
Gc	Overall	2.54602	0.41588	0.71643	3.58749	N = 825
	Between		0.34633	1.74323	3.30409	n = 33
	Within		0.23771	0.73208	3.42941	T = 25
trade	Overall	4.02934	0.45226	0.90573	5.05537	N = 825
	Between		0.38102	2.99773	4.70273	n = 33
	Within		0.25218	1.93734	5.15267	T = 25
labor	Overall	4.17372	0.18529	3.6354	4.49343	N = 825
	Between		0.18	3.7869	4.4677	n = 33
	Within		0.05364	3.87757	4.49534	T = 25
Fdi	Overall	3.05145	0.24107	-0.3455	4.588	N = 825
	Between		0.1043	2.88156	3.43258	n = 33
	Within		0.21806	-0.4384	4.49509	T = 25
aid2	Overall	39.9939	2.49905	8.77147	45.4794	N = 825
	Between		2.02843	36.1869	42.9684	n = 33
	Within		1.50019	11.5082	45.2163	T = 25
chaid2	Overall	0.08379	1.33183	-4.3514	28.436	N = 825
	Between		0.22711	-0.0916	1.25225	n = 33
	Within		1.31289	-4.6267	27.2676	T = 25
Chaid	Overall	0.0653	0.67383	-2.5453	14.2173	N = 825
	Between		0.11357	-0.0227	0.64961	n = 33
	Within		0.66447	-2.6114	13.633	T = 25

Appendix II: Pooled OLS estimation with lag of GDP

		Robust				
Ggdpc	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Ggdpc						
L1.	0.9191033	0.01783	51.54	0	0.8841	0.95411
K	0.0264212	0.01115	2.37	0.018	0.00453	0.04831
Aid	0.2727211	0.12183	2.24	0.025	0.03358	0.51187
Gc	0.0265389	0.01106	2.4	0.017	0.00482	0.04825
Trade	0.0571912	0.01549	3.69	0	0.02678	0.0876
Labor	-0.0201904	0.03727	-0.54	0.588	-0.0933	0.05297
Fdi	-0.0306431	0.0245	-1.25	0.211	-0.0787	0.01746
aid2	-0.1435781	0.06054	-2.37	0.018	-0.2624	-0.0247
chaid2	0.1147467	0.04942	2.32	0.02	0.01774	0.21176
Chaid	-0.1084714	0.0947	-1.15	0.252	-0.2944	0.07742
_cons	0.6693525	0.25781	2.6	0.01	0.16326	1.17544

Appendix IV fixed effect estimation with lag of GDP

		Robust				
ggdpc	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
ggdpc						
L1.	0.7841298	0.0815	9.62	0	0.61812	0.95014
Aid	0.2623826	0.18519	1.42	0.166	-0.1148	0.6396
Gc	0.0782825	0.05437	1.44	0.16	-0.0325	0.18902
trade	0.181993	0.0533	3.41	0.002	0.07343	0.29056
labor	-0.3409556	0.13602	-2.51	0.017	-0.618	-0.0639
Fdi	-0.0185652	0.01961	-0.95	0.351	-0.0585	0.02138
aid2	-0.1722745	0.08475	-2.03	0.05	-0.3449	0.00035
chaid2	0.1131633	0.05509	2.05	0.048	0.00095	0.22538
chaid	-0.1068401	0.11023	-0.97	0.34	-0.3314	0.11769
_cons	3.719564	1.06768	3.48	0.001	1.54476	5.89437

Appendix V: Unit root test

Harris-Tzavalis unit-root test for k		
Ho: Panels contain unit roots		Number of panels = 33
Ha: Panels are stationary		Number of periods = 25
AR parameter: Common		Asymptotic: N -> Infinity
Panel means: Included		T Fixed
Time trend: Not included		
Statistic	z	p-value
rho 0.6672	-10.4002	0

Harris-Tzavalis unit-root test for aid		
Ho: Panels contain unit roots		Number of panels = 33
Ha: Panels are stationary		Number of periods = 25
AR parameter: Common		Asymptotics: N -> Infinity
Panel means: Included		T Fixed
Time trend: Not included		
Statistic	z	p-value
rho 0.3707	24.5797	0

Harris-Tzavalis unit-root test	ggdpc	
Ho: Panels contain unit roots		Number of panels = 33
Ha: Panels are stationary		Number of periods = 25
AR parameter: Common		Asymptotics: N -> Infinity
Panel means: Included		T Fixed
Time trend: Not included		
Statistic	z	p-value
rho 0.6327	12.05	0

Harris-Tzavalis unit-root test	gc	
Ho: Panels contain unit roots		Number of panels = 33
Ha: Panels are stationary		Number of periods = 25
AR parameter: Common		Asymptotic: N -> Infinity
Panel means: Included		T Fixed
Time trend: Not included		
Statistic	z	p-value
rho 0.6874	-9.4332	0

Harris-Tzavalis unit-root test	trade	
Ho: Panels contain unit roots		Number of panels = 33
Ha: Panels are stationary		Number of periods = 25
AR parameter: Common		Asymptotic: N -> Infinity
Panel means: Included		T Fixed
Time trend: Not included		
Statistic	z	p-value
rho 0.6688	10.3236	0

Harris-Tzavalis unit-root test	d.labor	
Ho: Panels contain unit roots		Number of panels = 33
Ha: Panels are stationary		Number of periods = 24
AR parameter: Common		Asymptotics: N -> Infinity
Panel means: Included		T Fixed
Time trend: Not included		
Statistic	z	p-value
rho -0.0253	41.6687	0

Harris-Tzavalis unit-root test	fdi	
Ho: Panels contain unit roots		Number of panels = 33
Ha: Panels are stationary		Number of periods = 25
AR parameter: Common		Asymptotics: N -> Infinity
Panel means: Included		T Fixed
Time trend: Not included		
Statistic	z	p-value
rho 0.3784	24.2112	0

Harris-Tzavalis unit-root test	aid2	
Ho: Panels contain unit roots		Number of panels = 33
Ha: Panels are stationary		Number of periods = 25
AR parameter: Common		Asymptotics: N -> Infinity
Panel means: Included		T Fixed
Time trend: Not included		
Statistic	z	p-value
rho 0.3587	25.1521	0

Harris-Tzavalis unit-root test	chaid2	
Ho: Panels contain unit roots		Number of panels = 33
Ha: Panels are stationary		Number of periods = 25
AR parameter: Common		Asymptotics: N -> Infinity
Panel means: Included		T Fixed
Time trend: Not included		
Statistic	z	p-value
rho -0.1494	49.4535	0

Harris-Tzavalis unit-root test	chaid	
Ho: Panels contain unit roots		Number of panels = 33
Ha: Panels are stationary		Number of periods = 25
AR parameter: Common		Asymptotics: N -> Infinity
Panel means: Included		T Fixed
Time trend: Not included		
Statistic	z	p-value
rho -0.1506	49.5133	0