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Macroeconomic, institutional and political determinants of foreign aid inflows: evidence from selected sub-Saharan African countries

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Macroeconomic, institutional and political determinants of foreign aid inflows: evidence from selected sub-Saharan African countries

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DECLARATION

I, the author, thus certify that the master's thesis titled "Macroeconomic, Institutional and Political Determinants of Foreign Aid Inflows: Evidence from Selected Sub-Saharan African Countries" is entirely original, with the exception of any places where other authors' works are specifically cited. The following approval sheet has also been accepted.

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Abstract:
Using Blundell and Bond's one-step system GMM after controlling economic variables, this study evaluated the macroeconomic, political, and institutional determinants of the flows of official development in 40 SSA nations for the period 2002-2021. In order to reduce the possibility of multicolinearity and raise the weight of the variables, it calculated a weighted index using principal component analysis from the six governance indicators to quantify political stability and institutional excellence. The study's findings showed that institutional quality, the consumer price index, and lagged value government development assistance have a favorable influence on the flow of aid by 1% level of significant. The flow of government development assistance into SSA nations is also restricted by political stability, GDP per capita, and trade volume by 5%, 1%, and 1% level of significance. The study's policy recommendation is that governments in SSA nations can attract foreign capital by enhancing institutional quality and their ability to increase political stability and citizens' per capita income.

Key words: official development assistance, institutional quality, political stability, GMM, SSA

Acronyms and abbreviations

ADI- African development indicator
CPI- consumer price index
DAC- development assistance committee
GDP- gross domestic product
GNP- gross national product
GMM- generalized method of moments
IFI- international financial institutions
IMF- international monetary fund
IQI- institutional quality index
NGO- a non-governmental organization
OA- official assistance
ODA- official development assistance
ODF- official development finance
OECD- organization for economic cooperation and development
PVEST- political stability
SDG- sustainable development goal
SSA- sub-Saharan African countries
TR- trade volume
UNDP- united nation development programs
WDI- world development indicators
WGI- world governance indicators
WTO- world trade organization

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Chapter 1: Introduction

1.1. Background of the study

The lack of capital in developing nations has made it difficult for them to build infrastructure, combat poverty, provide humanitarian aid, and improve the standard of living for their population. One of the capital sources for developing countries is foreign aid, which helps them solve these and other issues. Foreign aid can take many different forms, including the transfer of cash, goods (such as food or military supplies), technical support, or training. Resources may include grants or unique credits (such as export credits) (Wells, 2015). The most well-known type of international aid is official development assistance (ODA), which is aid provided to promote development and combat poverty in underdeveloped nations. It should be mentioned that when we refer to aid in the next section, we mean official development assistance (ODA).

The money provided to developing countries by states and other approved organizations is known as official development aid (ODA). Its main goals are to promote economic growth and end poverty. ODA is typically provided as low-interest grants or loans, and it can be used for improving the livelihood of the citizens (Hynes & Scott, 2013). Low-income, lower-middle-income, and middle-income countries that are deemed to be more vulnerable all qualify as ODA recipients. In general, ODA is intended to be given to countries that need financial assistance to achieve the UN's Sustainable Development Goals (SDGs) and fight poverty. However, the criteria used by donor countries and organizations to determine whether countries are eligible for ODA may differ (Aning, 2010). Although some countries only get a tiny fraction of their aid in this way, bilateral grants between countries provide for the majority of the funding for official development assistance (ODA). ODA is occasionally routed through international and nongovernmental organizations (NGOs) (Williams, 2015).

But the developing countries couldn’t access foreign aid easily. They have been facing different constraints to get ODA to fulfill their capital gaps. Because the donors are not altruistic, they have their own concealed interests (Qian, 2015). The donors may have political, economic, humanitarian, security, and other interests to deliver foreign aid (Olsen, 2003). Although it has been a long time since the beginning of aid it was established as a financial system for the reconstruction of developing countries and war-torn countries, it has lost its purpose over time ((Bhagwati & Eckaus, 1970; Hjertholm & White, 2000a)). Therefore, instead of spending the aid for the intended purpose, it is seen that they are doing it for their own interest and it is not easy for developing countries to get the aid and use it for the purpose they want (Lancaster, 2015).

The history of payment of foreign aid or official development assistance was recognized after World War II to rebuild the countries destructed by the war (McGillivray, Feeny, Hermes, & Lensink, 2006). During this time, the primary reasons for aid provision by donors were to meet humanitarian or emergency needs, aid developing countries in achieving their developmental

(growth and poverty reduction) goals, demonstrate solidarity, secure political and strategic interest, further business interests, strengthen ancestral connections, and, in recent years, to fight the war on terror and advance human rights (Riddell, 2008). The humanitarian impulse to support the development process in developing countries (former colonies) could be the fundamental driving force behind aid, and it has remained a factor in determining foreign aid flows since the 1960s. The relevance of strategic interests in securing allegiance from nations during the Cold War to the current emphasis on security issues (battling terrorists) remains pertinent (Bandyopadhyay & Vermann, 2016).

However, so far, the hidden intentions of the donor countries are debatable. Donors that provide aid do so for a variety of reasons. Even while development was the main goal of assistance during the 1960s, contemporary aid has become more and more strategic in nature. The bilateral and multilateral donors have different interests that want to capture from the recipient countries and have their own conditions to provide the aid.

Even though, developing countries much needed the capital and many countries more demanded the sources of the capital, one of the source is official development assistance (ODA) to improve their economic growth and the livelihood of their citizens. Of course, ODA objectives are to help the developing countries to encourage their economic growth. However, the donors by setting a precondition, developing countries couldn't easily receive the aid that was set for them. Even it is difficult to understanding their interest to overcome the challenges. In this study the researcher would try to assess the developing countries economic, political and institutional determinants that constrained to access the aid from the donors by overcoming the conditions that settled by the donors particularly in sub Saharan African countries. In parallel with this, it enables to understand what donor organization looking for from aid recipient countries especially in sub Saharan African countries.

1.2. Statement of problem

Recently, the flows of aid have been more conditioned rather to reducing material poverty through the provision of infrastructure and basic social services. Aid promote good governance through the promotion of civil and political rights, and reverse negative environmental trends (Alesina & Dollar, 2000). But the donors, in addition to offering the aid there have been their motivation and conditionality that want to implement in the recipient countries. They have a multiplicity of motivations for offering aid to developing countries. The motives of economic development are becoming low and aid has been becoming highly contested by foreign policy and political relationship with the recipient countries. Alesina and Dollar (2000) added that most of the donors provided aid for their former colonies as a way to gain political influence in the world. As a result, either of cutbacks or policy conditionality, the trends of aid flows from donors have been changing periodically. In fact, Britain's aid to Africa began at a somewhat high level

in the mid-1960s (0.5% of GNP), then fell fairly sharply through to the mid-1970s, rose again in the second half of that decade, dropped slowly but substantially during the 1980s and much of the 1990s, and has increased sharply since the later-1990s (Killick, 1997).

In judgments about how to allocate donations, fighting poverty is becoming less important than political considerations. The poorest nations do receive concessional aid from some donors, though, and some aid initiatives are specifically designed to achieve this goal. For instance, aid from multilateral organizations (World Bank) is to support countries that have a budget deficit, and booming exports by encouraging investment to solve the problem of balance of payment parallel to reducing poverty and improving people's livelihoods. However, in theory, bilateral donors, multilateral organizations, or international financial institutions (IFIs) like the World Bank (WB), the International Monetary Fund (IMF), and the World Trade Organization (WTO) have the requirements to provide aid and developed rigidity rule (structural adjustment programs) to combat the inefficiency of aid since at the end of the 1980s for economic management of the recipient countries (world Bank, 1994). This claim has drawn a variety of scrutiny from a wide range of perspectives, especially as it relates to Africa (Geda & Degefe, 2002).

Furthermore, borrowing countries macroeconomic policies are significantly impacted aid conditionality. Good financial decisions are similarly influenced by both public and private entities (Killick, Malik, & Manuel, 1992). The non-governmental organization also coordinates with other NGOs so that aid is concentrated, and they choose recipient countries based on shared characteristics such as religion or colonial past as opposed to enhancing official aid by interacting with challenging institutional contexts (Koch, Dreher, Nunnenkamp, & Thiele, 2009). In light of this, bilateral aid is frequently designed such that it can at the very least support the economic goals of businesses or sectors in the donor countries (Steven Radelet, 2006).

Consequently, the developing countries couldn't realize the requirements for acquiring the aid underlined by the donors because of the volatility of the donor's interests. According to Alemayehu G. (2002) developing countries, particularly African countries challenged to acquire aid from bilateral and multilateral donors for their economic reform and in order to enhance people's lives and combat poverty, by constraints underlined by both bilateral and multilateral donors.

Along with the preconditions, another restriction that controls the flow of aid pertains to the contributors' financial situation like economic crisis of donors. One of the main determinants of aid flow from donors to recipients is the economic and financial crisis of the developed countries ((Berthélemy & Tichit, 2004); (Bulíř & Hamann, 2006); (Chauvet & Guillaumont, 2009); (Dabla-Norris, Minoiu, & Zanna, 2015);(Heinrich, Kobayashi, & Bryant, 2016)). Despite the fact that Fuchs, Dreher, and Nunnenkamp (2014) argue that financial crises have a low correlation

with the donor's outlay of foreign aid, stock market unpredictability, a proxy for economic uncertainty and financial volatility decreases aid from the United States. Contrarily, Dabla-Norris, Minoiu, and Zanna (2015) discovered that donor-funded foreign aid is decreased during times of economic unrest. Regarding the worldwide slump in the economy as an example, Dang (2013) claims that foreign assistance to developing countries has reduced by an average of 20–25 percent. For developing countries that depend heavily on aid, there may be severe macroeconomic instabilities or difficulties as a result of donors being less able or willing to satisfy aid potentials and engagements during crises. The focus of all the studies mentioned above is on how the economic circumstances of the donors limit the amount of aid that can be given to recipients.

Many studies argue that the donors are more inducements on creating markets for their producers, for geopolitical interests and to rise their global power prominence rather than reducing poverty and promoting expansion of host countries' economies. Foreign aid flows are increasingly dependent on political and strategic factors, economic demands, and recipient country policy success, claim Alesina and Dollar (2000). The empirical studies shows that different donors have different interests and evaluates how aid has changed over the years, shifting from a focus on recipient needs in the 1970s to a dramatic shift in emphasizing donor interests in the 1980s (Aning, 2010).

The aid depends on the contributors' political and financial interests. Some studies draw attention to the fact that the factors influencing aid are only considered from the political or institutional perspectives of the receiving nations individually. Using a panel data approach, Ali and Isse (2006) investigate the factors that determine foreign aid for 151 developing nations over the years 1975 to 1998. The findings indicate that GDP per worker, years of education, private credits, and trade reduce aid flows, while taxes, ethnicity, and government consumption also have a positive impact on foreign aid in the case of sub-Saharan African countries. But the studies only assess the economic aspects of the recipient countries.

With the percentage of multilateral aid to GDP as the dependent variable and the levels of health, education, and corruption as the variables that explain the outcome, Hlavac (2007) examines the factors that determine the inflows of multilateral aid to 22 sub-Saharan countries between 1995 and 2004. The results of the time-fixed-effect regression show that countries with low levels of health and education receive more aid and that corruption has a negative impact on aid inflows. However, the study was solely constrained by corruption and societal factors. Corresponding to this, Ekine (2019) explored the factors that influence foreign help to sub-Saharan nations using the independent variables GDP per capita, infant mortality, population civil and political rights, and government efficacy. The results show that government effectiveness draws greater aid. According to Brafu-Insaidoo and Biekpe (2014), using dynamic panel data model they examine,

financial liberalization is one of the constraint of capital inflows to SSA, which is liberalization of domestic equity market has a positive and significant impact on international capital flows to SSA. According to other studies, aid decisions are made from the perspective of the donors' economic gain rather than the economic situation of the recipient nations.

The justification for economic policy conditions is that donors believe particular policies and actions in various nations are crucial for growth and development and that aid is ineffective without them. The problem is donors do not specify the conditions even which policy is better for economic development, they are also criticized for imposing too many conditions. The other problem is the conditionality's are not working, many agree that governments able to implement reforms by their interests is better than donor conditions that have an impact on economic development (Kanbur & Venables, 2003).

As the studies, the conditions are only underlined by the donors and focused on their perspectives but not addressing the recipient's economic, political, and institutional factors that can contribute to attracting aid from outside. This study would be assessing the determinants that restricted the inflows of aid capital in to Sub-Saharan African countries in the perspectives of macroeconomic, political and institutional factors of the recipient countries. By recognizing the economic, political and institutional factors that influence the aid inflows, this study will help close the knowledge gap regarding how recipients attract aid flows, which supported their economic reform, provided facilities and basic social services, promoted transparency and accountability, changed the lives of their people, and served other purposes. Other studies missed the comprehensive determinants of aid inflows because we couldn't separate economic, political, and institutional variables in one country's status; the political system may shape the institution and the institution may also affect the economic system of the recipient countries (Acemoglu, 2012).

This investigation will assume aid has its advantage and is important to developing countries and it varies from time to time and examine how recipient countries' economic, political, and institutional factors constrained the inflow of aid from the donors. In this study, aid has been defined as simply taking into account official development assistance (ODA) foreign payments made through bilateral, multilateral, or nongovernmental partnerships. Financing with favorable terms or endowments makes up international payments. Additionally, low- and middle-income nations that are still in the early stages of development are included in the study's definition of developing nations.

1.3. Objectives

1.3.1. The study's overall aims

- This study's main goal is to analyze the political, institutional, and economic factors that influence the flow of foreign aid to a few particular sub-Saharan nations.

1.3.2. **Detailed study objectives**

The study's specific objectives are to:

- To show the trends of foreign aid inflows with the macroeconomic, institutional and political variables in sub-Saharan African countries.
- To explore the causation between macroeconomic, institutional, political variables and foreign aid
- To evaluate the macroeconomic, political, and institutional factors that influence the flows of foreign aid into sub-Saharan African nations.

1.4. Research issues

The following list includes the study's primary research questions:

- How does macroeconomic ambiguity affect the flow of aid to recipient nations?
- How does the political system affect the flow of foreign aid to recipient nations?
- Which institutional variables significantly influence the inflows of foreign aid?

1.5. Hypothesis

Based on the existing empirical literature on foreign aid and the determining factors in developing countries in general and Sub Saharan Africa in Particular, the study proposes the following working hypothesis:

1. Macroeconomic stability captured by gross domestic product per capita (high level of income per capita reduce aid inflows), trade volume (high amount of import and exports have positive impact on aid inflows) and consumer price index, which is an indicator of macroeconomic instability that positively affects capital inflows to developing countries.
2. Political stability measured by political stability and absence of violence/terrorism, and voice and accountability has a positive effect on foreign aid inflows to SSA.
3. Institutional quality proxies by government effectiveness, rule of law, regulatory quality and corruption control also has favored effects on the flows of aid to SSA.

1.6. Justifications and Significance of the study

Recognizing the macroeconomic, institutional and political determinants for aid inflows is important for policymaking in developing countries. Many researches are conducted on the determinants of aid from the donors position and but a few are conducted on the position of recipient countries statues. There is currently a gap in the research on how aid in developing nations, particularly in SSA, interacts with the political, economic, and institutional positions of

the recipient nations. Consequently, it is important to contribute to the standard of knowledge of the literature on economic, political and institutional variables in the recipient countries and aid inflows in Sub-Saharan African countries political economy framework. The study will have a contribution to Governments and Policymakers of developing countries will benefit from consulting this research paper as it highlights whether or not there is a significant impact of economic, institutional and political position on aid inflows. Other researchers will also find this research very resourceful to further their studies on this given matter.

1.7. The study's scope and limitations

According to the World Bank's 2022 classification, the study is limited to SSA nations lying below the Sahara desert. Given the broadness of the concept of foreign aid, the study attempts to focus on the economic, political, and institutional determinants of foreign aid inflows, as well as analyze the correlations between GDP per capita, political, and institutional factors by incorporating additional control parameters such as volume of trade and the index of consumer prices. This research is restricted to the years 2002 through 2021. This time period was chosen to include important factors of foreign assistance inflows in a sampled area by WDI.

1.8. The study's structure

The first chapter is the introduction, which includes the background, the problem of the research, the goals of the study, hypothesis and scope and significance of the study. The remainder of the paper is structured in the following manner: The second chapter is a survey of the literature, which contains both empirical as well as theoretical information. The third section discussed data collection, technique, the study process, and data analysis methods. The fourth section covered the outcomes and interpretation of descriptive outcomes as well as the statistical results of multiple linear regression analysis. Finally, the work has been summarized with conclusions and implications for policy according to the results obtained.

Chapter 2: Reviews of the literature

2.1. Theoretical notions of international assistance

2.1.1. Foreign aid definition

This part examines the current foreign aid literature pertinent to the topic, focusing on the economic, political, and institutional elements. The insights learned from the literature are then used to construct a conceptual structure.

According to Riddell (2008), "foreign aid" is the term used to describe all resources that are transferred from donors to recipients, including financial grants (gifts), loans with lower interest rates, tangible assets, skills, and technical assistance, as well as non-concessional multilateral and dual growth-oriented loans with an award portion of less than 25%.

Foreign aid can be official development assistance (ODA) or official development finance (ODF). Both official development assistance (ODA) and official development finance (ODF) may be offered by donors, depending on their intended recipients. Official aid (OA) and ODA are also used interchangeably. Grants and loans with a minimum 25% grant component are covered by ODA and OA (Wolfensohn, 1998). Both ODA and OA come from government funds and are primarily given to support social welfare and for the prosperity of developing nations (Immervoll & Pearson, 2009). The sole distinction between ODA and OA is that the latter is only given to "transitional countries" and a few "advanced" developing nations, whilst the former is given to all developing nations (Huq, Clunies-Ross, & Forsyth, 2009). For the sake of clarity, an advanced developing nation is defined as an independent nation that, in comparison with other less developing countries, has an acceptable standard of living, an established economy, and an advanced infrastructure for technology. And countries that are undergoing reforms to their macroeconomics in an effort to change how their economies are run are referred to as transitional countries.

Bilateral and multilateral aid is two different types of assistance. In the first case, aid is provided directly to a recipient government by a donor government. The latter is assistance provided by a global organization that speaks for many government contributors. However, in rare circumstances, a bilateral donor may work with a multilateral organization to deliver a program or project on its behalf in a recipient nation. Bi/Multi is a common term for these situations, which are normally counted as bilateral flows (OECD, 2018). The UNDP (United Nations Development Program) and the World Bank (WB) are two examples of international organizations that manage bilateral and multilateral aid. Over two-thirds of the total ODA from donor member nations is delivered bilaterally, frequently in the sort of grants, as reported by OECD (2009). Private entities like "non-governmental organizations" (NGOs) have contributed some of the humanitarian funding. Foreign aid can also be categorized based on its intended use. Project aid, for example, is only given to finance a particular initiative (like building a road or a

dam), whereas program aid is more flexible and can be used for overall government assistance or to promote a specific industry (Huq, Clunies-Ross, & Forsyth, 2009).

2.1.2. **Foreign assistance and economic expansion**

Donors that provide aid do so for a variety of reasons. Even while development was the main goal of assistance during the 1960s, contemporary aid has become more and more strategic in nature. The bilateral and multilateral donors have different interests that want to capture from the recipient countries and have their own conditions deliver the aid. For instance, the United States of America offers assistance to develop markets for the future by lowering poverty and raising output in developing nations, and by assisting nations to thrive under capitalism, it lessens the threat of communism. Future markets and alliances with nations devoted to allowing private sector investment—the cornerstone of long-term economic growth—will help create new markets for American products. With regard to international relations, national security, immigration, and business goals, Britain takes a viewpoint on development concerns.

French assistance has been given to its former colonies, although geopolitical concerns have taken precedence. Japan will provide assistance to countries that at international fora are generally supportive of Japanese interests (Bandyopadhyay & Vermann, 2013). Arab donors likewise rely on their income from gas and oil exports and strategically employ aid to further their foreign goals. Overly generous aid has been utilized to establish and uphold allies in the Arab world in order to reward supporters during military battles and to further their commercial interests, but it has favored Islamic nations because religious goals are particularly important to Arab contributors (Villanger, 2007). China's aid is also more heavily concentrated on fostering an international environment that is favorable for China's growth, assisting in China's ascent to the role of a world power, shaping the governance of the world, and rewarding those who agree to the One China Policy. Because loans are given out in exchange for natural resources, aid is utilized to encourage trade with underdeveloped nations. Additionally, it emphasizes that it provides aid to assist other developing nations in reducing poverty and improving the standard of living for its citizens (Fuchs & Rudyak, 2019).

There are requirements for providing aid to developing nations from international financial institutions like the World Bank and the International Monetary Fund (IMF). The IMF set the requirements for when governments offer aid and agree to change their economic policies in order to address the issues that prompted them to look to the international community for financial support. The design of the assistance programs is the first component of the conditionality, and the methods for tracking the implementation of the program are the second. The goal of conditionality is to assist the nation in finding solutions to its issues in order for it to pay back the IMF loan (Hasan & Hasan, 2020).

The primary objective of aid in developing countries is to provide assistance in areas such as healthcare, education, infrastructure, and economic development. The goal is to help developing countries reduce poverty and improve their standard of living by providing them with resources, technical expertise, and financial support. It happened, foreign aid can save the lives of millions of people living in poverty around the world. Foreign aid also has an impact on economic growth for developing countries, but the characteristics of the growth process for the developing world have been strongly questionable or vary. For instance, Ekanayake and Chatrna (2010); (Hjertholm & White, 2000b) stated that foreign aid has mixed impacts on economic growth in developing countries depends on the recipient countries' performance. As Islam (1992) explained that the impact of foreign aid on economic growth in the case of Bangladesh, the result indicates that foreign aid is an insignificant contribution to the economy. Moreira (2005) and (Fasanya & Onakoya, 2012) indicated in their studies, foreign aid has a positive impact on economic growth of Nigeria. Additionally, Mallik (2008) also found that foreign aid hurts the economic growth of highly aid-dependent African countries.

Foreign aid's effectiveness and contribution to economic growth have been disputed since the 1960s. In their initial investigation, Harold and Domar focused on how capital accumulation affected economic growth in the 1930s and 1940s. According to the Harold-domar model, foreign aid helps developing nations close their saving gaps because these gaps are the principal obstacles to investment in these nations (Adelman & Chenery, 1966; Chenery & Strout, 1966; Rotarou & Ueta, 2009). Because of how mechanical this strategy is, Ramsey creates a suitable alternative to foreign aid and a growth model.

By applying income from output and aid flows, nevertheless lacking access to other international capital flows, Ramsey's model explains how social planners should respond to transferring the ongoing resource allocation. They should choose the appropriate proportion of consumption and investment at each date in order to maximize the discounted lifetime utility from consumption. This model is used by Obstfeld (1999) to examine how aid transfers should be split among consumption and investment. Transfers should be used to fund more consumption if the economy is already on its steady-state trajectory rather than to boost the capital stock. Due to the fact that structural factors like the discount rate and the depreciation rate, which are independent of the transfer's amount, affect the future optimal outcome of capital, this holds true. However, spending a portion of the funds transferred for investment if the economic situation remains below the level of equilibrium can hasten the economy's convergence to a steady state and improve wellbeing. Although the growth effect of an unanticipated, persistent boost in help is minimal, Arellano, Bul, Lane, and Lipschitz (2009) discover that a large amount of aid is spent instead of being invested.

Additionally, Chenery and Strout's "two gaps" idea, which supports the Harold-Domar model of growth, was proposed in 1966. They clarify that in developing nations, there are not just savings gaps but also an international currency barrier that prevents the importation of capital goods and services from outside. To make up for the shortfall in the supply of capital products, foreign aid is crucial. Furthermore, Chenery and Strout (1966) elaborated on the "third gap" of accumulation of human capital, arguing that developing nations lack the executive and technological capabilities necessary to run production activities effectively. As a result, these countries look to foreign technical assistance to make up for this deficiency Finally, Bacha (1990) describes what he refers to as the "three gap model," emphasizing that developing nations also lack a reliable source of income that can be utilized to fund public investment. If the "fiscal imbalance" they referred to as vulnerability is accurate, then external funding is a key tool in helping developing nations.

The endogenous growth hypothesis is the other theoretical framework for help and growth. The weaknesses of the neoclassical model of economic growth served as the foundation for its creation (Nerlove & Arrow, 1962). The main proponents of this hypothesis are Romer (1986) and Lucas Jr. (1988). The theory acknowledges the significance of endogeneity in the growth phase. Another distinguishing feature was the presumption of growing yields compared to the steady return of capital prevalent in the neoclassical theory of growth. In light of a lack of infrastructure and skilled labor, developing nations are unable to lure investments.

The theory of endogenous growth emphasized the importance of human resources in the growth process, and since this new growth theory also fits to assess the impact of foreign aid on economic growth, aid that comes in the form of technical assistance may play a significant factor for affecting the development of capabilities and, ultimately, human capital in the majority of aid-recipient countries. Lucas, for instance, makes the assumption that spending money on education generates human capital, which is a key factor in determining how quickly a country grows. In the new growth theory, concerns about research and development, learning by doing or investing, and these issues all took on significant importance (Jhingan 2004). According to this view, developing nations seek to gain more from aid than advanced countries do by utilizing cutting-edge studies, inventions, and technological advancements, necessitating the promotion of organizational competence. Furthermore, the new growth model's increasing return on investment presumption suggests that foreign aid will boost growth for an extended period of time.

All of these growth models consistently emphasize the significance of capital in influencing economic growth. Capital is frequently thought of as a major growth predictor, even though the other factors may differ in various ways. However, there is still disagreement over the empirical validity of these capital sources' ability to predict growth in across the nation and intra-country

regressions. Furthermore, even if it is assumed that capital drives economic growth, it is crucial to do empirical research to confirm whether all forms of capital drive economic growth in countries that are developing.

The mere existence of a trap of poverty as a justification for aid is the alternative idea. As a result of an absence of facilities and skilled labor, poor countries are unable to draw in investment. This "investment gap" causes these nations unsuccessful in the world's economy, and as it widens, the disparity widens further, trapping the poor in a vicious cycle of poverty. Poor productivity is one potential conclusion of the impoverishment trap model, but given the underlying foundations, an improved equilibrium is also feasible. In theory, aid inflows might push a recipient country's economy past a "tipping point," either changing the result to a different equilibrium or eradicating the less fortunate equilibrium. The proponents of significant increases in foreign aid (J. Sachs et al., 2004) support these kinds of arguments. However, even if help is dependent on where the poverty trap originated, certain poverty traps may result from poor governance or from chances for seeking rent that gave rise to a strong constituency that was opposed to development. These models might ultimately show to be more insightful than the Solow model's mechanically inclined versions. However, in this particular type of model, assistance may be ineffectual and even counterproductive in the quest for an improved equilibrium.

Additionally, even while the poverty trap justifies the expansion of aid, the size of the aid was intended to shift economic activity out of the equilibrium created by the poverty trap. Foreign aid can be effective despite a lack of proof, as Kraay and Raddatz (2007) show. They discover only a little amount of evidence in favor of two specific poverty-trap processes, namely endogenous saving rates and productivity cutoff effects. Graham and Temple (2006) also show how the pitfalls brought on by political and economic considerations measure the degree to which aid has unfavorable consequences.

2.1.3. **Foreign aid, institutions, and political economy**

The aforementioned ideas mostly concentrated on the relationship between effective aid and economic growth. In the literature nowadays, it is accepted practice that a real overall equilibrium analysis ought to take into account the collective choice of a political equilibrium and regard institutions as endogenous over a long period of time. The idea of effectiveness is acknowledged as being the primary consideration in discussions of the efficacy of aid. One of the criticisms of aid is the possibility of dependency; possibly beneficiaries of significant transfers run the danger of becoming lazy and less eager to help themselves.

A number of methods that countries that depend on aid may see their governmental structures erode over time are described by Bräutigam and Knack (2004). Contrarily, Djankov, Montalvo, and Reynal-Querol (2008) show that aid is associated with deterioration in democratic

institutions and the degree of accountability and oversight on the executive. Coviello and Islam (2006) do not claim that aid adversely impacts the quality of institutions. R. Rajan and Subramanian (2007) present a novel method for looking at how different industrial sectors are affected by aid. They discover that in nations that get greater financial assistance, industries that are vulnerable to good governance expand more slowly than other industries. Numerous arguments also contend that the expectations of numerous donors have outstripped the institutional capability of aid recipients (Kanbur, 2000, 2006; Morss, 1984).

The majority of research makes the case that aid has not been successful, particularly in Africa. Herbst (2000) emphasizes that one of Africa's problems is that its institutions are weak, making it challenging to uphold law and order or provide public goods for a variety of well-established causes, some of which date back to the continent's pre-colonial history. Contrary to the path taken by Europe and the nations that have been extensively molded by European institutions. It is believed that past patterns and structural features, such as a small population density and discontinuous boundaries, have restricted the establishment of effective states. As a result, the competence of their governments and their capacity to successfully use aid may be a specific issue for African nations. Johnson, Robinson, and Daron Acemoglu (2002), Some African republics, in particular, have not created effective systems for taxes and public expenditure.

Many other skeptics of aid contend that the ruling class abuses it. Plenty of examples suggest that the state has been taken over by an interest group that represents the people and that, given the identity of elites and their adoption of aims that contrast with those of donors. Unrestricted aid is going to be possibly partly redirected for the benefit of them (Adam, O'Connell, & Politics, 1999; Boone, 1996; Lahiri & Raimondos-Mller, 2004). However, political leaders might fail to keep their interests in mind while implementing policies that promote growth, and in order to maintain their power, they might have to do so. It is not a new phenomenon in Africa. The system of governance in African governments has frequently been described as one of "personal rule," in which rulers are not restrained by functional mechanisms for oversight and organizations play a limited role. According to Daron Acemoglu, Verdier, and Robinson (2004), ineffective policies in some African countries not only permitted rulers to give over power but were also employed to ensure their political longevity. They also suggest that effective conditions or targeted aid provision could help relieve the problem, and there is an unresolved debate concerning the degree to whereby aid has really kept rulers in position.

Furthermore, unconditional financial assistance may foster competitiveness between various social groupings. Unconditional assistance payments, like resource rents, create "rents to sovereignty" that increase the danger of rent-seeking and conflict. Bhagwati, Brecher, and Hatta (1985) provided unambiguous examples of how the resources used in politicization would squander a transfer. The advantages of international assistance for national income have been entirely compensated for by the value of the fall in GDP at home, and the nation that receives it

is no more fortunate than in its absence of aid. Aslaksen and Torvik (2006) conduct a literature review and develop a model in which rents impact the rewards of participating in a democratic process vs obtaining power through civil strife. It is also possible that the direction of change in available resources, rather than their absolute level, is important. According to (Rodrik, 1999), fast-growing countries are differentiated in part by their ability to respond to negative shocks, such as adverse shifts in trade conditions. A negative shock risks causing a period of social strife and instability in countries with weaker institutions and higher polarization in society, with negative effects on economic growth. According to this worldview, aid could be aimed toward countries undergoing severe outside shocks in order to avoid the societal turmoil that would otherwise result from lower resources. This supports the preceding point stabilizing aid flows is a less rational policy goal than using aid to minimize overall volatility.

Another point of contention is that aid may corrupt the political system. Much foreign aid is stolen by corrupt officials and fails to reach the intended recipients. Other forms of political corruption include patron-client connections and buying votes, the politicization of some economic activities, censorship of the media, and complex legislation that serve as a cover for kickbacks and favors in politics (Pande, 2008). There are various forms of corruption in the bureaucracy that occur in the course of daily government operations, such as kickbacks collected by lower-level officials or theft from services provided to the public. These various types of corruption will have varying effects on the efficacy of aid and aid distribution among countries.

Another possibility is that aid will cause societal strife, political unrest, coups, and conflict, particularly in nations that are currently experiencing violence. It is common for donors to react differently to conflict, highlighting the ongoing ambiguity in this domain (Balla & Reinhardt, 2008). Some donors expanded their contributions to reconstruction following the war in the early 2000s, partially to reduce political unrest and the danger of recurrence of violence.

Another intricacy of aid is the question of failed or fragile states: how should donors continue when a nation is frail and primarily unable of enforcing the rule of law, exerting influence over its territory, or providing basic services? The intricacy stems from the fact that the fragile state might coincide with that of the least fortunate nations, as well as suggestions that aid could help to anticipate greater challenges and lessen the danger of future conflict. However, providing assistance under these circumstances raises fundamental ethical issues, which may necessitate a choice among two evils. Thus, endeavoring to use aid to sustain a fragile state may practically imply supporting internal oppression or boosting its capacity to wage an exterior war. It is unclear whether economists are well adapted to analyze these quandaries, which necessitate a broader understanding of history, politics, and philosophy, as well as comprehensive knowledge of a single country's condition. When a nation-state's underlying problems threaten to make it unsustainable, the dilemmas for outsiders grow more and more complex and profound.

Herbst (2000) contends that because certain African countries have reached this point, the concept of a nation-state is practically a myth.

So far, aid effectiveness is evaluating in the lenses of economic growth theories and political economics. However, a new controversy has erupted over the new "collaborating" model, which brings combines some of the most significant shifts in donor policy since the mid-1990s, based on (Temple, 2010) in comparison to older methods, the partnership model places a greater emphasis on selective aid allocation; concrete progress toward humanitarian goals; governance, institutions, and (roughly rhetorically) community ownership of reforms; and greater dependence on budgetary assistance instead of financing for projects and ex-ante procedures conditionality. Others, however, are skeptical of the partnership model's recent focus on unrestricted budget assistance and condemn the absence of interest paid to guarantee that strategies are based on evidence, as well as reforming some long-standing shortcomings in donor practices. Furthermore, because the partnership model is partially an attempt to find common ground, it is inherently imperfect and leaves the more difficult challenges unaddressed.

Donors set conditions on grants, loans, or technical aid, which are tied to specific policy decisions made by recipient governments. Conditionality has sparked intense debate, although opinions range on whether it ought to be blamed for its unambiguous achievement in effecting changes in policy or for its equally obvious inability to accomplish it. Nonetheless, the efficacy of aid is judged from economic and institutional views, which are unrelated to political considerations. The matter of conditionality is more concerned with politics. Since donors want influence over sovereign countries' policy decisions, conditionality is fundamentally political, and the discussion frequently incorporates concerns of political thought, diplomatic relations, and economics.

2.2. **Empirical review**

2.2.1. Aid and economic growth literature

The literature on foreign aid was divided into three major discussions. The first is the effectiveness of aid on economic growth, the second is aid allocation and distribution, and the last is the determinant of foreign aid inflows. This section will go over each debate one by one. Finally, this research will focus solely on the last debate, which is the drivers of assistance inflows.

Foreign aid's precise impact on economic growth in developing nations is a hotly discussed issue in aid studies. We can explore empirical discussions about the influence of foreign aid on growth in the economy in three areas. Some empirical research revealed a favorable association between aid and economic growth, while others found an adverse correlation and others found a mixed or neutral interaction. Plenty of research shows that aid is a critical component in developing countries' economic progress. Papanek (1973) investigates this using across-the-

nation regression analyses on 34 nations in the 1950s and 51 countries in the 1960s. The outcome demonstrates Savings and foreign inflows (aid, private investment, and other flows) both contribute positively to economic growth rates. And he discovered that foreign aid has a greater impact on developing countries with low savings rates and series balance of payments problems than savings or other forms of foreign resource inflows. Dowling Jr and Hiemenz (1983) discovered that foreign aid, as well as domestic saving and the inflow of private capital, helped to economic development in the Asia region, confirming Papanek's (1973) study. They also stated that the return on investment is quite poor in comparison to domestic savings and private inflow capital.

McGillivray (2005) uses an investigation that concentrates on the regions of Sub-Saharan Africa and the Pacific to conclude that help works in general and that poverty would be worse without aid. Addison, Mavrotas, and McGillivray (2005) reached the same conclusion, claiming that foreign aid is an important tool for economic growth and has consequences for poverty reduction and achieving the Millennium Development Goals. Gomanee, Girma, and Morrissey (2005) revealed an important beneficial impact of foreign aid on growth in their study using a sample of 25 Sub-Saharan African countries from 1970 to 1997 via pooled panel regression analysis data, in order to determine the effect of aid on growth.

Karras (2006) investigates the link between foreign aid and GDP per capita growth using annual data from 1960 to 1997 for a sample of 71 aid-receiving developing states. The findings indicate that foreign aid has a favorable, long-term, statistically significant, and large impact on economic growth. Similar investigations are being investigated in other recent studies. For example, Alghamdi (2016) discovered in 54 African countries using pooled, GLS, and panel regression on the effects of foreign aid, policies, and their relationship on growth in the economy from 1980 to 20015, that foreign aid has a favorable, significant but little impact on the growth of the economy. Ojiambo (2013). Furthermore, in the study titled "Effects of Foreign Aid Predictability on Investment and Economic Growth in Kenya," which used time series data from 1966 to 2010 and a distributed autoregressive lag estimation technique, the findings indicate that foreign assistance had a beneficial impact on Kenya's growth in GDP and investments by the government.

Steve Radelet, Clemens, and Bhavnani (2004) divide aid into three distinct groups and discover that its impact on growth varies significantly. Emergency and humanitarian assistance have no effect on growth. The same is true for long-term development aid, including aid promoting democracy, sustainability, education, and health. Aid with potential immediate economic impacts, such as budget support and aid to industries that are productive, has been found to have a significant impact on growth. R. Rajan and Subramanian (2005) argue that aid flows reduce partner nations' competitiveness via foreign exchange appreciation.

Furthermore, in other empirical research, the efficacy of aid to economic growth is conditional, such as macroeconomic policies and the beneficiary nations' political and institutional administration, all of which contribute to the efficiency of aid on economic growth. Durbarry, Gemmell, and Greenaway (1998) evaluate the effect of foreign aid on growth for 68 countries that were developing from 1970 to 1993 using an upgraded Fischer-Easterly type model using cross-section and panel analysis techniques. The findings substantially support the assumption that foreign aid has a favorable impact on growth, subject to a healthy macroeconomic policy context. They also discover that these consequences vary depending on income level, aid distribution amounts, and geographic location. Similarly, Burnside and Dollar (1997, 2000) examine the connection between foreign aid and economic growth. The research discovered that foreign aid and economic growth have positive effects in emerging economies with good fiscal, monetary, and trade practices, but have little effect when poor policies are present. Along the same lines, Collier and Dollar (2001) claim in their study that foreign aid may mitigate poverty in developing nations if sound policies are implemented.

Lee and Alemu (2015) used a dynamic generalized method of moments (GMM) model to address the fluctuating character of economic growth as well as the challenges of heterogeneity in their empirical research on the impact of foreign aid on economic growth by breaking down the African panel data in 20 countries with middle incomes and 19 nations with low incomes over a 15-year period between 1995 and 2010. They discovered a positive association among aid and economic growth in low-income African countries, whereas this was not the case in middle-income African countries. Furthermore, Durbarry et al. (1998) discovered that in their study of the effect of foreign aid on growth for an extensive number of developing nations using an augmented Fischer-Easterly type model and predict this employing both cross-section and panel measurement techniques, the outcome overwhelmingly supports the hypothesis that foreign aid has a favorable effect on growth, conditioned on stable macroeconomic policies setting, and also introduced that the findings differ depending on the level of income. According to Ilorah and Ngwakwe's (2021) study that examined the impact of foreign aid, controlled by governance effectiveness variables, on economic development in sub-Saharan African countries, the results show an upward correlation between foreign aid and GDP with the rule of law offering a beneficial boost to foreign aid and GDP growth, but corruption and governance have a negative relationship with economic growth.

Others have suggested that foreign aid has a detrimental effect on economic growth because it might be funneled toward the elites of the countries receiving it instead of going to sectors that encourage development. Therefore, a poor destination could hinder the development of the recipient nations. Numerous studies have looked at how foreign aid may have a negative impact on recipient nations' economic development. Boone (1996) backed up the claims, concluding that while aid does expand the size of government, it does not significantly boost investment or

benefit the poor as assessed by increases in indicators of human development. Whether the recipient governments are liberal democratic or extremely oppressive has little bearing on how well aid works.

Using panel data analysis and a sizable sample of aid-recipient recipient nations from 1980 to 2000, Ouattara (2006) studies the effect of aid on the public sector. The study's findings indicate that the investment of the public is closely tied to assistance flows, and that aid flows have a large positive influence on government spending on development while having a significant adverse effect on non-developmental spending. The outcome of this investigation also revealed that aid does not deter attempts to collect money. According to a study by Kabete (2008) looking at the case of Tanzania to determine how foreign aid and total debt service affect economic growth, both negatively affect GDP growth. Tanzania's GDP growth has been positively impacted by both net national savings and export growth, nevertheless. According to Addison and Mavrotas (2004), aid has a detrimental impact on economic growth in sub-Saharan African nations and discourages foreign direct investment in those nations.

Other research findings also support the varied effects of aid on economic growth. (Ekanayake & Chatrna, 2010b) analyzes the effects of foreign aid on the economic growth of developing countries using yearly information on a group of 85 developing countries encompassing the regions of Asia, Africa, Latin America, and the Caribbean for the period 1980–2007. The results show that the effects of foreign aid on economic growth in developing countries are conflicting. By estimating an aid-growth model and an aid-fiscal model, (Quazi, 2005) attempts to quantify the impact of foreign help on Bangladesh's GDP growth and budgetary behavior between the years 1973 and 1999. When the co-integration approach is used to analyze a neoclassical growth model, the aid-growth model reveals that aid has only minor influence on GDP growth. However, when aid is split into loans and grants, it is discovered that loans greatly increase the growth of GDP but grants do not. The aid-fiscal model, which makes use of a non-linear simultaneous model, discovers that foreign grants primarily pay ineffective civil spending, whereas foreign loans typically finance government investment projects and human initiatives, which ultimately result in stronger output increases.

2.2**.2. Aid, political and institutional literature**

The other discussions tend to focus on economic and management difficulties and the ambiguity around the efficacy of aid. The empirical investigations suggested that the economic and political structures of the recipient nations determine how effective aid is. The studies have more clearly expressed worries regarding low-income states' ability to accept significant new flows on top of the flows they already receive and have highlighted government management weaknesses, a dearth of worthwhile new initiatives and programs to fund, or the murky relationship between aid and quantifiable results for development (Burnside and Dollar, 2000). Other observers have

expressed concern about the macroeconomic impacts of significant increases in aid, citing the effects of the "Dutch disease" on small-scale economies (Heller, 2005; R. Rajan & Subramanian, 2005). The possible impacts of significant increases in aid on government organizations in low-income countries have received relatively little critical scrutiny.

Institutional concerns have just recently made a comeback in discussions on economic development. Political analysts (Haggard, 1990; Herbst, 1990), who might hypothetically have legitimate reasons to support the significance of institutions, have come to agree on the vital role of sound public institutions in the growth process. Recently, economists (e.g., Rodrik, 2003; J. D. Sachs, 2005) have come to agree on the idea that good institutions are solely a result of development, as opposed to the cause of it.

Aid is seen to function most effectively in settings with top-notch institutions, most likely as a component of a capable "developmental" state. Studies like (Burnside and Dollar, 2000) and (World Bank, 1998) are among those that support this thesis. Institutional measures are becoming a more overt consideration for allocating and disbursing help. As a result, institutional development is generally considered an independent variable that affects assistance effectiveness, making it a valid consideration for choosing aid recipients and formulating allocation plans. This means that aid ought to be targeted specifically at nations that are believed to decrease poverty the most efficiently. The Millennium Challenge Account, a new US aid program that focuses on providing support to nations that are deemed to be best equipped to utilize more resources, and the performance-oriented allocation procedure for international development assistance (IDA) both follow this approach (Steven Radelet, 2003).

The primary goals of assistance provision have not always been economic expansion and the eradication of poverty. According to Berthélemy (2006), the allocation of aid is largely explained by the donors' strategic goals and selfish motives. In spite of conditionality, another factor that affects the flow of aid is the financial standing of the donors. Numerous studies have revealed that the flow of aid provided by donors to recipients is unstable. The financial and economic crises in industrialized nations are one of the primary factors influencing the transfer of aid from donors to recipients (J.-C. Berthélemy & Tichit, 2004; Bul & Hamann, 2006; L. Chauvet & Guillaumont, 2009; Dabla-Norris et al., 2015; Heinrich et al., 2016). despite the fact that Fuchs et al. (2014) claim that recessions are not strongly related to the donor's outlay on foreign aid, stock market instability a proxy for economic instability and financial volatility reduces aid from the US (Mendoza et al., 2009). On the other hand, Dabla-Norris, Minoiu, and Zanna (2015) discovered that donor foreign aid is decreased during times of economic unrest. Inter-alliance (neocolonialism) is the other barrier preventing the transfer of help from developed to less advanced countries (Amin, 2014).

2.3. **Conceptual framework of the study**

The conceptual framework is depicted in the image below, which uses developed theoretical and empirical data to explain the relationship between the key elements (macroeconomic, political, and institutional variables) and how it relates to aid flows. The map shows that overall political stability, institutional quality, macroeconomic indicators and their lagged value should all influence the flow of foreign aid. On the other side, ODA flows also contribute to macroeconomic stability, political stability, and institutional quality. As a matter of fact, strong institutions and political stability complement one another.

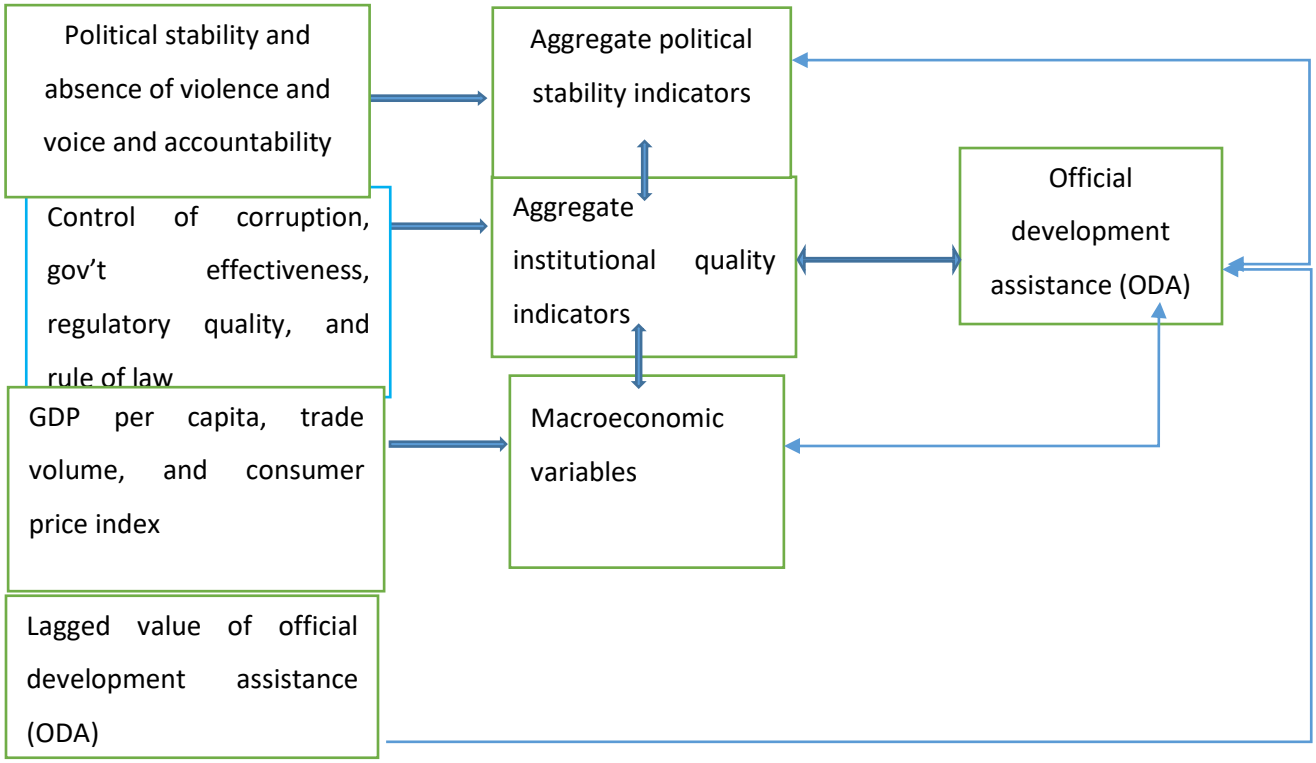


Figure 1: Schematic framework representing the determinants of official development assistance, macroeconomic, political and institutional variables and its implication to the improvement of economic, political and institutional quality.

Chapter 3: Methodology and model specification

This chapter covers the study of estimating techniques and underlying presumptions. The kinds and origins of data, functional descriptions of the parameters that are going to be used, model specifications, estimating techniques, and some comments are all included in this portion of the research.

3.1. Data sources and types

This section provides a general explanation of the variables utilized in this study and their sources. The study intends to employ secondary data sources with a 2002–2021 time span for its analysis. The study's year range is limited since there is a dearth of information on the important factors for the countries under examination. The World Bank's (WB) World Development Indicators (WDI), Africa Development Indicators (ADI), and World Governance Indicators (WGI) databases of political and institutional quality indicators provide data on macroeconomic aspects. Information on foreign aid (commitments and disbursements) is available from the Organization for Economic Cooperation and Development (OECD) online statistics repository. These numbers also include data from the World Bank's Africa Development Indicators. In order to ensure consistency, efforts are made to ensure that the data comes from a single source.

3.2. Variables Descriptions

The aggregate yearly inflows of official development assistance (ODA) (bilateral and multilateral only) to recipient countries were chosen by the researcher as the dependent variable. The explanatory variables of interest were the selected macroeconomic variables as well as the political and institutional quality indicators variables. Additional variables that are frequently included in aid regressions and are discovered to have a significant impact on aid flows were added as well.

3.2.1. **Dependent variable**

ODA ($US): Net official development assistance (ODA), is stated in US dollars. ODA is the study's preferred measure of assistance and the major attentional variable. The organization of economic cooperation for development (OECD) is a group that promotes economic cooperation and growth uses the term "net ODA total" ($US) to describe the amount of loans or grants given to developing nations on the OECD list of aid recipients by members of the development assistance committee (DAC). Due to its ability to quantify the dependency of the receiving nation on aid, the variable is taken into account as a measure of aid in this study. However, the variable does not differentiate between the various types of aid, which in reality could have distinct effects on societal welfare and economic growth.

3.2.2. Independent factors

3.2.2.1. Macroeconomic factors

GDP per capita ($US): The income of the various peoples is said to correspond with the standard of living in a particular nation, according to world development indicators (WDI). It serves as a gauge of a country's wealth and is based on its population, which also serves to illustrate the economic health of the recipient nation and the potential market for its products. GDP per capita is used as a substitute for size of market, as is customary in the literature. The variable's anticipated sign is negative since it serves as a measure of the potential economic value of the donors' interests in the things that are most accessible to them financially.

Trade volume (TR): Trade volume is measured by a proportion of GDP, the total value of commodities imported and exported. The influence of the macroeconomic policy environment in the association between aid growth and trade openness has employed trade openness as a trade-related variable (Alesina & Dollar, 1997, 2000; Feeny, 2005; Javid & Qayyum, 2011). It may be argued that improved trade ties between donor and recipient nations would result from greater trade liberalization. In this scenario, it would be expected that greater trade between the nations will result in predictable foreign aid flows. Loans are given in exchange for natural resources and donors may use aid to encourage trade in developing nations (Fuchs & Rudyak, 2019). Additionally, the donors emphasized the terms of certain aid by requiring that particular products and services be obtained from businesses in the donors' own countries or that it be utilized for particular causes that benefit groups in the donors' nations (Steven Radelet, 2006). The model predicts that trade and help will have a favorable connection.

Consumer price index (CPI): It shows the fluctuation in the cost for the typical consumer to buy a basket of products and services, which can either be fixed or changed on an ongoing basis. This is a crucial indication of macroeconomic stability that may have an impact on the flow of aid. It signifies changes in the economy's overall level of prices or occurrences of inflation. It demonstrates the macroeconomic instability that caused the economy to become distorted, discourages saving because the value of money in the future is less than its present value, raises nominal interest rates, which may have an impact on credit demand and depreciates the worth of financial resources.. Alesina and Dollar (1997, 2000) inflation rates that are elevated are a sign of unstable macroeconomic conditions, which is bad for the efficacy of international aid. According to our assessment, rising prices will have a negative effect on aid.

3.2.2.2. **Political and Institutional quality variables:**

The improvement of good governance (quality of institutions and politics)) in recipient nations is the motivation for donors to provide help. Dollar and Burnside, 2000 Aid flows have been impacted by the recipient nations' political and institutional qualities. The donors emphasized the requirements that the recipient nations must meet, some of which may include political and

institutional reforms (R. G. Rajan & Subramanian, 2008).In order to capture the impact of political and institutional quality that satisfies the requirements of donors to attract aid inflows to recipient countries, this study will use the Worldwide Governance Indicators (WGI) research dataset on good governance. This set of data examines opinions on the quality of governance offered by a sizable number of businesses, residents, and poll participants who are experts in nations that are industrialized as well as developing. This information was acquired from a number of survey organizations, research groups, non-governmental organizations, global organizations, and businesses in the private sector.

Voice and accountability, political stability and the absence of terrorism or violent crime, the efficiency of the government, regulatory quality, the rule of law, and corruption control are the six basic components of governance. The WGI anticipates building aggregate indicators for these six categories. The six overall metrics are based on 31 fundamental sources of data, which include both evaluations by experts from throughout the world and poll participants' impressions of governance. Looking at the effects of other studies, institutions, and politics on foreign aid inflows, this study uses measures of political and institutional quality produced by Kaufmann, Kraay, and Mastruzzi (2010) accessible in the WGI Database. The dataset consists of six variables, each assessing a distinct aspect of institutions or governance across 200 nations over a span of more than two decades. One of the most comprehensive datasets on institutions and governance is the WGI, and its breadth makes it ideal for comparing institutions between countries and throughout time. The WGI website states that the indicators are developed using information from over 30 sources, including private sector companies, think tanks, survey institutions, NGOs, and international organizations. The indicators, which range from -2.5 to 2.5, are calculated in units of the standard normal delivery. Given below is an explanation of the WGI database's indicators:

Higher numbers equate to excellent governance, while lower values imply bad governance, and the indicators range from -2.5 to 2.5. The researcher divided the governance into political stability indicators and institutional quality indicators to fully convey the message of the study's interest variables. The creation of a single weighted index is necessary since using each of these six indices separately in regression at once runs the risk of multicollinearity and of being unable to properly explain the political and institutional quality indices. The aggregate-weighted index that maximizes the correlation between the produced aggregate-weighted index and the individual political and institutional political indices was created using principal component analysis. Before any aggregation was done, the separate political and institutional indices were first standardized, making the generated principal component stand out as a divergence from the mean. According to ((Tchamyou, Asongu, & Odhiambo, 2019) the institutional quality index is proxies for the rule of law, corruption conception, government efficacy, and regulatory quality,

and the political stability index is proxies by political stability, lack of violence, voice, and accountability.

The definitions and sources of the governance indicators are from the World Bank and are listed as follows. The expected sign of all political and institutional indices variables are positive.

Control of corruption evaluates both major and small forms of corruption to determine the extent to which power and/or public authority are used for personal gain. The index also takes into account leadership and private interest state control.

Government effectiveness: It includes information on the standard of civil and public service as well as how free from political meddling they are. It evaluates the effectiveness of policy construction and operation as well as the commitment of the government to such policies.

Political stability and absence of violence/terrorism: It gauges the probability of political instability, hostility, and terrorism motivated by political objectives. The indicator specifically takes into account the possibility that dissent and revolts lead to property damage, human injury, or disruption of regular economic activity, as well as the use of violence to advance political causes and intrastate disputes.

Regulatory quality: Measures a government's capability to make and carry out suitable laws and regulations that permit and promote the expansion of the private sector. It accounts for the possibility that the cost of conducting business would increase as a result of increased compliance with regulations, bureaucratic inefficiency, inconsistent taxation, trade policy, investment and financial freedom, unfair commercial practices, and discriminatory tariffs.

Rule of law: assesses the extent to which agents abide by the laws and regulations, particularly the effectiveness of contract execution, the safeguard of academic property rights, the courts and the police, and the likelihood of lawlessness and violence. Law and order, expropriation risk, property rights, violent and organized crime, contract enforcement, and state contract disputes are just a few of the topics it addresses.

Voice and accountability: Measure the extent to which citizens can participate in the election of their government, as well as their freedom of speech and access to the media. Human rights, confidence in elections, press freedom, confidence in the parliament, and media independence are just a few of the factors it takes into account.

The International Country Risk Guide of Political Risk Services (ICRG, 2015) provides a political and institutional risk rating that gives the highest value to the lowest risk and the lowest value to the highest risk as well as a way to assess the better aspects of the political and

institutional framework. All of the institutional and political variables show positive anticipated signals, which suggests that stronger institutions and political stability will encourage an increase in foreign aid inflows.

3.3. **Model specification**

Foreign aid is essential for economic growth as well as the improvement of political and institutional quality, claim theories, and empirical research. Particularly in poorer nations, it plays a significant role. Due to the significant demand for financial assistance from developing nations, the donors established the requirements that must be met by the receiving nations. Developing nations are condemned for misusing help as well. Many think that without the support of the recipient nations, help is worthless. The amount of help flowing to the recipient nations has been constrained by these and other criticisms. These and other criticisms have limited the aid flows to the recipient countries. In this investigation, we sought to identify the economic, political, and institutional variables that influenced assistance inflows, particularly into the research region of sub-Saharan African nations.

The conditionality of a donor to provide help, according to empirical studies, may be due to institutional, political, or economic factors. Loans may be given by nations largely for their profit or to help the borrowing nations'. Net official development assistance (ODA) received will be the dependent variable, and the proper aid variable is employed by Maizels & Nissanke (1984), Trumbell and Wall (1994), Gounder (1994), and Ramadour & Cauvet (2002). As they more accurately represent the resource being transferred in its entirety, the disbursements are used rather than the commitment. Donors are neither wholly self-interested nor wholly self-sacrificing, according to the literature and empirical findings.

Based on research in the literature and in empirical stus, the independent variables are chosen. One prerequisite of the receiving countries' macroeconomic position is the consumer price index (Alesina & Dollar, 1997, 2000). In line with Alesina and Dollar (1997, 2000), Neumayer (2003), and M. Chauvet and Piger (2002), GDP per capita growth captures recipients' needs; recipients' quality is assessed using factors like freedom of trade, which is proxies by trade as a proportion of GDP; quality of institutions, which is proxies by government effectiveness; rule of law; and corruption control; and political stability, which is proxies by political stability and lack of voice and accountability.

To identify whether macroeconomic, political, and institutional variables determine the aid capital inflows in sub-Saharan African countries, we must identify the important model. The model can be provided as follows in light of the literature already in existence:

$$ODA_{it} = \beta 0 + \beta 1 ODA_{it-1} + \beta 2 GDPpc_{it} + \beta_3 CPI_{it} + \beta_4 TR_{it} + \beta_5 IQI_{it} + \beta_5 PV_{it} + Xit + \alpha i + \Upsilon t + \varepsilon it$$

Where $ODA_{it}$is the dependent variable, is the total official development assistance (ODA) the countries received from bilateral and multilateral donors expressed as $US, and is as the proxy variable for foreign aid inflows. $ODA_{it-1}$is the lagged total aid. The selected macroeconomic variables include ($GDPpc_{it}$, CPI_{it}, $and\ TR_{it}$) gross domestic product per capita, consumer price index and, trade volume respectively. IQI_{it} is the institutional quality index that represents the aggregate value of government effectiveness, regulatory quality, rule of law and corruption control. pv_{it} is political stability index the represented the aggregate value of political stability and absence of violence/terrorism and voice and accountability. X_{it} is a vector of other control variables that affect the flow of aid. i and t indicated that the individual country and time correspondingly. β_o, β1, β2, and β3 are all expressed as elasticity's. γ_t and αi are unobserved time-specific and country-specific fixed effects respectively, ε_{it} is the error term.

3.4. Method of Data Analysis and Estimation Technique

3.4.1. A Dynamic GMM Estimator

A variety of economic variables interact in dynamic ways. They can be identified by the lagged dependent variable being included among the right-side regressors, which shows that the influence of the dependent variable's earlier periods tends to persist in the dependent variable's current period. By integrating individual effects, the dynamic panel model is also made more general. Consequently, a two-tiered error structure is created, with individual-level errors and overall residual errors. Due to the issue of individual effects coming from individual variation and the presence of a dependent variable with a lag among the regressors, dynamic panel variable regressions experience autocorrelation problems (Baltag, 2005).

It follows that the lagged dependent variable is also a function of the error term as the dependent variable is a function of the error term. As a result, the pooled OLS estimation is immediately invalidated by the endogeneity issue brought on by including the lag variable that is dependent. Because it ignores the cross-sectional effect and instead assumes strong exogeneity (or orthogonality) between the regressors and the error term, the pooled OLS estimator is flawed and unreliable (Roodman, 2009).The Fixed effects estimator makes the assumption that unobservable individual-specific effects are fixed and uncorrelated with the error term, although this assumption is broken in regressions of a dynamic nature, according to Baltagi (2005). Also, for a large N and small T of panel data, the within estimator becomes biased and inconsistent (Nickell, 1981)

Random Effect, as opposed to FE, presupposes that particular separate heterogeneity is uncorrelated with the regressors. However, until the period reaches infinity, RE meets an endogeneity problem if the model uses a lag-dependent variable as a regressor. As a result, applying RE to a dynamic panel model is challenging. Though, utilizing FE and RE asymptotic estimators, the bias can be decreased if the time period is too long. Both estimating strategies are

challenging to utilize because this study only has a short time to overcome the bias ((Roodman, 2009). Another method of estimation is the Generalized Least Squares (GLS) estimator. This method was developed to deal with the problem of Heteroskedasticity. However, it shares the same drawback as the earlier model estimating techniques in that it ignores the endogeneity issue.

Standard panel data model estimation methods like pooled OLS, fixed effects, Within estimator, random effects, and generalized least squares are typically ineffective in dynamic panel datasets because they do not take estimated equation endogeneity and individual-specific effects into account (Baltagi & Baltagi, 2008).These common estimating methods will produce inaccurate and inconsistent results when used to equations with a delayed dependent variable on the equations' right side. What therefore has to be done to address the endogeneity issue? The use of differenced-GMM and system-GMM estimation approaches was advised by Roodman (2009).He also makes the point that applying these estimate approaches to dynamic models results in dynamic panel bias because they are primarily intended for static models.

Arellano and Bond (1991) proposed the Generalized Method of Moments (GMM), a dynamic panel estimator, to address the issue of the lagged dependent variable's endogeneity in a dynamic mode, which happens when the explanatory variable and the error term are correlated. The GMM additionally accounts for errors in measurement in general, autocorrelation, omitted variable bias, and unobserved panel heterogeneity. It uses explanatory factors that are orthogonal to the error term yet have high correlations with the regressor to cope with endogeneity. GMM was created as well to be used with a big group in a short amount of time. Additionally, it's designed to control any distributed fixed effects.

There are many justifications for employing this estimating method. First, by taking into account causality the independent variable, which may come from to the dependent variable and vice versa and may be correlated with the error term, it avoids endogeneity problems. Second, the GMM takes into consideration the relationship between the explanatory variables and the time-invariant individual-specific fixed effects contained in the error term. Another benefit is that it takes into consideration the possibility of autocorrelation brought on by a lagged dependent variable on the right-hand side of the equation. For panel data with a big N and a short T, GMM is also helpful (Mileva, 2007)

Considering that we have an endogenous linear regression model: $Y = X\beta + \mu$
Where y and $\boldsymbol{\mu}$ are N x 1 vectors; β is a K x 1 vector of unknown parameters; X is N x K matrix of explanatory variables. We assume an N x L Z-matrix that is correlated with X (explanatory variables) but orthogonal to the error term due to the assumption of endogeneity. In this case,

orthogonality means that the variables in the Z matrix are unrelated to the error term $\boldsymbol{\mu}$ (i.e. a set of valid instruments).

Specifics of GMM include:

1. N (the number of groups or cross-sections) must be bigger than T (the time duration).
2. GMM employs instrumental variable (IV) estimation to reduce the biases. The instruments need to be external E (Z'μ) = 0 then.
3. The quantity of instruments must be less than or equal to the quantity of groups (Z≤ N).

When there are small T, big N, and independent variables that are not absolutely exogenous, that is, when they are connected with past and perhaps present realizations of the error term (endogeneity issue),dynamic panel models are used. Additionally, it is helpful when fixed effects, Heteroskedasticity, and intragroup autocorrelation exist.

There are typically two different GMM techniques. The first is the Arellano and Bond (1991) difference GMM technique, which eliminates the fixed effects and corrects endogeneity by differencing all regressors. However, this method of transforming regressors via differencing has a flaw in that it amplifies gaps in unbalanced panel by deducting the prior observation from the present one. This is synonymous with saying if we are having an unbalanced panel, applying difference GMM may weaken our results.

However, the second technique, the System GMM approach put forth by Arellano and Bover (1995)and Blundell and Bond (1998) amends endogeneity by adding extra instruments to increase efficiency and altering the instruments so that they are uncorrelated (exogenous) with the fixed effects. The original equation and the converted equation are both used in the GMM system of equations. Instead of deducting the previous observation from the current one, it uses orthogonal deviations, which minimizes data loss.

3.4.2. GMM Model Specifications

3.4.2.1. Difference GMM:

The initial model: $lny_{it=}\alpha lny_{it-1} + \beta x'_{it} + (\gamma_i + \alpha_t + \varepsilon_{it})$ (1)

Model transformation: $\Delta lny_{it} = \alpha \Delta lny_{it-1} + \beta \Delta x'_{it} + \Delta\alpha_t + \Delta\varepsilon_{it}$ (2)

The lagged dependent variable may be linked with the error term, thus even when the fixed effect is eliminated by converting the regressors by first differencing, the endogeneity problem still exists. Fixed effects that are assumed to remain constant across time Blundell and Bond (1998) and Bond, Hoeffler, and Temple (2001)are no longer included in the altered equation. Equation (2) depicts changes in the dependent variable by using the first-differenced lagged dependent variable, which is instrumented with its previous levels.

3.4.2.2. System GMM:

Still using the above given initial model (1) $lny_{it} = \alpha lny_{it-1} + \beta x'_{it} + (\gamma_i + \alpha_t + \varepsilon_{it})$ with the assumption that the equation is a random walk model and γ_i is persistent; put on the difference GMM will yield both a biased and ineffective estimate of in finite samples, especially when T is short. According to Blundell and Bond (1998) the use of weak instruments is to blame for the difference GMM estimator's subpar performance under these conditions. Therefore, this is when the system GMM is useful. Because it will express one equation in levels form with first differences as instruments and another equation in first differenced form with levels as instruments, the system GMM is appropriate. The system GMM approach uses a bigger number of moment conditions (instruments), yet Monte Carlo research proposes that there are benefits in precision and the small sample bias is decreased when T is short and the dependent variable is persistent. Additionally, a two-step GMM should be employed when Heteroskedasticity and serial correlation are present, utilizing a weighting matrix created from the first step's residuals.

3.4.3. Understanding Difference and System GMM Specifications

Given the initial model,$lny_{it} = \alpha y_{it-1} + \beta x'_{it} + (\gamma_i + \alpha_t + \varepsilon_{it})$

The Rule-of-Thumb Bond (2001) recommended methods for deciding between the Difference and System GMM requirements are:

1. First, we estimate the dynamic model using the within or FE approach with pooled OLS and LSDV.
2. We see the associated FE estimate of as a lower-bound estimate and the pooled OLS estimate for as an upper-bound estimate.
3. If the Difference GMM estimate is near to or lower than the FE estimate for, it is likely that the instrumentation is weak and the Difference GMM estimate is downwardly biased. A System GMM estimator should be utilized in its place.
4. A System GMM should be used if the model displays persistent random walk behavior. Before claiming that the researcher's estimation results are reliable, a researcher needs to be aware of some GMM diagnostics. The validity of the instruments must be verified using the Hansen (1982) J-test and Sargan (1985) test of over identifying constraints in order for GMM estimations to be trusted. These tests are run to check the validity of the null hypothesis about the entire set of instruments. Failure to disprove the null hypothesis will justify the instrumentation decision. The original error term is serially uncorrelated and the moment conditions (instruments) are correctly defined if the null hypothesis of no second-order serial correlation is not rejected (Arellano & Bond, 1991).

CHAPTER 4: RESULT AND DISCUSSION

By using several econometric models, this section of the study comprehensively gives various assessments on the macroeconomic, political, and institutional factors of foreign aid inflows. The first section (section 4.1) provides descriptive statistics and conducts an in-depth analysis of the macroeconomic, political, and institutional landscapes as well as their developments throughout the chosen Sub-Saharan African nations during the sample periods. To understand the varied behaviors and patterns throughout the sample Sub-Saharan African countries over the specified sample periods, summary statistics and line graphs are used.

The model specification test and the causal connections between our variables (i.e., the macroeconomic, political, and institutional variables pertaining to foreign aid) are attempted to be captured in Section 4.2. Forecast error variance decomposition (FEVD) and impulse response functions (IRFs) are also simulated to ascertain the relative endogeneity/exogeneity of these variables, along with panel unit root tests to verify their stationarity.

The third section (section 4.3) focuses on the econometric simulation of the models mentioned in chapter three and gives estimates and econometric results. The results are presented and interpreted in this section of the paper in accordance with the findings produced by Stata simulation of the models. We made an effort to interpret the findings in section 4.4. These findings are supported by a variety of other writers' empirical studies and available fundamental economic theories. The findings and analysis were based on data from the World Bank's World Governance Indicators (WGI) for the political and institutional variables and it’s World Development Indicators (WDI) for the economic variables.

4.1. Statistical Analysis

We can see in table 1 of the summary statistics that we have the same number of observations by first looking at the basic statistics of the dependent variable foreign aid and the explanatory variables GDP pc, trade (% GDP), consumer price index (CPI), political stability index, and institutional quality index. This demonstrates the great balance of the panel data that was used for the primary model variables. When we look at average official development assistance (ODA) inflows into Sub-Saharan African nations, we find that in 2021, SSA countries will receive a mean of 19.82 percent of the total ODA received by African countries. This is somewhat less than the 33.6 percent ODA inflow, which according to the World Bank (2023) is the highest average ODA inflow ($US) in 2021 for SSA nations when averaged out since the 1970s. The sample and time coverage are to blame for the variation. The average GDP per capita

for the time period under consideration (2002 to 2021) is 7.11%. The World Bank's assessment of GDP per capita for 48 Sub-Saharan African nations in 2021 is 9.35%. The number of nations sampled and the time periods included in this study paper could be the cause of the slight difference. Our sample starts in 2002, but the World Bank averages GDP per capita from 1961.

Additionally, table 1 demonstrates that 68.45 percent of the sampled sub-Saharan African countries' average trade volume (%GDP) throughout the study period came from African nations. The figure is greater than the ever-increasing 63 percent recorded in sub-Saharan African nations in 2008. The discrepancy may be a result of the study's time frame and the number of countries it sampled. Additionally, the consumer price index (CPI) for the tested sub-Saharan African nations during the sample period had an average value of 142 percent. The average standard deviation of political stability index for the sampled Sub-Saharan African countries over the sample period is at -0.53 and its higher political stability index than -0.65 points of the average value of for 2021 based on all over sub-Saharan African countries since from 1996 to 2021. The difference may come from the sampled countries and period. Finally, the average institutional index (IQI) is 3.43e-10, it indicates very low.

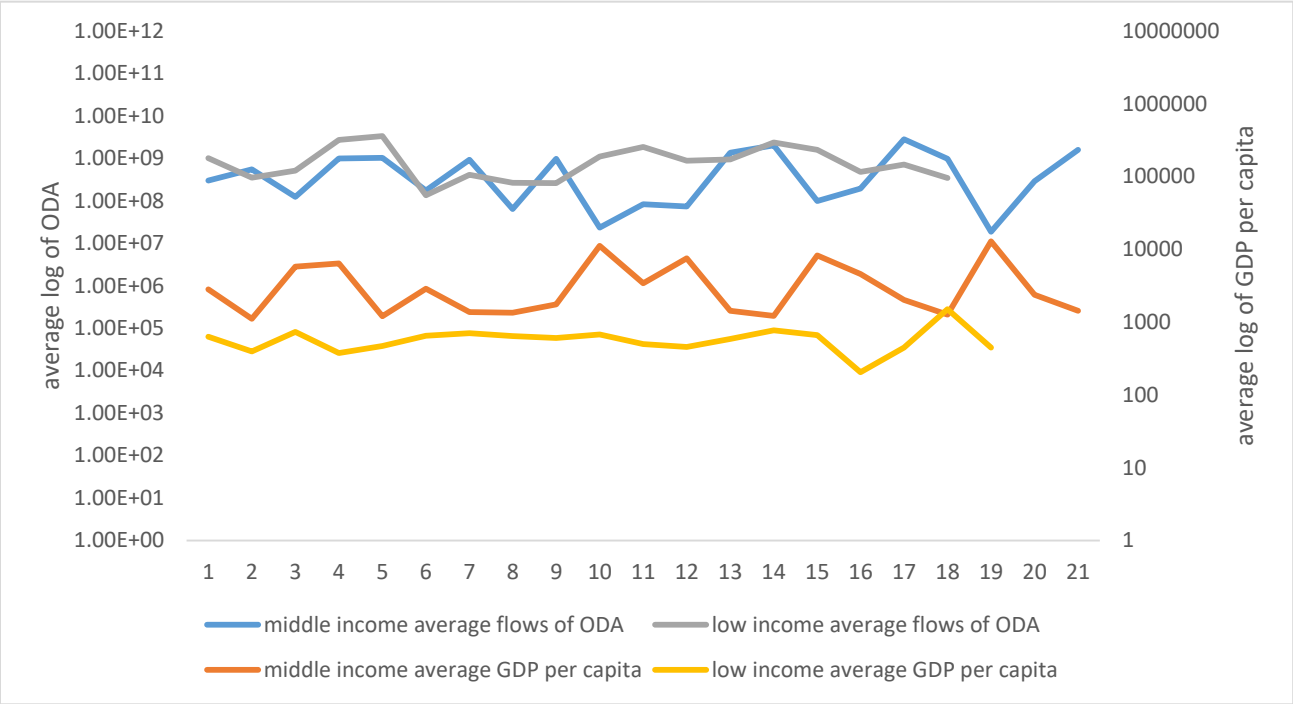
Table 1: Summary statistics for full data

Variables	Observation	mean	Std.dev.	min	max
lODA	800	19.82	1.452	13.16	23.16
lGDPpc	800	7.115	1.088	4.705	9.896
TR	800	68.45	34.38	0.757	225.0
CPI	800	142.0	586.7	15.35	16,246
IQI	800	3.43e-10	1.000	-1.874	3.023
PVEST	800	-0.529	0.898	-2.699	1.201

Source: estimation of the author

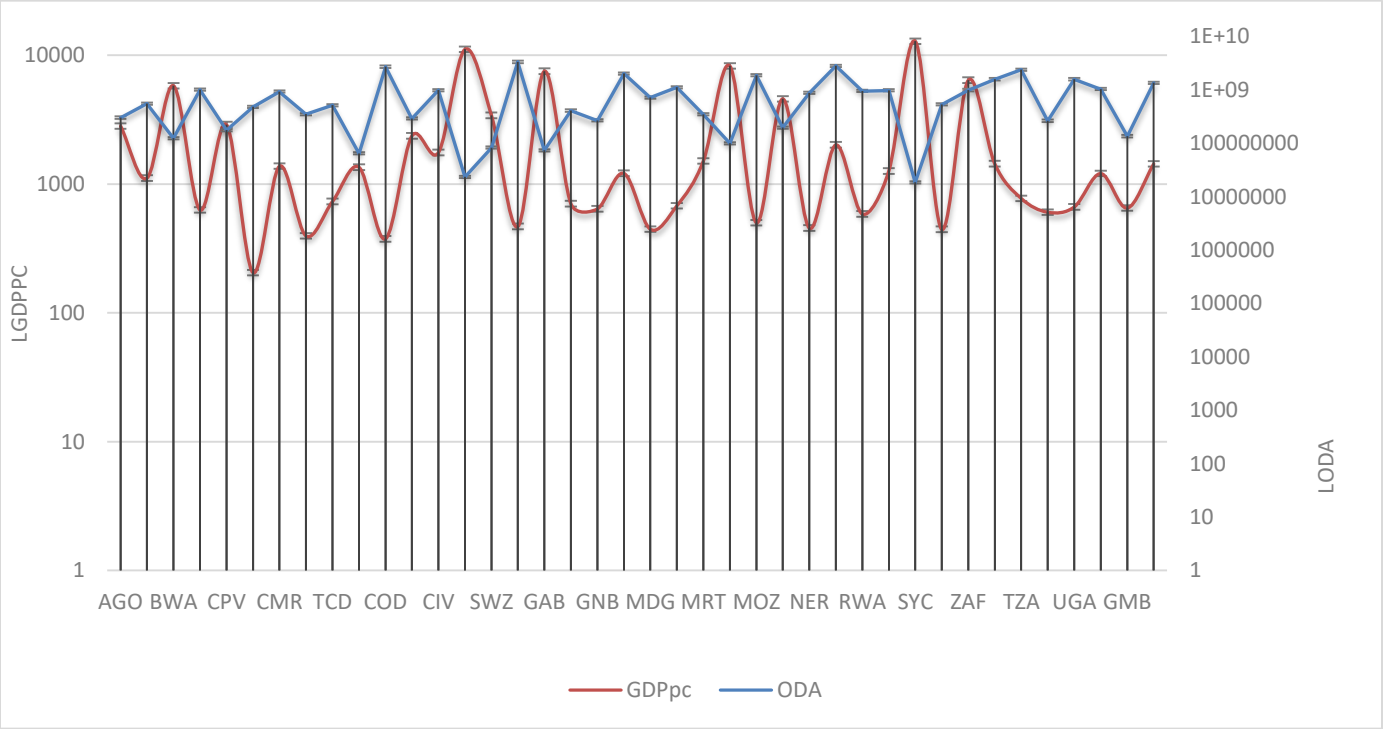
Based on the grouping in sub Saharan African countries classified in income per capita level in 2022 according to regional economic outlook (AFRICA, 2023) to comparing the flows of average official development assistance (ODA) with average GDP per capita of sub Saharan African countries (SSA), see in appendix 1. The grouping is help to understanding the average flows of official development assistance in the region by classifying low income and middle income countries. As we can see in the figure 1, the flows of average official development assistance in the sampled SSA countries as compared to the average GDP per capita of the region, ODA has high in low income countries than middle income countries in the sampled countries. Low income countries have the probability to get aid than middle income countries. The flows of ODA coincides with the aim of official development assistance, ODA recipients encompass low-income and lower-middle-income nations as well as those middle-income nations that are thought to be more susceptible (Nwude, Ugwoke, Uruakpa, Ugwuegbe, & Nwonye, 2020).

Figure 2: the flows of ODA in the SSA countries compared with GDP per capita income



Source: Based on data from the World Bank and the author's own construction

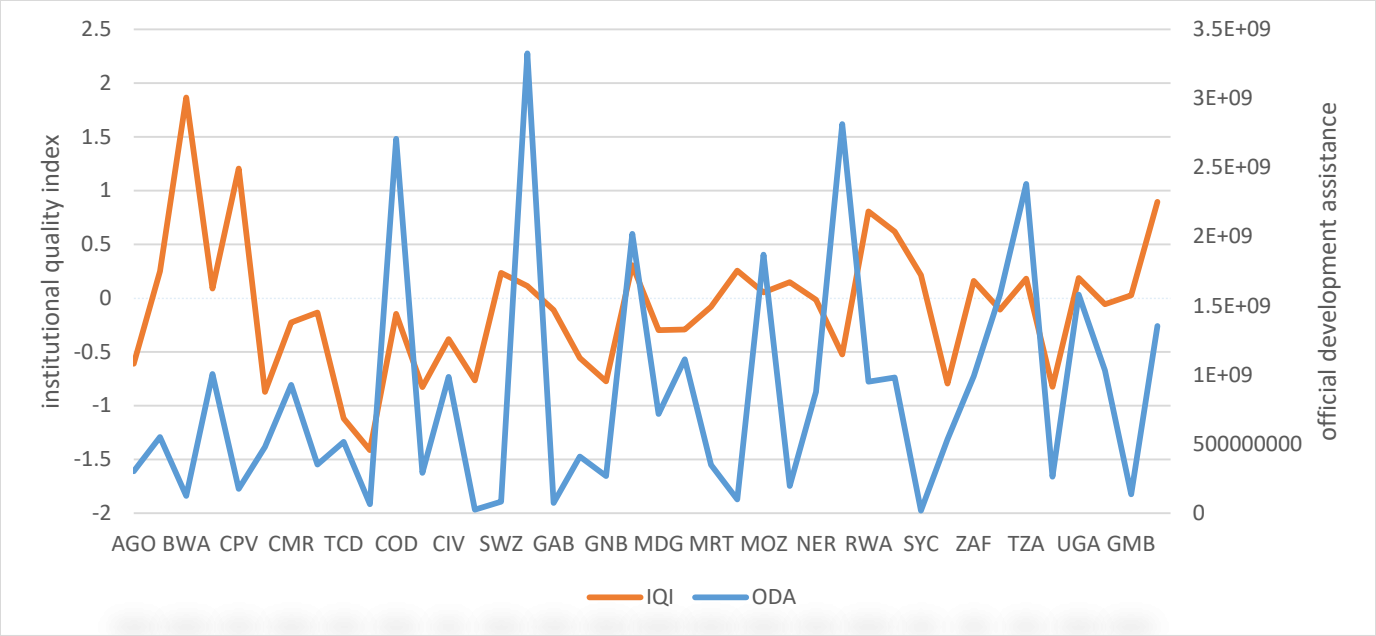
Figure 3: the average value of natural logarithmic ODA and average value of natural logarithmic GDP per capita in SSA (country-wise)



Source: Based on data from the World Bank and the author's own construction

As can be seen from figure 2, seeing the general pattern, it can be observed that while log of GDP per capita and log of ODA follow an opposite pattern in SSA for the given period. As we expected and indicated in the literature the aid received is depends on the GDP per capita, meaning that when the countries per capita incomes goes up the countries official development assistance becomes down. The official development assistance main target is to increase the individual countries income per capita or to pullout the countries from lower income to middle or from middle to higher income. However it's not always true because it may not be in the needs of recipient countries, sometimes depends on the interest of the donors. As we can see in the above figure 4.1 (a), Botswana (BWA), Gabon (GAB), Mauritius (MRS), Seychelles (SYC) when GDP per capita increasing the ODA received decrease. The countries such as Congo, Dem. Rep. (COD), Burundi (BDI), central Africa republic (CAF), Ethiopia (ETH), Mali (MLI), Mozambique (MOZ), Niger (NER), Seria Leone (SLE), when their GDP per capita deteriorate they received more development assistance from the donors. On the contrary, some countries are getting aid even their economic growth declined, for instance Gambia (GMB), Tanzania (TZA), and Madagascar (MDG). Notably, for the given sample of SSA countries in the given period, Equatorial Guinea (GNQ), Gabon (GAB) and Seychelles (SYC) are registered the largest average GDP per capita. Burundi has the lowest average GDP per capita for the given sample period.

Figure 4: The average value of ODA and the average value of the institutional quality index of the SSA (country-wise)

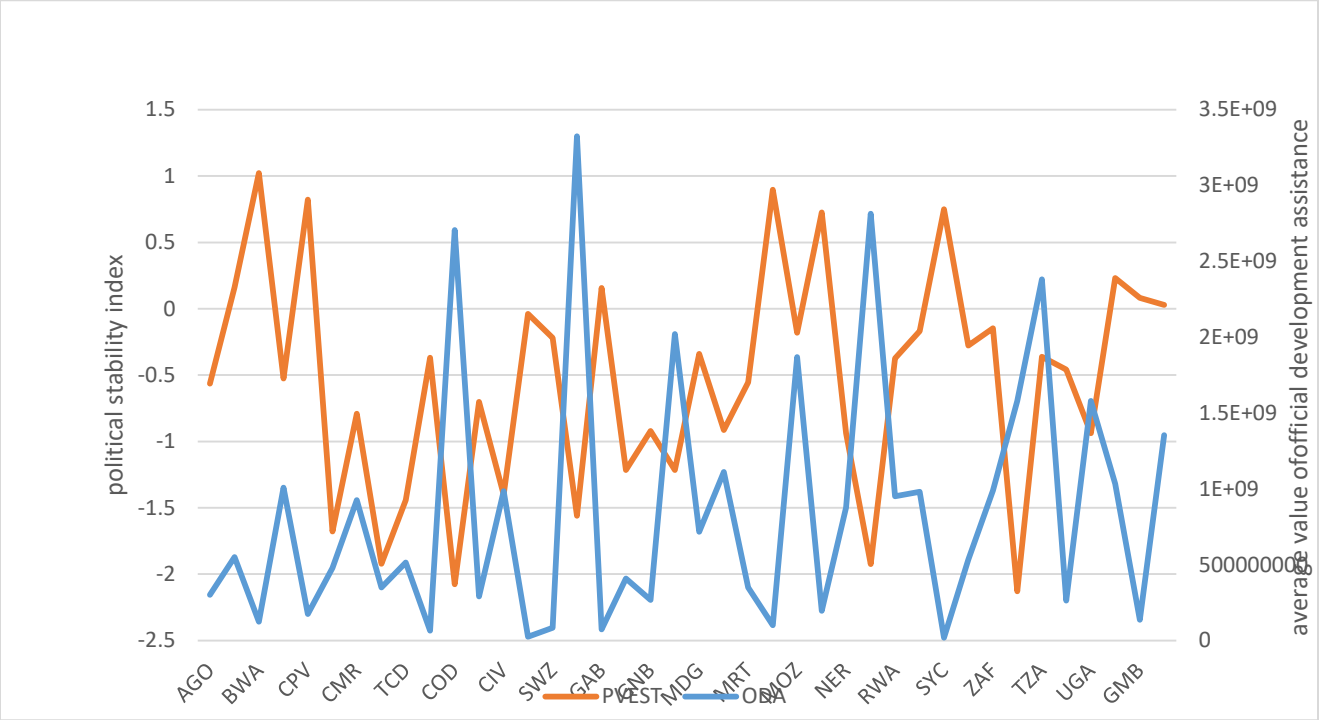


Source: Author's own construction based on data from World Bank

The institutional quality also follows a path the same to the official development assistance (ODA), but in some countries variables as couldn't be expected. The result indicated that the countries that have best institutional quality received a low amount of ODA from the donors, meaning that from the definition of the official development assistance it needs only for the countries that have low institutional quality in order to improve it. As indicated in the figure 3 above Ethiopia (ETH), Congo, Dem. Rep. (COD) and Rwanda received high amount of aid even if they have low institutional quality. And on the other hand, if the countries that have high institutional quality they received high amount of aid from the donors. For instance South Africa (ZAF). Moreover, if the countries that have low level of institutional quality like Togo (TGO) they received low amount of assistance. It indicates that rather to improve the quality of institution the donors may have other objectives.

Figure 5: the average value of ODA and the average value of political stability index in SSA (country-wise)

Source: Author's own construction based on data from World Bank



It's also seen from the graph above in figure 4 that generally the average level of political stability is negatively associated with the average levels of ODA inflows, meaning that when the countries are more instability they received high amount of aid. From the given sampled in SSA countries, Congo, Dem. Rep. is on an average at the low level of political stability or high level of political instability with average index of -2.077 and Sudan with the average index -2.13 and they received high amount of assistance. On the other hand Botswana, Mauritius has average political stability index values 1.02 and 0.9 and they received low amount of assistance. As looking at the graph 4.1(c) the political stability is negatively associated with the flow of development assistance rather to attract it.

4.2. Model selection test

Under this section, the appropriate panel data model which has a better power of prediction by incorporating the required standards is examined through several tools of appropriate model selection.

4.2.1. Selection between Pooled OLS and FE Estimators

A test called the Chow test is used to decide whether Pooled OLS or Fixed Effect (FE) models should be employed to estimate panel data. It specified as accepting the null hypothesis is in favor of pooled regression is more appropriate than the fixed effect and when we reject the null hypothesis, it is in support of the fixed effects estimation (Chow, 1960). Therefore, as appendix 2 reveals, the p-value is less than a 1% level of significance indicating the rejection of the null hypothesis which means, we have to take into account that, the country fixed characteristics are needed in the regression analysis and fixed effect estimation is preferred in the models.

4.2.2. Hausman Specification Test Result

According to the results of the specification test (Hausman, 1978), as shown in appendixes 4, the p-values are less than 1%, suggesting that the rejection of the null hypothesis is favored (i.e., fixed effect estimating is chosen over the random effects estimator) in the model. Therefore, in this research, fixed effect estimation is more appropriate than the estimation of the random effects, however, this study developed another model due to the other potential problems in the fixed effect estimation.

4.3. Causality and model selection tests

4.3.1. Panel Unit Root Tests

Determining the direction of causality among our main variables of interest such as official development assistance, GDP per capita, institutional quality, and political stability is important as this procedure would help governments and policy makers of SSA in identifying the variable that should be target first. When thinking about determining the short run and long run relationships between the variables of interest (i.e. official development assistance, GDP per capita, institutional quality and political stability), one must first perform a panel unit root test before going any further. In our case, we did so to determine the stationarity of these four variables. A stationary series is means reverting and has a finite variance and the associated shocks are only transitory.

We employed Im-Pesaran-Shin and Fisher panel unit root tests which are able to test the stationary test balanced data. The unit root test outcomes are given in the table below

Table 2: ADF test based on Im-Pesaran-Shin and Fisher panel unit root tests

Variables	Stationary level	Im-Pesaran-Shin		Fisher	
		Statistics	p-value	statistics	p-value
lODA	I(0)	-6.8358	0.0000	-7.8277	0.0000
lGDPpc	I(0)	-7.2234	0.0000	-9.7105	0.0000
IQI	I(0)	-3.8108	0.0001	-5.4745	0.0000
PVEST	I(0)	-4.4768	0.0000	-6.3068	0.0000

All four variables are determined to be stationary at level in both Im-Pesaran-Shin and Fisher unit root tests, as can be seen from the table above. The result indicated that the variables do not change with time because they are I (0). To find out if there is causation among and between the variables, as well as which direction the causation is going, we can perform certain causality tests. We employed a panel VAR model and the corresponding granger causality tests on the four variables because they are all stationary at level.

As stated by Granger (1969), a variable X is said to Granger-cause another variable Y if and only if variable X's previous values had a stronger predictive power for Y than Y's own past values. If it is possible to anticipate the current values of the dependent variable Y using the explanatory variable X's past values, we say that X Granger causes Y. To examine the relationships between variables' causes and effects, Granger (1969) developed the Granger test within a time series framework. If we assume that the variables X_{it} and Y_{it} are stationary series, then the model is given by

$Y_t = \alpha + \sum_1^N \beta_N Y_{t-N} + \sum_1^N \theta_N X_{t-N} + +\varepsilon_t$, where t= 1, 2… T

This model is extended by Dumitrescu and Hurlin (2012) to test the causality within panel data frameworks. The extension made by Dumitrescu and Hurlin (2012) is given by

$Y_{it} = \alpha_i + \sum_1^N \beta_{iN} Y_{it-N} + \sum_1^N \theta_{iN} X_{it-N} + \varepsilon_t$, where t=1… T and i=1… N

This model tests the whether or not past values of X have certain causality on the present value of Y.

And the null hypothesis is given by:

$$H_O: \theta_{i1} = \cdots = \theta_{iN} = 0 \quad \forall \quad i = 1 \ldots N$$

Holtz-Eakin, Newey and Rosen, (1988) introduced the panel VAR model in order to deal with multivariate simultaneous equation models which are endogenous. Even though panel VAR models are used to estimate simultaneous equations which are endogenous in nature like those of dynamic GMM estimators, our main concern is not estimating the coefficients as we already did so with a System GMM estimator. Rather we are employing panel VAR here to test whether or not there is a causality between the four variables of interest that are considered endogenous in a GMM framework of our earlier estimations. Therefore we employ panel VAR for model selection criterion; panel causality tests along with the corresponding variance decomposition and impulse response.

4.3.2. Model Selection for Panel VAR

Using the moment and model selection criteria (MMSC), which Andrews and Lu (2001) established as the best lag selection parameters, the best lag for Panel VAR is chosen. The Hansen (1982) statistic of over-identifying limitations for GMM models serves as the foundation for this ideal lag selection criterion. According to Michael R.M. Abrigo and Inessa Love (2015),

the MMSC is comparable to the Akaike information criteria (AIC), the Bayesian information criteria (BIC), and the Hannan-Quinn information criteria (HQIC) that are frequently applied in maximum-likelihood models. Therefore after running the Panel VAR regression on our four variables of interest (namely, official development assistance, GDP per capita, institutional quality and political stability variables), the three model selection criteria of Andrews and Lu (2001) show that the optimal lag is four (4) since the fourth lag has the smallest MBIC, MAIC and MQIC, as shown appendix 6.

We see that log of GDP per capita (lGDPpc) is Granger-cause of log of official development assistance (lODA) but there is no reverse causality flowing from log of ODA after running the Panel VAR model with the ideal lag of four (4) and the Panel Granger causality test. The fact that official development assistance does not Granger-cause political stability and institutional quality may also be seen. Additionally, observe that institutional quality is not the granger cause of log of GDP per capita. But log of GDP per capita is granger causes institutional quality. Political stability and the log of the GDP per capita are mutually reinforcing each other. Last but not least, political stability is a more important cause of institutional quality but the opposite is not true.

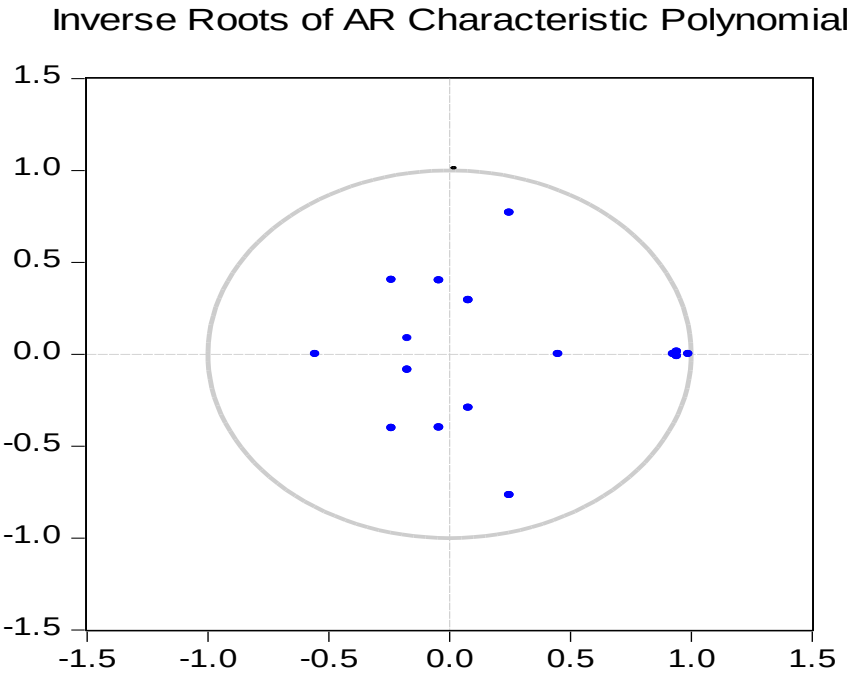
Table 3: Results of the Granger causality test

Null Hypothesis:	W-Stat.	Zbar-Stat.	Prob.
LGDPPC does not granger cause LODA	8.14468	2.34655	0.0189
LODA does not granger cause LGDPPC	6.91544	1.21302	0.2251
IQI does not granger cause LODA	6.76176	1.07130	0.2840
LODA does not granger cause IQI	7.23720	1.50973	0.1311
PV-EST does not granger cause LODA	5.86956	0.24858	0.8037
LODA does not granger cause _PV_EST_	6.52343	0.85153	0.3945
IQI does not granger cause LGDPPC	6.69572	1.01041	0.3123
LGDPPC does not granger cause IQI	9.61847	3.70559	0.0002
_PV_EST_ does not granger cause LGDPPC	9.58627	3.67589	0.0002
LGDPPC does not granger cause _PV_EST_	8.11667	2.32072	0.0203
_PV_EST_ does not granger cause IQI	8.18924	2.38764	0.0170
IQI does not granger cause _PV_EST_	6.55543	0.88104	0.3783

Once we tested the direction of causality, we are interested in knowing the effect of the relative exogenous shocks in the system. Impulse-response functions (IRF) and forecast-error variance

decompositions (FEVD) are the methods with which we can identify the effects of shocks in endogenous variable system. Before estimating the IRF and the FEVD, we have to first check the model stability which depends upon the eigenvalues of the Panel VAR model lying inside a unit circle. The underlying graph shows that the eigenvalues lie in the unit circle thereby ensuring the model is stable. The results of Dumitrescu-Hurlin (2012) panel causality tests in Table 3 reveal that there is a two way causality going from official log of GDP per capita and political stability in the short run and the others political stability with institutional quality and GDP per capita with ODA have been unidirectional effect.

Figure 6: Model Stability condition



Source: Author's own Stata results based on the data from World Bank

4.3.3. The Forecast Error Variance Decomposition (FEVD)

The Forecast Error Variance Decomposition (FEVD) shows the percent of the forecasting error produced over time because of a specific shock. Specifically, it demonstrates the proportion of the dependent variable's fluctuation that can be accounted for by the shocks to both the dependent variable itself and the other variables in the system. Additionally, it shows how much one variable has an effect on another. According to Domingos (2000), a variable's relative endogeneity or exogeneity can be determined by the percentage of variations that are explained by its own prior realizations. The most exogenous variable of all is thought to be the one that can best be described by the inventions of one's own past realizations as compared to the other factors.

Table 4: Results of Forecast error variance decomposition (FEVD)

Variance Decomposition of LODA:					
Period	S.E.	LODA	LGDPPC	IQI	_PV_EST_
1	0.419441	100.0000	0.000000	0.000000	0.000000
2	0.502684	99.39904	0.544047	0.055023	0.001890
3	0.554576	99.09881	0.825370	0.059518	0.016300
4	0.606307	98.90846	0.988348	0.084889	0.018307
5	0.648767	98.55976	1.269346	0.149729	0.021162
Variance Decomposition of LGDPPC:					
Period	S.E.	LODA	LGDPPC	IQI	_PV_EST_
1	0.132167	0.008877	99.99112	0.000000	0.000000
2	0.194191	0.337736	99.54725	0.003245	0.111770
3	0.235323	0.995670	98.31910	0.078137	0.607090
4	0.273194	1.648322	97.24757	0.101960	1.002148
5	0.304775	1.843739	96.73907	0.096968	1.320222
Variance Decomposition of IQI:					
Period	S.E.	LODA	LGDPPC	IQI	_PV_EST_
1	84971.55	0.018518	0.308552	99.67293	0.000000
2	111148.1	0.179881	1.134211	98.68206	0.003853
3	116302.2	0.231832	1.313901	98.35354	0.100728
4	116549.4	0.231551	1.308769	98.12769	0.331991
5	118447.6	0.224929	1.272474	98.07810	0.424497
Variance Decomposition of _PV_EST_:					
Period	S.E.	LODA	LGDPPC	IQI	_PV_EST_
1	0.208328	0.130482	0.213805	0.112003	99.54371
2	0.278903	0.073945	0.121059	0.188539	99.61646
3	0.325922	0.058863	0.097575	0.142831	99.70073
4	0.363528	0.050700	0.111042	0.154231	99.68403
5	0.395695	0.050485	0.146187	0.209644	99.59368

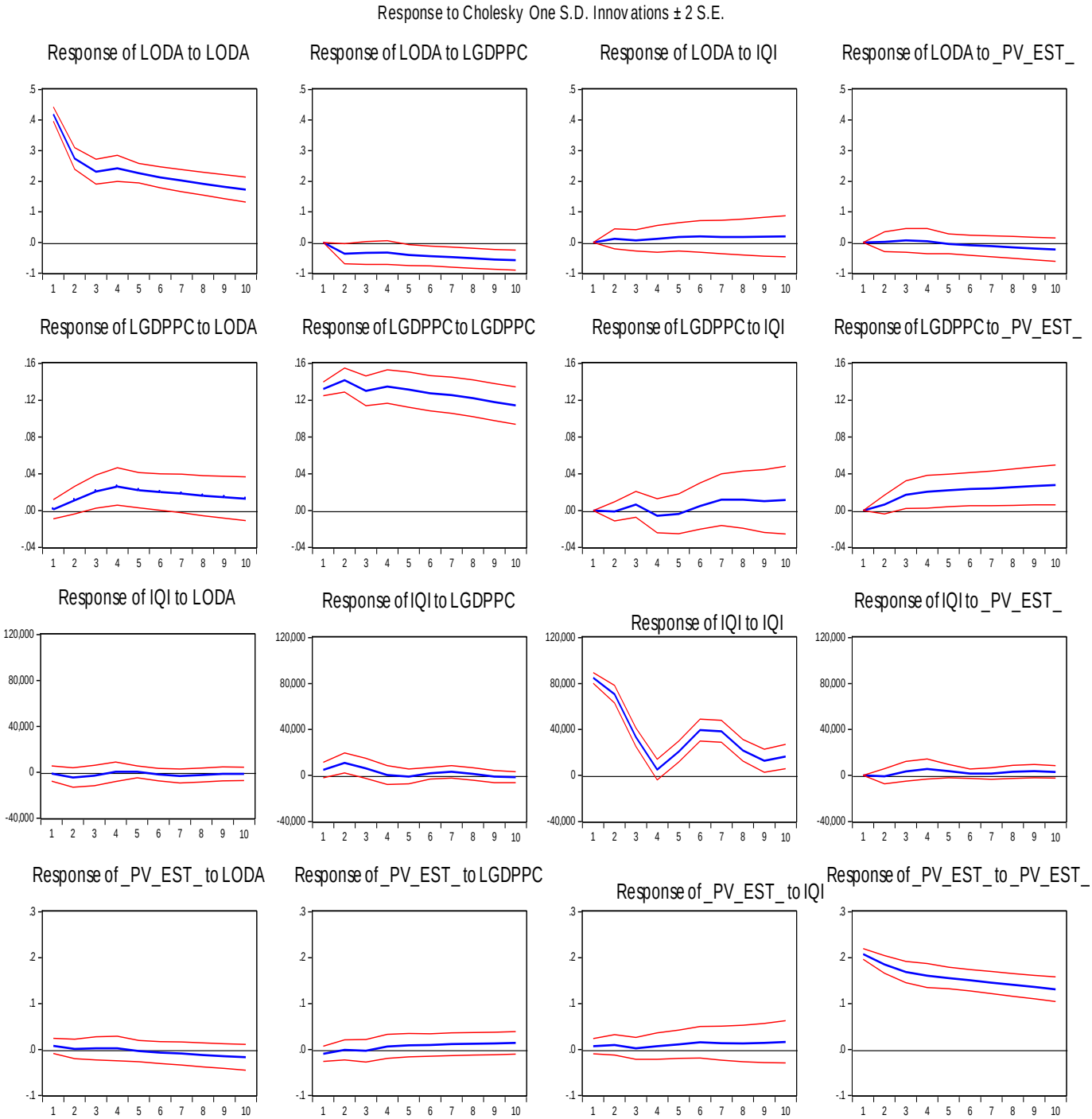
Cholesky Ordering:LODA LGDPPC IQI _PV_EST_

As can be inferred from Table 4 above, in the short run looking at year 1, a 100% forecast in the error variance in log of ODA is explained by the variable itself. It has an average contribution of in the next five years is 99.2%. Other variables in the model do not have any influence on log of ODA in the first period. But in the next five periods the variables lGDP pc, IQI and PVEST are contributed an average of 0.7%, 0.07% and 0.012% respectively. This implies that log of GDP per capita, institutional quality and political stability have strong exogenous impact, or that they do not influence log of ODA at all.

In the first lag, the GDP per capita variable contribution 100% for itself, while other variables do not contribute to GDP per capita in the first period. It has also an average contribution for the next five years is 98.4% for itself. The other variables ODA, IQI and PVEST have average contribution of 0.97%, 0.06% and 0.6% respectively. By the same token, the forecast error variances in institutional quality and political stability variables are explained by their own respective variations in the system is 78.97% and 99.63% respectively.

Comparing the variables log of ODA, log of GDP per capita, institutional quality and Political stability in the system, we can see that the average contribution political stability is the most exogenous of all the four variables with 99.63% of all the forecast error variances explained by its own variations. Therefore political stability relatively the most exogenous variable and Institutional quality is relatively the most endogenous variable of all the four.

Figure 7: impulse response function results



Source: generated *by Author using STATA from the source data*

When we look at the impulse response functions of the variables, we can see in figure (6) that a standard deviation shocks of a variable on itself at the initial point shows a quick jump and slows down over time. An impulse to log of ODA on itself has a positive impact that gradually decreases over time but stays positive and converges to zero after that. A standard deviation shock of log of GDP per capita on itself returns a quick incremental response initially and decreases also over time. It stays positive until around 8th or 9th period and finally converges to zero at period 10. In a similar way the institutional quality initially decreases positively up to the fourth period and suddenly increases and again decreases to its own standard deviation impulse and positively decreases until the last period in the horizon and comes down to equilibrium in the latter periods. A standard deviation shock of Political stability on itself initially positively decreases and to become stabilized in the latter periods. From this we can see that most of the variations in the dependent variable are from its own shocks.

In the standard shock of the log of ODA, the response of log of GDP per capita is initially increases up to period 4^{th} and becoming decreases and positively stable. But the institutional quality response is at initial point it becomes negative and then no response and negative and so on. Generally, institutional quality do not have response to the standard deviation shock of log of official development assistance. When we look at the response of the political stability to the deviation shock of log of ODA at the initial period it has no response and become negatively impact after 5^{th} period to the end of the latter periods.

On the other hand, the standard deviation shock of log GDP per capita on institutional quality is initial shoot up and positively increases until period 2^{nd} and becomes decreases positively up to the fourth periods then no response on the latter periods. And its shock on log of ODA is initially decreases negatively and converges to zero after 3^{rd} periods. But the shock of log of GDP per capita on the political stability is almost zero.

The standard deviation shock of institutional quality is positively and smoothly reacted to by the logs of ODA, GDP per capita, and political stability. When political stability shock not hits the log ODA, there is no reaction. . Although initially beneficial, its effect on the log of GDP per capita continues to grow into later decades. Finally, the institutional quality reaction to the standard deviation shock of political stability is initially nonexistent, increases favorably after the third period, and then smoothly disappears after the sixth period.

In conclusion, it can be said that the majority of variations in the forecast error variances of both the log of ODA and the log of GDP per capita, as well as the institutional quality and political stability, are caused by their respective shocks and not much by other external variables, according to the FEVDS and IRFs and the causality tests. Because of this, they are very exogenous and rarely respond to changes in other factors. All in all, the results of the FEVD and IRF tests agree with one another and are consistent with those of the causality tests and the

GMM results. Given the relative endogeneity and exogeneity's of these four variables, it is crucial that policymakers develop strategies to influence the relatively most exogenous variables (political stability and log of ODA), which are susceptible to external variable shocks, in order to boost economic growth in Sub-Saharan African nations.

4.4. Empirical Result

Although the study made its final destination to employ both a Heteroskedasticity and autocorrelation consistent dynamic panel data estimation as table (5) below displays and tries to show the empirical association between foreign aid inflows and our main interest variable of a regressor, GDP per capita (GDP pc), trade volume (% GDP), consumer price index (CPI), political quality index and institutional quality index (IQI), it has tried to employ the fixed effects regression analysis also as of appendix 2. This estimation is tried because our prior model selection procedures are laid on the fixed-effects model over pooled OLS and random effects estimation. However, the given results in the appendix mentioned above are done with larger problems of Heteroskedasticity, autocorrelation, and endogeneity due to the lagged dependent variable. Hence, we are forced to leave taking implications from the fixed-effect model and instead, it is used the estimations from GMM. The GMM estimation is required not only for the given problems but also because our sample size is relatively larger than the number of years under consideration and thus suitable for this type of estimation as ((Roodman, 2009) principle of moment conditions estimator. As well as, Nickell (1981) has a detail explanation why we cannot use FE estimation for such a like dynamic panel Data even with different model transforming approaches.

Table 5: Empirical result with Blundell & Bond's (1998) one-step System GMM Estimation

Dependent variable	lODA
VARIABLES	
Natural log of official development assistance	0.689***
	(0.072)
Natural log of GDP per capita	-0.169***
	(0.048)
Trade volume percentage of GDP	-0.004***
	(0.001)
Consumer price index	0.000***
	(0.000)
Institutional quality index	0.200***
	(0.072)
Political stability index	-0.210**
	(0.088)

Constant	7.605*** (1.559)
Observations	760
Number of countries	40
AR(1)	0.003
AR(2)	0.689
Hansen	0.135
Sargen	0.155
Number of Instruments	22.000
Overall significances	F(39, 754) = 65.32 Prob > F = 0.0000

*Notice that "***", "**", and "*" shows statistically significant at 1%, 5%, and 10% levels respectively. Standard errors are in parentheses. P-values are reported for Arellano-Bond AR (2), and Hansen test statistics.*

Results of the Hansen and AR (2) tests must be reported. The Hansen J test is used to determine whether instruments are valid; it examines the null hypothesis of an instrument's general validity. If these null hypotheses are not rejected, the decision to employ the specified instruments is supported. Additionally, failing to reject the AR (2) test means that there is no second order serial correlation and that the moment criteria are correctly given.

As pointed out in table (5) the empirical result shows that the lagged dependent variable of official development assistance (lODA), growth domestic products per capita (lGDPpc), trade volume of percentage GDP (TR), consumer price index (CPI), institutional quality index (IQI), and political stability index (PVEST) have a significant effect on foreign aid inflows proxy for official development assistance received by sub-Saharan African countries. The lag of official development assistance, the lagged dependent variable, is significant at a 1% level of significance and has a positive coefficient. It suggests that having more successful ODA in the past will increase the likelihood of receiving extra aid now. When donors saw that the previous year's aid was successful in boosting trade, economic growth, and institutional and political quality, they sought the delivery of more aid (Wacziarg & Welch, 2008). According to the facts, donors provide aid to developing nations and support rapid economic growth for the benefit of their economies and for the development of their trade (Kim & Oh, 2012).

Official development assistance inflows in the studied area are negatively and statistically significantly (at a 1% level of significance) impacted by the gross domestic product per capita. And this is the fact that rising total gross domestic product on a per-capita basis reduces the inflows of ODA. The improvement of developing nations' per capita income is the goal of

official development assistance. In order to address critical economic issues like food production and provision, illiteracy, and industrial growth, the donor provides help to developing nations. The nations with high per-capita incomes show that they are ineligible for government development aid. Only countries with low GDP per capita levels are eligible for ODA. Consistent results were also discovered by (Brückner, 2013; Djankov, Montalvo, & Reynal-Querol, 2006; Kim & Oh, 2012; Lundborg, 1998), who found a comparable outcome. GDP per capita has a negative impact on ODA allocations to aid recipient nations.

Another variable, trade volume, significantly affects the log of ODA negatively at the 1% level of significance. However, the predicted sign is positive, indicating that trade volume has a favorable impact on the flow of aid. This is because, as discussed in the empirical literature (Singh, 2010), donors provide aid to recipient nations in exchange for their obligation to purchase products and services from the donor's country. The demand on donors to provide aid to host countries increases if the recipient countries engage in substantial international trade because donors anticipate that the recipient countries will be more likely to repay their loans and will also have more opportunities to sell their goods (Wacziarg & Welch, 2008). Additionally, the OECD states that one objective of aid is to encourage trade as a tool for alleviating poverty and as a means of overcoming trade barriers so that developing nations can fully benefit from economic openness. Trade can draw foreign aid since, according to the facts, it is one of the tenets of excellent policies that support the efficacy of international assistance (Burnside & Dollar, 2000).

The investigation's findings, however, diverge from what the literature had expected. The results are in line with the literature, which asserts that donors provide aid to developing countries that are experiencing a capital shortage in an effort to increase trade, economic growth, and governance effectiveness. However, the amount of trade in developing nations, especially in sub-Saharan African countries generally in Africa, does not draw aid, therefore the bilateral aid donors are not ready to provide aid that does not gain from it. According to Baccini and Urpelainen (2012) and Lundsgaarde, Breunig, and Prakash (2010), they conform to the policies of aid following the trade. As a result, these authors claim that the sub-Saharan African countries have very little trade activity and that there is little to no trade between the region and the donors. So instead of attracting the contentious aid, the sub-Saharan African nations are pushing it out.
The consumer price index (CPI) has an influence that is to be anticipated. It increases ODA inflows and is considered at the 1% level. Donors are willing to provide aid to help developing nations stabilize their macroeconomic issues. The second claim is that the flow of aid causes inflation to increase. Given that inflation is one of the long-term macroeconomic system-affecting indicators of macroeconomic instability (Lamah, 2021).

Furthermore, institutional quality index (IQI) is playing a role to enhance the inflows of capital in terms of ODA in SSA. It affects ODA with a 1% level of significance and it is in line with several studies see for example (Young, 2014, Maruta, 2020, Kaya, 2020, Boateng, 2021). The authors contend that ODA inflows depend on how well-developed the recipient countries' institutions are at the moment. It affects ODA inflows in two ways. First, donor nations are more likely to give aid to nations with strong institutions because they are more certain that it will be used for its intended purpose. Because of this, strong institutions can draw capital flows in the form of aid to poor nations. The other idea is that donors may offer aid to emerging nations so they can raise the standards of their institutions in nations with weak institutional frameworks. By providing training and technical help to create effective institutions, aid can foster institutions. (Bräutigam & Knack, 2004; Jones & Tarp, 2016).

Last but not least, there is a link between political stability and official development assistance inflows that is unfavorable. ODA inflows are negatively impacted by political stability at a 5% level of significance. Steinwand (2015), Morgenthau (1962), Asongu (2016), and Breuning (2007) obtained comparable results. The logic behind this is that since the flow of aid is restricted when the aid recipient countries' political systems are more stable, it implies that the donors have their own political interests when the developing nations' political systems are unstable. They spend a lot of money to meet their political needs when there is unrest. It bolsters the idea that developed nations give aid to underdeveloped nations in order to address their own wants rather than to help those underdeveloped nations with their difficulties. Because most of the countries in this region are unstable politically and the region is in a fragile state, the findings are consistent with the SSA. Because of this, a larger proportion of aid goes to this region than to any other (Asongu, 2019).

CHAPTER 5: CONCLUSION AND APPLICATIONS FOR POLICY

As stated in the outcomes of the simulations of our model, some conclusions and policy implications are offered in this chapter. Consequently, the conclusions are presented in part 5.1 of this study, which is then followed by section 5.2, which presents the policy implications.

5.1. **Conclusion**

This study is conducted to assess the macroeconomic, political and institutional determinants of foreign aid inflows for selected 40 SSA countries covering for 2002-2021 and uses a dynamic system GMM (One-step system GMM) estimation technique. The data were obtained from the open source of World Bank's World Development Indicators (WDI) and World Governance indicators (WGI) data-bases. The study tried to use descriptive analysis to explore the trends of aid flows as compared to GDP per capita across countries in the region by dividing as low income and middle income countries. The trend shows that low income countries have better access to aid than middle income countries (Radelet, 2006). In addition, it has been analyzed by using the average value of foreign aid inflows of each countries with average values of GDP per capita, institutional quality and political stability index. The description examines the economic, political and institutional determinants of foreign aid inflows that vary country from country. High political stability reduces the flows of aid to some SSA countries, for instance, Botswana and Mauritius. Low political stability attracts the flows of aid on the other hand, such as Congo Dem. Rep., Nigeria and Sudan. The trends of institutional quality with flows of aid in each country is also varies like political stability.

The empirical results from this study show that GDP per capita, political stability and institutional quality determines the flows of foreign aid in sub Saharan African countries. As well as trade volume and consumer price index are other determinants of aid flows in Sub Saharan African countries. GDP per capita affects the official development assistance negatively by 1% significance level. It indicated that when the income per capita of the countries being improving, the official development assistance becomes declined. Institutional quality index also positively determined the flows of official development assistance in to SSA countries by 1% level of significance. The result indicated that good institutional quality attract foreign capital inflows in terms of aid. Good institutional quality of aid recipient countries able to effective the official development assistance. On the other hand, political stability index is also negatively affects the official development assistance by a 5% level of significance. The result examine that the official development assistance is more inflows to sub Saharan African countries when the countries are highly in political instability than politically stable countries. While other factors such as lagged official development assistance and consumer price index have a significant and positive effect on the inflows of official development assistance in to SSA countries, trade volume also has significant negative effect on official development assistance in SSA.

Panel unit root tests were performed on the four main variables (i.e. official development assistance, GDP per capita, political stability and institutional quality) to determine their level of stationary before proceeding to test for their causal relationships. Both the Im-Pesaran-Shin and Fisher unit root tests show that all the four variables were stationary at level. After running a panel granger causality test, it was found that the causation goes only from GDP per capita to official development assistance and institutional quality and not the other way around. It's also noted in the results that there is causality between political stability and GDP per capita each other's. Political stability is granger causes to institutional quality but not the reverse.

To reinforce the results obtained from the causality tests, we have run forecast error variance decompositions (FEVD) and impulse response functions (IRFs) on the four main variables. The results show that institutional quality responds to shocks from the other variables other than its own innovations. Whereas the other three variables, official development assistance, political stability, and GDP per capita are not that much responsive to shocks other than their own. While it's found that institutional quality is relatively endogenous variable of all the three variables, political stability is also relatively exogenous of all.

5.2. **Policy Implications**

Various policy implications based on the findings in Sub-Saharan African countries could be provided. The results show that governments and policy makers of these countries should target political stability, institutional quality to attract the inflows of foreign capitals. Developing countries have to be sensitive for their institutional quality, because institutional quality is sensitive to the shocks of political stability than GDP per capita and official development assistance. As their policy variable since variations in the institutional quality other than its own shocks are also explained by the shocks from political stability and GDP per capita. Countries in SSA should not ignore factors leading to reduce the quality of institution and policies aimed at decreasing political instability, increasing income per capita should be pursued by these countries in order to maintain stable flows of foreign capital. In general, there are two benefits to improve the quality of institution in the SSA countries, the first benefit is to improve the income per capita of the countries by attracting the official development assistance and the second benefit of institutional quality is able to eligible for accessing foreign capitals like official development assistance and foreign direct investment to eradicate poverty and for technical training and for other purposes.

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7. **Appendixes**

Appendix 1: grouping of SSA countries based on income per capita

Middle income countries				low-income countries			
Name	Code	Av. ODA ($US)	Av. GDP pc ($US)	Name	Code	Av. ODA ($US)	Av. GDP pc ($US)
Angola	AGO	3,01E+08	2817,4	Burkina Faso	BFA	1,01E+09	630,2074
Benin	BEN	5,51E+08	1114,723	Central Africa Rep.	CAF	3,5E+08	396,8919
Botswana	BWA	1,24E+08	5803,881	Chad	TCD	5,14E+08	732,5046
South Africa	ZAF	9,89E+08	6402,436	Cong Dem. Rep.	COD	2,71E+09	375,6909
Zambia	ZMB	1,03E+09	1208,541	Ethiopia	ETH	3,33E+09	468,7135
Cape Verde	CPV	1,75E+08	2890,766	Gambia, the	GMB	1,36E+08	652,0945
Cameron	CMR	9,26E+08	1378,385	Guinea	GIN	4,08E+08	704,0004
Comoros	COM	64494000	1352,847	Guinea Bissau	GNB	2,67E+08	642,1634
Cote d'Ivoire	CIV	9,86E+08	1759,406	Togo	TGO	2,63E+08	605,195
Equatorial guinea	GNQ	23427500	11121,24	Mali	MLI	1,11E+09	678,2588
Eswatini	SWZ	82748500	3417,237	Mozambique	MOZ	1,87E+09	501,551
Gabon	GAB	73614999	7528,67	Niger	NER	8,77E+08	455,5084
Ghana	GHA	1,35E+09	1435,657	Rwanda	RWA	9,5E+08	586,4298
Kenya	KEN	2,02E+09	1212,544	Tanzania	TZA	2,38E+09	774,3704
Mauritius	MUS	99546500	8260,684	Uganda	UGA	1,58E+09	664,6603
Namibia	NAM	1,96E+08	4586,034	Burundi	BDI	4,79E+08	205,622
Nigeria	NGA	2,81E+09	2016,553	Madagascar	MDG	7,17E+08	446,6065
Senegal	SEN	9,8E+08	1263,356	Mauritania	MRT	3,48E+08	1512,96
Seychelles	SYC	18557000	12850,54	Sierra Leone	SLE	5,34E+08	445,5979
Congo Rep.	COG	2,9E+08	2366,94	Sudan	SDN	1,58E+09	1438,635

Appendix 2: Fixed effect estimation result

Dependent variable	lODA
Independent variables	(1)
	fixed effects
lGDPpc	0.326***
	(0.0689)
TR	0.00467***
	(0.00135)
CPI	6.86e-05**
	(3.24e-05)
IQI	0.104
	(0.0665)
PVEST	0.00419
	(0.0525)
yr	0.0254***
	(0.00437)
Constant	16.91***
	(0.467)
Observations	800
Number of country	40
Overall significance	F(39, 754) = 65.32
	Prob > F = 0.0000
R-squared	0.213

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 3: **Chow Test Result for checking country effect**

(1) id2 = 0	(2) id3 = 0

(3)	id4 = 0		
(4)	id5 = 0		
(5)	id6 = 0		
(6)	id7 = 0		
(7)	id8 = 0		
(8)	id9 = 0		
(9)	id10 = 0		
(10)	id11 = 0		
(11)	id12 = 0		
(12)	id13 = 0		
(13)	id14 = 0		
(14)	id15 = 0		
(15)	id16 = 0		
(16)	id17 = 0		
(17)	id18 = 0		
(18)	id19 = 0		
(19)	id20 = 0		
(20)	id21 = 0		
(21)	id22 = 0		
(22)	id23 = 0		
(23)	id24 = 0		
(24)	id25 = 0		
(25)	id26 = 0		
(26)	id27 = 0		
(27)	id28 = 0		
(28)	id29 = 0		
(29)	id30 = 0		
(30)	id31 = 0		
(31)	id32 = 0		
(32)	id33 = 0		
(33)	id34 = 0		
(34)	id35 = 0		
(35)	id36 = 0		
(36)	id37 = 0		
(37)	id38 = 0		
(38)	id39 = 0		
(39)	id40 = 0		
	F(39, 755)	=	68.19
	Prob > F	=	0.0000

Appendix 4: Hausman Specification test result

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
lGDPpc	.6044362	.424132	.1803042	.
TR	.0037632	-.0002925	.0040557	.
CPI	.0001088	.0001014	7.38e-06	.
IQI	.092687	.0358623	.0568247	.
PVEST	-.05312	-.1541086	.1009885	.

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 66.39
Prob>chi2 = 0.0000
(V_b-V_B is not positive definite)

Appendix 5: Multicollinearity test results

	VIF	1/VIF
PVEST	2.06	0.484527
IQI	1.98	0.506090
lGDPpc	1.83	0.547452
TR	1.63	0.615064
CPI	1.02	0.981768
Mean VIF	1.70	

Appendix 6: optimal lag length selection criteria

VAR Lag Order Selection Criteria
Endogenous variables: LODA LGDPPC IQI _PV_EST_
Exogenous variables: C

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-13845.88	NA	1.82e+10	34.97445	34.99806	34.98352

1	-11735.03	4195.055	91597026	29.68442	29.80246*	29.72979
2	-11706.80	55.81299	88812297	29.65354	29.86602	29.73520
3	-11693.95	25.28076	89521983	29.66149	29.96841	29.77945
4	-11642.21	101.2641*	81796914*	29.57123*	29.97258	29.72549*
5	-11635.02	13.99453	83639489	29.59348	30.08927	29.78403
6	-11628.15	13.31128	85592615	29.61653	30.20676	29.84338
7	-11621.95	11.93638	87742478	29.64129	30.32595	29.90443
8	-11609.41	24.03592	88517863	29.65003	30.42912	29.94946

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion