UNIVERSITY OF CAPE COAST

FOREIGN AID AGRICULTURAL SECTOR DEVELOPMENT AND POVERTY REDUCTION IN SUB-SAHARAN AFRICA

EVANS AMPONSAH

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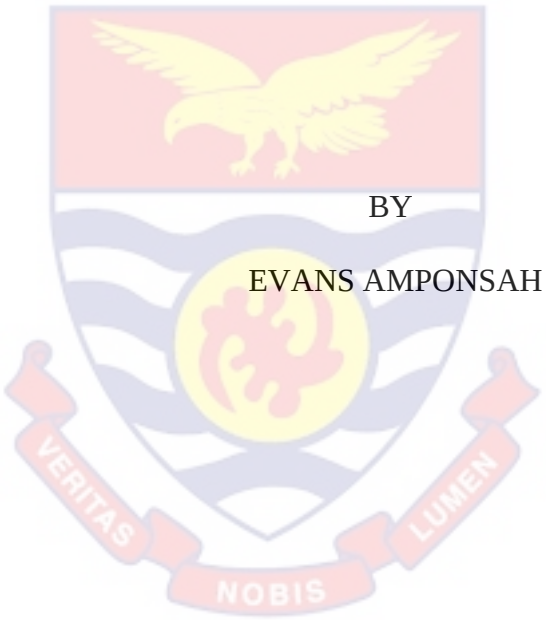

BY

EVANS AMPONSAH

Thesis submitted to the Department of Finance of the School of Business, College of Humanities and Legal Studies, University of Cape Coast, in partial fulfillment of the requirements for the award of Master of Commerce degree in Finance

JULY 2024

DECLARATION

Students' Declaration

I declare that this thesis, with the exception of quotations and references contained in published works which has been identified and duly acknowledged is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

Signature:…… Date:……

Name: Evans Amponsah

Supervisor's Declaration

I hereby declare that the preparation and presentation of this thesis was supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Signature:…… Date:……

Name: Dr. Peterson Owusu Junior

ABSTRACT

This research investigated the role of agricultural sector development in the relationship between foreign aid and poverty reduction, utilising panel data from 40 sub-Saharan African countries. The study spanned from 2000 to 2022, and System Generalized Method of Moments (GMM) was employed for the statistical analysis. This method addresses potential endogeneity issues arising from reverse causality and omitted variable bias by using instrumental variables. The study revealed that foreign aid had a poverty reducing effect depending on the measure of aid. The study further revealed that bilateral aid, technical aid and grant aid had a positive and significant effect on poverty reduction while multilateral aid failed to contribute to poverty reduction in the SSA region during the period under study and this can be attributed to aid conditionalities. Additionally, the findings indicated a positive and significant influence of agricultural sector development on reducing poverty. Moreover, results from the third objective showed that countries that engage in agricultural activities when they receive aid and channel this aid towards the development of this sector, its impact on poverty reduction is higher. In light of this, the study recommends that policymakers in Sub-Saharan African (SSA) countries prioritize the alignment of foreign aid programs with their national agricultural development strategies. This can be achieved by developing comprehensive agricultural sector plans that clearly articulate priority areas for investment, such as infrastructure development, technology adoption, and market access.

KEY WORDS

Sub-Saharan Africa

Multilateral aid

Bilateral aid

Technical aid

Grant aid

Poverty reduction

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DEDICATION

To my family

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

SSA	Sub-Saharan Africa
SDGs	Sustainable Development Goals
GDP	Gross Domestic Product
UN	United Nations
MDG	Millennium Development Goals
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
FAO	Food and Agriculture Organization
GMM	Generalized Method of Moment
WDI	World Development Indicator
IMF	International Monetary Fund

CHAPTER ONE

INTRODUCTION

Introduction

Foreign capital has long been a pivotal tool in the global effort to lessen poverty, particularly in sub-Saharan Africa (Adusei, 2020), a region that faces some uppermost poverty rates in the world. With its diverse array of countries, each grappling with unique socio-economic challenges, sub-Saharan Africa presents a complex landscape for development interventions. Over the years, billions of dollars in aid have been channeled into the SSA region with the aim of alleviating poverty and also improving health and education (Ayoo, 2022). The connection between foreign assistance and alleviating poverty is multifaceted, influenced by factors such as governance, institutional capacity, and the specific design and implementation of aid projects. While some nations have made momentous strides in reducing poverty with the help of foreign aid, others have seen limited progress, raising questions about the efficacy and sustainability of aid interventions.

Background to the Study

The UN Sustainable Development Goals (SDGs) are premeditated to be universal objectives for both advanced and developing countries, as highlighted by Gasper, Shah and Tankha (2019). In 2015, the UN General Assembly established 17 SDGs along with 169 targets to accomplish by 2030. The primary targets of SDG1 and SDG2 known as "no poverty" and "zero hunger", respectively, strives to eliminate poverty and hunger, ensure food security, enhance nutrition, and support sustainable agriculture globally. This target encompasses various additional goals, such as promoting international

cooperation and environmental sustainability, all aimed at the eradication of poverty (Asongu & Nwachuku, 2017; Asongu & Odhiambo, 2019; Dhrifi, Jaziri & Alnahdi, 2020; Sarkodie & Strezov, 2019; Temitope & Fanowopo, 2020). Therefore, the accomplishment of the initial goal could contribute to the attainment of subsequent goals.

Reflecting on developmental initiatives in Africa, the emphasis of the MDGs shifted focus from driving growth to emphasising reduction in poverty. It was recognised that reducing poverty does not solely hinge on overall economic growth (Liu, Hasan, Xuan, Saydaliev, Lan & Iqbal, 2023), but rather on empowering the poor to actively engage in the growth process. This entails revitalizing their enthusiasm for engaging in agriculture, and consequently, in the broader growth and development process. Likewise, the central ambition articulated in the African Union's 2030 agenda is to eradicate poverty continent-wide, fostering fair growth and sustainable development in Africa (Union, 2015). East Asia and the Pacific regions have seen the most significant reductions in poverty, while SSA remains the poorest region, with over 35% of its population living on less than US$1.90 a day.

In Africa, poverty is mainly a rural issue, with approximately 75% of the impoverished population living in rural regions and reliant on agriculture for their sustenance and income. SSA houses over 250 million individuals living in extreme poverty, with Eastern and Southern Africa having the world's highest concentrations of impoverished populations (Mahembe & Odhiambo, 2018). Half of the world’s extremely poor now live in SSA, which is the only region that has not met its Millennium Development Goals (MDGs) target (Mahembe & Odhiambo, 2021).

Despite robust growth worldwide in recent years, poverty remains one of the most significant challenges of the 21st century (Yu & Huang, 2021). The most recent poverty estimates indicate that in 2017, 9.2% of the worldwide population subsisted below the $1.90-a-day Poverty Line (World Bank, 2020). This corresponds to 689 million people living in extreme poverty, a decrease of 28 million from 2016 and 52 million from 2015. From 1990 to 2015, the global extreme poverty rate declined by approximately 1% annually. However, recent data indicates a deceleration in poverty reduction observed from 2013 to 2015. Between 2015 and 2017, the global poverty rate dropped by less than 0.5% per year, raising alarms about achieving the 3% target by 2030 without rapid, meaningful, and momentous policy measures.

Between two and four billion people survive on the equivalent of less than US$2 a day (World Bank, 2020). Figure 1 illustrates the increase in the population who are considered to be extremely poor, from 278 in 1990 to 437 million in 2018 (World Bank, 2018). The World Bank also estimated that by 2030, SSA would be home to around 9 out of every 10 individuals who are severely poor.

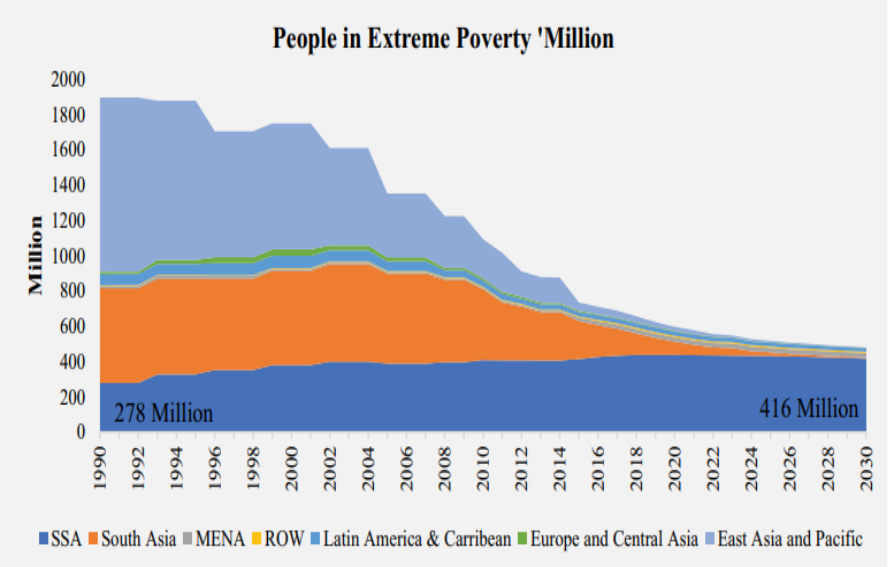

Figure 1: Poverty in sub-Saharan Africa
Source: World Bank, (2018)

The experience of extreme poverty is harsh—persistent hunger, inadequate access to clean water and sanitation, limited healthcare, widespread disease, overcrowded and substandard housing, restricted education, and minimal opportunities (Easterly, 2006). It is unsurprising that poverty is commonly perceived as the breeding ground for crime, piracy, and terrorism (Nabarro & Lasbennes, 2019). As reported by the World Bank, "people are considered poor if their standard of living falls below the poverty line, which is the amount of income (or consumption) associated with a minimum acceptable level of nutrition and other necessities of everyday life" (World Bank, 2018).

Concerning this goal, SSA nations present a significant case for examination due to the acute poverty prevalent, with millions of individuals surviving on less than $1.90 per day (World Bank, 2018). While the global poverty rate declined after 1980, the period between 1985 and 2005 witnessed a nearly doubled increase in the number of persons living in poverty in SSA, impacting the typical African economically worse off than two decades ago

(WDI, 2018). Poverty is on the ascent in most SSA countries, posing a significant challenge for the UN and the World Bank to achieve poverty eradication by 2030, as previously stated. Consequently, it is crucial to devise prompt solutions to alleviate poverty before the situation worsens any further. In response, the World Bank aims to decrease extreme poverty by 3% by the year 2030 in line with SDG 1.

As an initiative to eliminate poverty, the Heads of State in the UN declaration of 2000 committed to pursuing cancelling debt, expanding access to market, boosting foreign investment, and increasing Official Development Assistance (ODA) to SSA countries. Donor countries within the OECD have reached an agreement to allocate 0.7 percent of their GNI as foreign aid (OECD, 2019). Foreign aid has become a prominent plan in promoting economic development and well-being in emerging nations (Alimi, 2018; Asongu & Nwachukwu, 2017; Ugwuanyi, Ezeaku, & Ibe, 2017; Yiew & Lau, 2018).

The Dual-Gap theory also emphasises the role of external financing, such as foreign aid, in filling the savings and trade gaps in developing economies. In the context of Sub-Saharan Africa (SSA), where domestic savings and export revenues are often insufficient, foreign aid can provide the capital needed for investments in key sectors like agriculture. This infusion of resources helps bridge financial deficits, enabling agricultural development projects such as irrigation systems, modern farming techniques, and rural infrastructure, which are pivotal for improving productivity and incomes. The different growth goals anticipated from ODA are based on the belief that aid is essential for boosting growth and well-being, alleviating unemployment, and diminishing poverty levels (Asongu & Ezeaku, 2022)

Major sources of foreign capital for the SSA region are foreign aid, FDI, and personal remittances (Zardoub & Sboui, 2023; Bird & Choi, 2020; Njangang et al., 2018; Adusah-Poku, 2016). Of these three, foreign aid is the primary font of foreign capital for the SSA region. Total foreign aid to SSA rose from $1.17 billion in 1970 to $49.27 billion in 2017. In contrast, within the corresponding timeframe, FDI rose from $0.71 billion to $24.61 billion, and personal remittances surged from $0.02 billion to $42.72 billion. This underscores the significance of foreign aid as a crucial font of capital for the region.

Foreign aid is characterised as the allocation of financial resources, encompassing grants and concessional loans, directed towards socioeconomic development in developing nations. Official development assistance may involve direct exchange between donor and recipient countries (bilateral aid) or may be channeled through multilateral development organisations (OECD, 2019 It can manifest as the disbursal of funds provided under favorable terms and grants from certified agencies belonging to the DAC, multilateral institutions, as well as non-DAC countries. Foreign aid also encompasses financial contributions from official donors in more developed countries in Central and Eastern Europe, nations formerly part of the Soviet Union, and specific advanced developing countries to support development in other nations (World Bank, 2019).

Aid can also manifest in the form of technical assistance, a type of help offered to less-developed countries by international organisations like the UN and its agencies, individual governments and philanthropic institutions (Galistcheva, 2023). Its aim is to equip these nations with the skills and

proficiency necessary for fostering development. Many technical-assistance initiatives commenced after World War II, when large parts of Europe and Southeast Asia were in ruins, and countries in Africa and Central and South America were striving to enhance their living standards

Addressing the issue of poverty through the advancement of agricultural output and offering rural communities' fresh jobs and pay prospects in farming has emerged as a significant priority for policymakers and academics globally (Sikandar, Erokhin, Wang, Rehman, & Ivolga, 2021). The agrarian sector in developing countries makes a substantial contribution to the inclusive improvement of their economies (Martin, 2019). Undoubtedly, agricultural development holds potentials for generating employment and reducing poverty.

Modernization theory also posits that structural transformation, particularly in the agricultural sector, is essential for economic development and poverty reduction. Modernizing agriculture through foreign aid-funded initiatives—such as technology adoption, market linkages, and value-chain improvements—can shift the sector from subsistence farming to a more market-oriented and productive model. Historically, researchers failed demonstrate significant concern regarding the impact of agricultural development on employment generation and poverty reduction. In numerous developing nations, governmental strategies have fallen short in accomplishing their poverty reduction objectives primarily due to insufficient financial resources. On the other hand, the primary objective for the sustainable agricultural development is the increasing of agricultural output and proceeds of the small-scale farmers (Mollier et al., 2017; Jägermeyr, 2020; Herrmann & Rundshagen, 2020).

Most of the development activities in these SSA countries rely on foreign assistance due to limitations in domestic resources (Amusa, Monkam, & Viegi, 2016). Agricultural production has been a driving force in poverty reduction (Sridhar et al., 2023). The UN Millennium Declaration, signed in 2000, underscores the importance of reducing poverty through agriculture-led economic growth. The G8 Genoa Summit in July 2001 also highlighted the crucial role of agriculture in reducing poverty. According to the FAO (2017), the demand for agricultural aid in African countries has significantly increased, surpassing current commitments.

The agricultural sector constitutes a substantial portion of the GDP, employs a large segment of the labor force, produces the majority of staple foods, and serves as the sole source of means of support over half of the population living in SSA countries (Van Arendonk, 2015; McCullough, 2017). Specifically, 78% of the world's poor rely deeply on agriculture not only for their nourishment but also for the growth in agricultural productivity and incomes, which are among the most effective tools for ending extreme poverty (OECD, 2016; Sakho-Jimbira & Hathie, 2020). The World Bank highlighted in its report that it is crucial to prioritise agriculture in the development agenda, as economic growth in agriculture is at least twice as effective in reducing poverty compared to growth in other sectors (World Bank, 2018).

Despite the numerous benefits of the agricultural sector, it is noteworthy that many countries in SSA continue to experience severe poverty and food insecurity (Mary, 2019). According to a 2018 report on Food Security and Nutrition by the FAO in 2017, approximately 821 million people, or about 12% of the global population, were estimated to be food insecure and chronically

undernourished. Most of these individuals reside in SSA countries. Furthermore, the populations in these countries who depend on agriculture to sustain their lives are significantly poorer than those employed in different areas of the economy.

Despite its vital importance for development, African agriculture has seen insufficient investment from governments, donors, and foreign investors, resulting in persistently low productivity levels in the sector (Ssozi, Asongu, & Amavilah, 2019). This could further be ascribed to the circumstance that the majority of households in developing countries, especially SSA lack sufficient funds to meet the financial needs of their farms (Moyo, 2016; Adjognon et al., 2017). Limited agricultural technology and extreme weather conditions result in inadequate food making in evolving countries, necessitating significant agricultural investment (Morea & Balzarini, 2018). Consequently, global development organisations have been urgently urged to address these issues through the intervention of external financial aid (Ducastel, Bourblanc, & Adelle, 2023; OECD, 2016). The FAO projects that an average annual investment of $209 billion is needed to light the anticipated agricultural demand of 93 developing countries which includes the regions in SSA in 2050 (Blandford, 2019). Since many less developed countries, such as those in SSA, have restricted agricultural investment capabilities, they must depend on external financing to fulfill their development requirements (Liebrand et al., 2021; Bjornlund, 2020).

Within this framework, foreign aid has been identified as a crucial factor in advancing agricultural sector development by providing technology transfers and managerial skills that can benefit farmers (Ssozi et al., 2019). Foreign aid

is not only restricted to reduce poverty, but also boost the agriculture sector (Dhahri & Omri, 2020). Foreign aid can be channeled directly into the agricultural sector through various means such as funding for infrastructure development, agricultural research, technology transfer, training programs, and subsidies (Pernechele, Balié, & Ghins, 2018). Increased investment in the agricultural sector can lead to improvements in productivity, efficiency, and market access for smallholder farmers. This may involve modernising agricultural practices, providing access to improved seeds, fertilizers, and irrigation technologies, as well as supporting farmer cooperatives and agribusiness development. As the agricultural sector grows, it engenders job opportunities, stimulates rural economies, and contributes to overall economic growth. Higher agricultural productivity can lead to surplus production, which can be sold in markets, generating income for farmers. Additionally, agricultural development can stimulate growth in related sectors such as agro-processing, transportation, and trade, further expanding economic opportunities and reducing poverty (Wehmeyer et al., 2023; Umbadda, & Elgizouli, 2018; Birch, 2018).

In 2018, the global agricultural sector employed approximately one billion people, constituting roughly 28% of the world's population (Hemathilake & Gunathilake, 2022). The value of traded agricultural goods has surged from $380 billion in 2000 to approximately $1.4 trillion in 2018. Fruits and vegetables accounted for 23% of this trade, cereals for 14% and fish and meat for 22% (Arita, Grant, Sydow & Beckman, 2022). For many years, agriculture has been crucial in driving the economies of various nations (Ajieroh

et al., 2023). It has served as a foundation for early development in countries such as the UK, France, and the Netherlands (Ajieroh et al., 2023).

Similarly, Etuk and Ayuk (2021) and Ojiya et al. (2017) claimed that agricultural development is one of the most powerful tools to eliminate extreme poverty, enhance shared prosperity, and provide food for an estimated 9.7 billion people by 2050. Four decades ago, in his Nobel Prize lecture, Theodore Schultz noted that "the majority of the people in developing countries earn their income from the agriculture sector," and this circumstance has remained largely unchanged since then (Lundahl, 2021). For example, in South-East Asia, a significant portion of the impoverished population consists of rural smallholders who derive a considerable portion of their income from agriculture.

However, there are also many rural landless individuals who primarily rely on income from both farm and non-farm labor. In much of Sub-Saharan Africa, the most of the deprived reside in rural areas and earn the majority of their income from agricultural activities. For that reason, given the extensive poverty in SSA, foreign aid and the development in the agricultural sector could serve as a means to alleviate poverty in the region.

Statement of the Problem

Despite the robust economic growth observed in many parts of the world in recent years, poverty persists as one of the foremost encounters of the 21st century (Ssekibaala & Kasule, 2023; Yu et al., 2021; Liu et al., 2023). A significant concern in Africa has been how to achieve socio-economic goals such as poverty reduction, achieving food security, swelling employment, access to quality education and health facilities and sustained growth**.** Regarding this goal, Sub-Saharan African countries create an important case of

study because it suffers from acute poverty with millions of people living on less than $1.90 a day (World Bank, 2018; Janz et al., 2023; Adeyeye et al., 2023).

Over the past two decades, the agriculture sector has faced a dual challenge: decreasing foreign aid allocations alongside sectoral issues (Hussain, 2016; Ssozi et al., 2019). The surge in food prices during 2006-2008 pushed nearly 100 million people into poverty (Turvey, 2017). Factors contributing to the food crisis, as identified in the IFAD report, include neglect of agricultural investment, inadequate infrastructure, low production levels, and inefficiencies in the agriculture sector, all of which could exacerbate poverty levels in low-income countries. As a result, food making has dwindled in the impacted nations due to sectoral challenges. Additionally, with the world's population projected to necessitate a 70 percent increase in food production by 2050 (Bahar et al., 2020), failure to address these sectoral issues will exacerbate the hunger crisis to unprecedented levels

Rakshit et al. (2023) shows that the rate of poverty SSA experienced shows a modest decline, attributed to the region's notable economic advancements, contributing to a general slowdown in the global reduction of extreme poverty. Current assessments indicate that between 1990 and 2018, SSA's poverty rate decreased by 15.8%, leading to a reduction in the number of people living below the poverty line of $1.90 per day from 56.0% in 1990 to 40.2% in 2018 (World Bank, 2020). However, the pace of poverty reduction has been notably slower at the thresholds of $3.20 and $5.50 per day (Ssekibaala & Kasule, 2023). Between 1990 and 2018, poverty in Sub-Saharan Africa (SSA) decreased by 9.5% from 76.1% to 66.6% at the $3.20 per day threshold, and by

3.3% from 89.3% to 86.0% at the $5.50 per day threshold (World Bank, 2020). A particularly concerning report by the World Bank (2020) indicated that individuals with low incomes in SSA are more susceptible to various shocks and global economic downturns like the one triggered by the COVID-19 pandemic.

The World Bank's projections indicate that 50% of the individuals who had lifted themselves out of poverty between 2013 and 2018 were thrust back into severe poverty as a result of the economic downturn triggered by the COVID-19 pandemic. This regression is estimated to have affected approximately forty million people in the SSA population (Kharas, 2020; Ssekibaala & Kasule, 2023).

Over the past twenty years, ODA to SSA has seen a notable increase. However, SSA remains one of the poorest regions globally, with real income per capita currently lower than it was in the 1970s. (Olaoye et al., 2023; Karangwa, 2023). Total ODA to SSA between 1984 and 2018 was US$ 952.85 billion (World Development Indicators, 2019). Bilateral aid inflows rose significantly from a low of $5.24 billion in 1980 to $34.74 billion in 2011, remaining relatively stable thereafter. From 1980 to 2005, inflows fluctuated below $30 billion, while from 2006 to 2019, there was a substantial surge beyond that threshold. Multilateral aid, though consistently lower than bilateral aid, followed a similar trend. It started at $2.48 billion in 1980, peaked at $6.26 billion in 1995, dropped to $3.39 billion in 2000, then steadily increased to $22.38 billion in 2019.

Overall, aggregate ODA rose significantly from $7.72 billion in 1980 to $32.84 billion in 2005, surpassing $40 billion and reaching a peak of $55.25

billion in 2019. These trends underscore the substantial benefit SSA economies derived from aid during this period. Poverty continues to increase in most SSA countries, making it a primary challenge for the UN and the World Bank to eliminate poverty and hunger by 2030. It is, therefore, essential to establish possible solutions to reduce poverty before the situation becomes more dreadful.

Foreign aid-poverty reduction literature highlights the significance of aid for the socio-economic development of any country and argues that aid has indeed had a positive impact on growth and also contribute to the alleviation of poverty (Mahembe & Odhiambo, 2019; Dhahri & Omri, 2020; Ugwuanyi et al. 2017; Matete, 2018; Alvi & Senbeta, 2012; Van Der Sluis & Durowah, 2018; Iwegbu and Dauda 2022). On the contrary, other studies show that foreign aid has no effect on poverty on the recipient countries (Hongli & Vitenu-Sackey, 2023; Ilyas, Banaras, Javaid & Rahman, 2023; Anetor et al., 2020).

A significant limitation in existing studies on the effectiveness of aid is the aggregation of various forms of foreign assistance into a unified measure, typically expressed as a percentage of GNI. These studies often combine humanitarian, military, educational, healthcare, agricultural, and other types of aid into a single composite figure which obscures the distinct impacts of each type of aid, making it difficult to draw specific inferences about the individual contributions of different aid forms to poverty reduction. For instance, while agricultural aid might directly influence food security and rural incomes, healthcare aid primarily impacts health outcomes and can indirectly affect productivity and economic stability. The conflation of these diverse aid types

prevents a nuanced understanding of their unique roles and relative effectiveness in reducing poverty.

Moreover, the sources of aid—whether bilateral or multilateral also show a vital role in determining the outcomes of aid interventions. Different sources have varying priorities and accountability mechanisms, which can significantly influence the efficacy of aid programs. Disaggregating aid by both type and source is thus essential for a more accurate assessment of how specific forms of assistance contribute to growth and poverty alleviation in SSA.

While foreign aid has been shown to reduce poverty in SSA, reliance on it can have unintended consequences, particularly if it is not effectively integrated into sustainable development strategies. Aid dependency occurs when recipient countries become overly reliant on external funding, weakening their incentives to develop domestic revenue generation mechanisms, such as tax reforms or local private sector growth. Over time, this dependence may undermine governance and reduce accountability, as governments focus on pleasing donors rather than addressing the needs of their citizens.

Current discussions, however, tend to support the perspective that African countries should lessen their reliance on Official Development Assistance (ODA) due to its perceived economic limitations (Phiri, 2017; Park, 2019). Achieving this reduction in aid dependency may involve restricting the inflow of aid components that do not directly contribute to growth and poverty reduction.

This context underscores the value of a disaggregated analysis of ODA in assessing the impact of each aid component on economic growth. Such an analysis is particularly relevant for policy-making, as it helps identify which

components of aid should be discouraged or encouraged. Among prominent studies that investigate aid effectiveness in a disaggregated manner are (Dhahri & Omri, 2020; Maruta et al., 2020; Alvi & Senbeta, 2012). Although these studies provide some important policy directions, the focus was on only monetary measures of aid without any focus or attention on other form of aid such as technical aid and it effect on poverty reduction.

Technical assistance might include deploying experts to teach skills and address issues in their areas of expertise, such as irrigation, agriculture, industrialisation, fisheries, education, public health, or forestry (Asongu et al., 2020). Technical aid or assistance can significantly contribute to poverty reduction by enhancing capacity building, improving infrastructure, and fostering economic development and as such, the need to examine how it contributes to poverty alleviation in SSA.

Specifically, whereas study on the effect of composite aid on growth and poverty has been relatively modest up to now, empirical literature on disaggregated aid such as bilateral aid, multilateral aid, grant aid and technical aid is sparse. The neglect is still evident despite these forms of foreign aid comprising substantial portions of assistance to the SSA region. Technical assistance or aid might include deploying experts to teach skills and address issues in their areas of expertise, such as irrigation, agriculture, industrialisation, fisheries, education, public health, or forestry (Asongu et al., 2020).

Hongli and Vitenu-Sackey (2023) also perform an evaluation of the impact of foreign aid on Africa's development. The authors made a recommendation to policy-makers and further studies to focus on technical assistance as another form of aid other than only financial aid also known as

ODA and educational projects that could strengthen institutions and industrialisation.

On the other hand, the difference in findings could also be as a result that these empirical works have not thoroughly studied the role of agricultural sector development in the relationship between foreign aid and poverty reduction. Agricultural development is widely recognised as the key solution to reducing poverty, especially in developing regions of the world (Erokhin, 2017; Ahmed et al., 2018; Erokhin & Gao, 2019). The agriculture sector serves as a crucial source of employment in numerous developing countries. Agriculture holds significant potential to offer essential employment opportunities for the jobless and alleviate poverty among rural farmers. When individuals are employed, they gain a source of livelihood, enabling them to provide for themselves and their dependents. Also, many previous researchers that have examine this nexus looked at data between 1973 and 2015, which have offered a less timely estimate of the foreign aid and agriculture's impact on poverty.

The economic development and political landscape of these countries have evolved rapidly over an extended period. Therefore, it is crucial to assess the impact using the most current data available. Therefore, it is against this backdrop that this current study examines the role played by agricultural sector development in the relationship that exist between foreign aid and poverty reduction.

This study addresses gaps in the existing literature by utilising a comprehensive measure of aid and also disaggregating aid into type and source to scrutinize the disaggregated influence of foreign aid on poverty reduction. Another gap in the literature in the SSA context that is filled by this study is the

employment of the role of agricultural sector development in the relationship between foreign aid and poverty reduction in SSA. The findings would reinforce the importance of aligning aid strategies with SDG 1 (No Poverty) and SDG 2 (Zero Hunger). It would help policymakers to leverage these global frameworks to attract funding and measure progress, ensuring that aid contributes to long-term poverty alleviation and food security

Purpose of the Study

This study seeks to evaluate the relationship amidst foreign aid, agricultural sector development and poverty reduction in Sub-Saharan Africa.

Research Objectives

To achieve the purpose of the study, the specific objectives of the study are to:

1. assess the relationship between foreign aid and poverty reduction in SSA.
2. analyse the effect of agricultural sector development on poverty reduction in SSA.
3. to examine the role of agricultural sector development on the relationship between foreign aid and poverty reduction in SSA.

Research Hypothesis

$H_1$1: there is a significant relationship between foreign aid and poverty reduction in SSA.

$H_1$2: there is a significant relationship between agricultural sector development and poverty reduction in SSA.

$H_1$3: agricultural sector development plays a significant role in the relationship between foreign aid and poverty reduction in SSA.

Significance of the Study

The study seeks to evaluate the relationship among foreign aid, agricultural sector development and poverty reduction in sub-Saharan Africa and as such would have both empirical, economic and social contributions. Empirically, the study would contribute to the extant works on the relationship among foreign aid, agricultural sector development and poverty reduction by employing indicators that incorporate several facets of foreign aid and also serve as a reference point for scholars. It can also offer practical policy recommendations for governments, international agencies, and donors involved in providing foreign aid. This can add up to the development of more effective and targeted interventions to reduce poverty in SSA. In the light of social significance, this study would inspire SSA economies to strengthen and also improve upon their agricultural sector while ensuring environmental sustainability so that increase in foreign aid will contribute more to poverty reduction in the said region. This study may also have implications beyond SSA, influencing how foreign aid is approached in other regions facing similar challenges.

Delimitation of the Study

The study concentrated on SSA and thus eliminates countries from other regions of the globe. Although there are a total 48 countries in SSA, only 40 were included in this study because of data availability. Additionally, the lack of data for certain countries somewhat limited the study's scope. However, this does not impact the study's representativeness, as the countries included account for more than half of the population.

Definition of Terms

Poverty

According to the World Bank "people are considered as poor if their standard of living falls below the poverty line, that is, the amount of income (or consumption) associated with a minimum acceptable level of nutrition and other necessities of everyday life." (World Bank, 2018, p.147).

Foreign aid

Foreign aid can be defined as "financial or technical help given by one country's government to another country to assist social and economic development or to respond to a disaster". This typically includes grants, loans, and subsidies, as well as technical assistance, training, and goods (Nidup, 2016)

Agricultural Sector Development

Agricultural sector development refers to the deliberate and organised efforts aimed at improving the productivity, efficiency, sustainability, and overall performance of the agricultural industry within a particular region or country (Putsenteilo, Klapkiv, Karpenko & Gvozdecka, 2020). This development encompasses various aspects, including technological advancements, infrastructure improvement, policy formulation, research and development, education and training, market access, and financial support.

Organisation of the Study

This study is structured into five main chapters. Chapter one serves as an introduction, covering the study's background, problem statement, purpose, objectives, research hypothesis, significance, delimitations, definitions of terms, organization, and a chapter summary. Chapter two reviews the literature, providing both theoretical justifications and an empirical review relevant to the study. Chapter three details the research methods, including the design, sources

of the data, variables and their measurement, data processing and analysis, and concludes with a summary of the methods. Chapter four presents the regression results, thoroughly discusses the stated hypothesis, and ends with a chapter summary. Chapter five offers a summary, conclusions, recommendations, and suggestions for future research.

Chapter Summary

Despite robust economic growth in many parts of the world in recent years, poverty remains one of the most significant issues of the 21st century (Yu & Huang, 2021). Although estimates vary, there is consensus that the number of poor people globally is still alarmingly high, particularly in the SSA region. This chapter begins by describing the context in which the problem exists and introduces the problem statement. The research focuses specifically on the roles of foreign aid and agricultural sector development in reducing poverty in SSA. This emphasis is due to the belief that the effectiveness of foreign aid in reducing poverty in SSA is closely linked to advancements in the agricultural sector. This section completes with definitions of key terms used in the study and an outline of the organisation of the remaining chapters.

CHAPTER TWO

LITERATURE REVIEW

Introduction

The study examines the link between foreign aid, agricultural sector development and poverty reduction. The motive of the review of the literature is to gather theories and empirical works to support the investigation. The chapter discusses theories and prior works that are related to this study. The earlier section of the chapter discusses the theoretical underpinnings, which is followed by the review on the various concepts applied. Previous works on the topic was discussed in the subsequent sections and it was followed by the conceptual framework, gaps in the literature and lastly the chapter summary.

Theoretical Review

This section reviews the theoretical foundations in light of the research objectives.

Dual-gap theory

The dual-gap theory as proposed by Chenery and Strout (1966) offers valuable insights in the relationship between foreign aid and poverty reduction. This theory establishes a connection between foreign capital and long-term growth, which ultimately results in increased individual incomes and subsequently reduces poverty by addressing gaps in investment-savings and import-export relationships. The seminal work by Chenery and Strout (1966) and more recent empirical discussions (Shimeles, Rebei, & Ndikumana, 2009; Yak-ama, 2013; Taylor, 1994; Easterly, 1999, etc.) have examined the dual-gap theory and strategies to address resource gaps, considering the evolving dynamics of development economics (Meier & Stiglitz, 2001). The dual-gap

theory additionally proposes that economic development stems from investment. However, relying solely on domestic savings for investment is deemed insufficient to propel growth and development (Chenery & Strout, 1966). The theory underscores the necessity of supplementing domestic savings with external financing, either through borrowing or development assistance, for sustainable economic development and poverty alleviation to be achieved.

Foreign aid underscores the necessity for international intervention and is feasible for opening up economies (Iwegbu & Dauda, 2022). It stresses that the domestic resources of many emerging economies are insufficient to stimulate the growth and development required for poverty reduction. Consequently, emerging economies may rely on assistance and resource augmentation from developed countries (Iwegbu & Dauda, 2022). In light of this situation, the relevant theory that elucidates the need for foreign intervention, whether through capital-intensive projects or investment inflows, is the two-gap theory pioneered by Chenery and Strout (1966).

The savings gap refers to the shortfall between the required investment for economic growth and the actual savings within a country and it originates from the Harrod-Domar model, wherein investment is funded solely by savings. Developing countries often have low levels of domestic savings, which limits their ability to invest in productive activities such as infrastructure, education, and industry. Hence, foreign aid becomes essential to supplement this deficiency (Easterly, 1999).

The World Bank often employs the dual-gap theory (Easterly, 2003) to illustrate the significance of foreign aid in developing economies, despite facing challenges regarding its theoretical foundations (Mbah & Amassoma, 2014).

Todaro and Smith (2020) argue strongly for the need to supplement financial aid with technical assistance, particularly through high-level worker transfers, to ensure the most effective utilisation of aid funds for driving growth in recipient countries. Chenery and Strout (1966) assert that the effectiveness of foreign aid in promoting long-term growth and poverty reduction depends on the absorptive capacity of aid recipients and various internal factors, including infrastructure conditions, institutional structures, and the administrative capacities of governments.

Sachs and Snowdon (2005) also argue that there are several reasons that people in the developing world are caught in poverty traps. One reason is that poor people are unable to save up enough income to invest for the future and instead use their entire income for subsistence purposes (Sachs & Snowdon, 2005). Second reason, according to Sachs, is that those poor people who choose to have children are stuck in a demographic trap, such that population growth increases faster than savings, meaning that they are unable to save enough in order to provide adequately for their family (Sachs & Snowdon, 2005).

The final problem is that the capital stock per person in the developing regions is too small; a doubling of the capital stock would, he argues, drastically increase the income level for people at very low levels of capital per person (Sachs & Snowdon, 2005). Thus, they argues, capital stock only becomes useful when it passes a certain "threshold" beyond which the poor can begin to save and to contribute to economic concerns outside of their own homes. Foreign aid is the way out of the poverty trap as it is the mechanism by which the capital stock passes this threshold (Lundahl, 2021). After reaching the threshold, people can begin to save and pay higher tax levels, which in turn

support public projects. Insights derived from the theory can inform policy recommendations for aid agencies and governments. By understanding how aid can effectively fill economic gaps, policymakers can design more targeted and impactful interventions.

The extended version of the theory also highlights that the increase of exports in developing countries is constrained. Imports can surpass exports only with the help of external aid (both grants and concessional loans) or private foreign investment, which provides the necessary currency exchange for importing capital equipment and industrial raw materials, allowing investment to exceed domestic savings and achieve the target growth rate (Lundahl, 2021). Nevertheless, even if domestic savings could be increased to meet the investment needed for the desired growth rate, the required currency exchange for importing crucial capital equipment and raw materials would still be lacking. Therefore, foreign capital plays a vital role towards growth and poverty reduction.

In the context of this study, SSA countries often struggle with low domestic savings rates, which limits their ability to finance investment in critical sectors such as infrastructure, education, healthcare, and agriculture (Ackah & Lambon-Quayefio, 2023). The theory was also useful in the context of SSA regarding the need for foreign aid or capital borrowing by developing countries to attain swift economic development. The central question addressed is what limits the increase in investment necessary to reach a specific growth rate in these developing countries.

Many SSA countries have low domestic savings rates because of factors such as low-income levels, high poverty rates, and cultural factors that prioritise

immediate consumption over saving for the future. Weak or underdeveloped financial systems can also limit the ability of households and businesses to save effectively and channel those savings into productive investments (Mary, 2019). Political instability, conflict, and economic uncertainties can deter both domestic investors, leading to reduced investment levels and as such causing savings-investment gap in the SSA region.

Foreign aid can help tie the savings-investment gap by providing supplementary resources for investment in development projects thus enabling greater investment in key sectors essential for economic development and poverty reduction. Foreign aid can be used to finance development projects in critical sectors such as infrastructure (roads, bridges, ports), education, healthcare, agriculture, and technology. Some foreign aid is provided as direct budget support, which can help governments finance their expenditures without resorting to excessive borrowing. This type of aid can stabilise economies by supporting essential public services and investments, which might otherwise be underfunded due to limited domestic savings. It also allows governments to allocate more resources towards poverty alleviation programs, thus addressing immediate needs while fostering long-term growth. These investments help stimulate growth by creating job opportunities, increasing productivity, and enhancing access to essential services, which ultimately reduces poverty. Technical assistance and capacity-building efforts funded by foreign aid can also improve governance and institutional frameworks. Stronger institutions can better manage public resources, attract investment, and implement effective economic policies (Mary, 2019). By enhancing the efficiency and effectiveness of public administration, aid helps ensure that investments are more productive

and sustainable, thereby addressing the savings gap through improved management of existing resources.

This study makes the claims, in accordance with this idea, that, all things being equal, foreign aid will stimulate economic growth and reduce poverty reduction by bridging the investment and savings gap that exist between the rich and the poor through the flow of aid and other form of assistance from capital-rich economies to capital-poor economies.

Modernization theory

The modernization theory which was promulgated by Walt Rostow, an American economist, who is best known for his book "The Stages of Economic Growth: A Non-Communist Manifesto," published in 1959. In this book, Rostow outlined his theory of economic growth in which he described the modernization theory. The theory suggests that societies advance through various stages of development, transitioning from traditional agrarian economies to modern, developed societies. (Rostow, 1959). Modernization theory emphasises the importance of economic growth through structural transformation and also the use of modern technology in their activities (Rostow, 1959).

Modernization is the process in which societies undergo a fundamental and comprehensive structural transformation from one state to another (Banda, 2020). The starting point is regarded as a traditional society which progresses into an advanced, modern society. This is associated with a shift in the structure of an economic, to a more reliance on the use of modernize methods in the agriculture sector (Pingali, 2007). This move sees a more dependance over time on the agricultural sector, with an increasingly large proportion of an economy's

output coming from agricultural activities. In the process of agricultural modernization, farmers are encouraged to adopt new crops, advanced production methods, marketing skills, hybrids, greenhouse technology, genetically modified foods, artificial fertilizers, insecticides, tractors, and other scientific advancements to replace traditional practices. The modernization theory of development has been studied across Africa and has shown relevance to the development of some African countries, as it facilitates the transition from feudal to capitalist societies (Dibua, 2017).

Modernization theory has evolved through three phases: the first phase in the 1950s and 1960s, the second phase in the 1970s and 1980s, and the third phase in the 1990s. Emerging after World War II, particularly in the early 1950s, modernization theory became influential in expansion policies for third world countries and remains relevant today. Within this framework, several theories have been developed by scholars such as Rostow (1959), Hagen (1962), Lerner (1958), Eisenstadt (1974), Parsons (1971), and Inkeles and Smith (1974). Modernization theorists, both at macro and micro levels, argue that poor countries require assistance from wealthy nations to accelerate their development process (Thaha & Galib, 2022). This assistance should include capital, technology, technical expertise, and education, which are crucial for the diffusion of modern agricultural practices. In this process, it is anticipated that development and economic growth in impoverished nations will result in job creation and also alleviation of poverty and economic structures comparable to those of the Western world.

In support to this, the 18th-century physiocracy school of thought emphasises the idea that a country's economic success is largely dependent on

its agricultural growth. They contend that land agricultural development is the key to long-term, sustainable growth (Sertoglu, Ugural, & Bekun, 2017). Gunnar Myrdal, the economics Nobel further supports this idea. He said that the country's agriculture sector is a key contributor to long-term economic growth and has the capacity to do so. However, most developing, developed, and rising government administrators, economists, and development specialists disagree on how to make this belief a reality. Alternative government administrations have, however, taken alternative paths, such as increasing agricultural farm inputs and capital and labour stock accumulation (Neoclassical growth model). This is relevant considering that the majority of economies and regions work to reduce the rate of poverty to the lowest possible level using a variety of growth and development strategies. Because of this, agrarian development is seen as the answer to reducing poverty, especially in developing nations.

This theoretical perspective directly aligns with the agricultural sector in Sub-Saharan Africa, where modernization can serve as a critical catalyst for poverty reduction. The transition from subsistence farming to modernized agricultural systems, characterized by mechanization, improved irrigation, and the use of advanced seeds and fertilizers, increases productivity. Higher agricultural yields translate to greater food security, reduced malnutrition, and an increase in household incomes for farming communities, which constitute a large proportion of the population in SSA. It can be suggested that encouraging the progress of the agricultural sector is an essential first step toward more comprehensive economic modernization and the eradication of poverty in the region. SSA countries may produce surpluses, create jobs, and invigorate rural economies by investing in agriculture and raising productivity. This lays the

groundwork for greater economic development. The modernization idea emphasizes how current agricultural methods and technical innovation are key factors in the rise in agricultural production. To turn traditional subsistence agriculture into a more productive and commercially oriented industry, it is perceived that investments in R&D, extension services, and the spread of upgraded technologies (like high-yielding seeds, fertilizers, and irrigation systems) are essential. Modernizing agriculture helps nations produce more food, become less dependent on imports, and provide revenue for farmers—all of which help to lower poverty.

On the other hand, the idea that developed nations must support developing nations in order for them to benefit from their advancements is a fundamental tenet of modernization theory. The spread of new agricultural technology, such as high-yielding crops, fertilizers, irrigation systems, and sustainable farming methods, can be aided by foreign assistance (Rostow, 1959). Foreign aid may help modernize the agricultural sector, enhance productivity, and raise smallholder farmers' incomes by allowing technology transfer and capacity building. This will help reduce poverty.

Therefore, the foundation of this theory is the idea that developed and developing nations may attain similar levels of growth. In order to elucidate the process of social evolution, modernization theory looks at a nation's internal factors while making the assumption that "traditional" nations can be helped to become more developed in the same way that more developed nations have used to develop. The theory also aims to identify the social variables that contribute to social progress and the development of societies and economic sectors. Levy (1967) maintains that: “as time goes on, they and we will increasingly resemble

one another because the patterns of modernization are such that the more highly modernized societies become in their activities such as agriculture and industrialisation, the more they resemble one another".

Absorptive Capacity Theory

Absorptive capacity theory is a theoretical framework that describes how organizations and countries gather, integrate, and utilize external knowledge to enhance their performance. The theory posits that incorporating new knowledge can enhance an organization's innovation and flexibility, leading to higher performance levels compared to not absorbing new knowledge. This theory was introduced by Cohen and Levinthal in 1990. The theory further suggests that organizations have a limited capacity to absorb new knowledge, known as absorptive capacity. This capacity consists of two primary components: (1) the ability to recognize the value of new information (knowledge acquisition), and (2) the ability to utilize that information to create value (knowledge assimilation and exploitation).

A key strength of the theory is its explanation of why some organizations are more successful at leveraging external knowledge than others. It asserts that organizations with higher absorptive capacity can more effectively identify valuable external knowledge and integrate it into their existing capabilities, resulting in enhanced performance. Thus, Firms with strong absorptive capacity can derive greater benefits from partnerships, as they are more adept at learning from their partners and integrating that knowledge into their own operations. At the macro level, regions or countries with higher absorptive capacity can better utilize foreign capital, technology transfer, and global knowledge flows to spur economic growth and development.

Absorptive Capacity theory was first introduced in the fields of management and organisational science as a concept to be considered at the organisational level by Cohen and Levinthal in 1990. They initially measured ACAP using "Research and Development (R&D) intensity," defined as the R&D expenditure funded by the business unit, stated as a percentage of the business unit's sales and transfers. While Cohen and Levinthal (1990) emphasised the importance of the cognitive aptitudes of individual members to ACAP at the organizational level, it is generally seen as an organisational-level construct (Lane et al., 2006; Todorova and Durisin, 2007; Zahra and George, 2002).

Africa in general is the world's fastest-growing region. With its population expected to reach 2.2 billion by 2050 and over 4 billion by 2100, Africa is the only region whose population will continue to expand beyond this century (FAO, 2017). Sub-Saharan Africa alone could contribute to over half of the world's populace growth within 2019 and 2050, with an anticipated increase of 1.05 billion people. Rapid population growth, driven by high fertility rates, is leading to a greater demand for food. This makes reaching the second sustainable development goal of ending hunger by 2030 particularly challenging. It is crucial to consider the future of agriculture and its capacity to meet this rising food demand, especially in SSA, where 60% of the population consists of smallholder farmers. The growing urbanisation and its impact on food demand present significant opportunities for the future of agriculture in SSA, provided smallholder farmers are not overlooked in favor of large processors and agribusinesses.

Regarding employment, rural youth in SSA are still predominantly involved in agriculture (Sakho-Jimbira & Hathie, 2020). Evidence suggests that although the proportion of rural youth engaged in farming is expected to remain high in the coming decades (Mabiso & Benfica, 2019). Currently, around 40% of SSA youth are employed in the agriculture sector. There are numerous opportunities for youth if future agricultural developments can provide decent and appealing jobs and promote rural entrepreneurship. Investing in technology could attract young men and women in rural areas to agriculture which would create greater opportunities and contribute greatly towards the fight against hunger and poverty in the region.

Generally, foreign capital can be described as the transfer of capital, technology, and expertise from one country to another. SSA countries have received benefits in terms of foreign assistances. However, those benefits do not automatically translate into spillovers for the host country. This process necessitates that the host country possesses adequate capacities, known as absorption. Countries with higher absorptive capacity can more effectively identify and direct foreign aid to align with their needs and priorities. Many developing countries seek to attract increasing amounts of foreign capital without realizing that they must have the initial conditions required to absorb the benefits of the aid provided.

The absorptive capacity theory explains how a recipient country's ability to utilize and transform external resources such as foreign aid into productive outcomes affects the success of development initiatives. For foreign aid to contribute to poverty reduction through the agricultural sector, recipient countries must have the technical, and infrastructural capacities to channel aid

into productive agricultural investments. For example, foreign aid allocated to agricultural infrastructure, such as irrigation systems or rural roads, is effective only if the recipient country has the technical expertise, administrative efficiency, and systems to implement such projects. High absorptive capacity ensures that aid is translated into tangible agricultural outcomes, such as higher yields, better market access, and rural employment, which reduce poverty. This theory is directly link to the third objective of the study.

Sub-Saharan economies must identify and attract foreign aid that specifically targets agricultural development because Agriculture is a primary economic activity in SSA, employing a large portion of the population who are poor and contributing significantly to GDP in many countries. Effective use of foreign aid in the region requires training of local farmers, agricultural extension workers, and policymakers to understand and assimilate new agricultural techniques and technologies. Supporting local agricultural research to develop innovations that can further improve productivity and sustainability in the region. Higher productivity leads to increased food production, which can lower food prices and improve food security, directly benefiting poor households.

Alvarado, Iñiguez, and Ponce (2017) suggested that nations ought to achieve a basic level of economic development before seeking to capitalize on the advantages of aid. Otherwise, they should not anticipate substantial benefits from foreign investment. Cordero and Ferreira (2019) affirm that greater absorptive capacity in the host country generally accelerates the transfer of benefits from multinational enterprises. Essentially, a nation with strong absorptive capacity can better utilize external assistance and innovations to promote development and enhance the welfare of its population.

Linking of the theories

The dual-gap theory emphasizes the financial and savings-investment gaps in developing economies, highlighting the role of foreign aid in bridging these deficits. For SSA, foreign aid provides critical funding for infrastructure, agricultural inputs, and capacity-building efforts that local resources cannot cover. The theory situates foreign aid as a necessary external source to stimulate growth by financing development projects, particularly in agriculture, where public investment often falls short. However, it does not address the dynamics of how this aid translates into sustainable poverty reduction.

Modernization theory complements the dual-gap theory by illustrating the pathways through which external financial resources (foreign aid) can lead to structural transformation. It posits that investments in modern agricultural practices, rural infrastructure, and technology adoption catalyze productivity improvements and income growth in SSA's predominantly agrarian economies. Agricultural sector development becomes the conduit for modernization, shifting economies from subsistence farming to market-oriented agriculture, enhancing household income, and reducing poverty. Modernization theory also underscores the role of social and institutional change, which is often supported by foreign aid programs aimed at improving governance, education, and extension services.

While the dual-gap theory explains the "need" for foreign aid and modernization theory highlights its potential impact, absorptive capacity theory provides the critical perspective of how aid is used effectively. This theory argues that the capacity of SSA countries to absorb and utilize aid efficiently determines its impact on development. For instance: Investments in agricultural

sector development will only succeed if local systems can implement aid-funded programs, manage resources effectively, and adapt to modern practices. Aid directed toward building rural roads (dual-gap) enables farmers to access markets (modernization), but its success depends on local governments' ability to maintain these roads and manage resources (absorptive capacity).

Conceptual Review

This section reviewed relevant concepts supporting the study. The major concepts of foreign aid, agricultural sector development and poverty will be discussed.

Foreign Aid

Foreign aid refers to the allocation of capital, goods, or services from one country to another, or from international organisations to recipient countries (Ali & Zeb, 2016). It is typically quantified in terms of official aid provided by Development Assistance Countries (DAC) (OECD, 2019). Official aid represents the aid flowing from authorised donors to countries listed on the DAC roster of recipients (WDI, 2017). This study considers two primary sources of aid—bilateral aid and multilateral aid—as well as two types—grant aid and technical aid. The study also examines how different types of aid interact with agricultural sector development to reduce poverty. For example, bilateral aid and technical aid are shown to have significant effects on poverty reduction, emphasizing the importance of how aid is delivered and utilized. To differentiate bilateral aid from multilateral aid, the latter is determined by subtracting net bilateral aid inflows from DAC from the total aid, and this is represented as a percentage of GDP. The relationship between multilateral aid and poverty reduction is anticipated to be positive because it increases the

savings required for investment, thereby promoting growth (Dreher & Langlotz, 2020; Wambaka, 2023).

Bilateral aid refers to assistance provided by one country to the government of another country, whereas multilateral aid involves assistance from multiple governments to the government of another country through organizations like the International Monetary Fund (IMF) and World Bank (OECD, 2016). It is measured as net bilateral aid inflows from DACs and expressed as a percentage of GDP. The relationship between Bilateral aid and poverty reduction is anticipated to be positive because it supplements countries' savings required to increase investment levels, thereby promoting growth (Dreher & Langlotz, 2020). The distinction between bilateral and multilateral aid is significant because donors have increasingly focused on determining which aid channels—bilateral or multilateral—are more effective in achieving their development objectives (Biscaye, Reynolds & Anderson, 2017). This distinction is crucial looking at the growing body of observed evidence suggesting that bilateral aid is highly susceptible to political influence, leading to hostile effects on the growth and development outcomes of recipient countries (Rommel & Schaudt, 2020; Findley, Milner & Nielson, 2017).

Grants are requisite commitments that allocate a definite amount of funds for disbursement without any repayment obligation (WDI, 2019). Technical aid, on the other hand, includes: (a) free-standing technical assistance intended at funding the transfer of technical and managerial skills, with the primary goal of enhancing overall national capacity, independent of any specific investment projects; and (b) investment-related technical aid, intended to boost the capacity to execute specific investment projects (WDI, 2019).

Aid is generally considered to be significantly more unstable and uncertain compared to tax revenues (Mascagni, 2016), a volatility issue exacerbated in aid-dependent jurisdictions (Asongu, Uduji & Okolo-Obasi, 2020; Clements, Gupta, Pivovarsky & Tiongson, 2004). Research has demonstrated that grant aid tends to exhibit greater volatility compared to aid provided in the form of loans (Clements et al., 2004). Given these supposed uncertainties and the trend of foreign aid shifting towards grants and technical assistance, it is essential to evaluate their implications for recipient countries.

Agricultural sector development

Earlier researchers have characterized agricultural sector development as the enhancement of productivity, efficiency, sustainability, and resilience within a country's or region's agriculture (Mkpado, 2013). It encompasses a range of interventions, policies, and investments directed towards promoting growth, transformation, and modernization of the agricultural sector. Jama and Pizarro (2008) similarly describe agricultural sector development as deliberate endeavors to boost productivity within the farming sector, which involves adopting contemporary methods, enhancing crop yields, and optimizing resource usage.

The overarching goal of agricultural sector development is to improve the well-being of rural communities (Lockie, 2020). We define agricultural sector development as the endeavors and tactics aimed at enhancing the vitality and impact of a nation's agricultural industry by facilitating opportunities for small-scale farmers, fostering income generation, and elevating overall welfare

in rural regions. This encompasses maximizing output (including crops and livestock) from available resources such as land, water, and labor, in a manner that generates income for farmers (Davijani et al., 2016). Achieving this may entail the implementation of improved seeds, fertilizers, irrigation methods, and pest control measures. A primary objective of agricultural sector development is to bolster agricultural productivity, which may involve advocating for the adoption of enhanced farming techniques, technologies, and inputs to augment yields per unit of land or labor (Sarkar et al., 2020).

Proponents of agriculture argue that in many African nations, only the agricultural sector possesses the necessary scale and interconnections with growth to substantially impact overall economic expansion. Agriculture stands as a vital sector that sustains the livelihoods of the majority, contributes significantly to GDP, and holds a pivotal role in ensuring food security and mitigating poverty (Achterbosch, van Berkum, Meijerink, Asbreuk, & Oudendag, 2014). It is anticipated that technology will emerge as a primary driver of agricultural advancement in the future (Khan et al., 2021; Lockie, 2020). Over the forthcoming decades, there is an expectation of achieving greater food production with reduced natural resource utilization. According to a report by the FAO (2017), in developing nations, approximately 80% of production increases are forecasted to stem from enhanced yields and increased cropping intensity. In countries where land is scarce, yield improvement is projected to account for almost all of the production increases.

In the context of Sub-Saharan Africa (SSA), agricultural sector development refers to the targeted transformation and modernization of agricultural practices, infrastructure, and institutions to address the unique

challenges faced by the region. This includes the adoption of improved farming technologies, mechanization, and irrigation systems to enhance productivity and efficiency. It also involves the development of rural infrastructure such as roads, storage facilities, and processing plants to improve market access and reduce post-harvest losses. Strengthening policy frameworks, securing land tenure rights, and providing robust extension services are equally critical to empower farmers and promote sustainability. Furthermore, fostering climate-resilient practices is essential given SSA's vulnerability to environmental shocks.

With agriculture as the primary livelihood for most of the region's population, advancing this sector can lead to improved household consumption, enhanced life expectancy, and increased GDP growth. By addressing structural challenges like limited market access, insecure land tenure, and climate vulnerabilities, agricultural development can drive meaningful poverty reduction. A large proportion of Sub-Saharan Africa's population depends on agriculture for their livelihoods. Improvements in the sector can directly reduce poverty by increasing income, food security, and rural employment, while also fostering economic growth. Agricultural sector development is measured as agriculture value-added in (constant 2010 US$).

The World Development Report (World Bank, 2015) emphasizes significance of agricultural growth as a crucial driver for poverty alleviation. It highlights that GDP growth originating from agriculture tends to elevate the proceeds of the poor 2-4 times more than GDP growth from non-agricultural sectors (World Bank, 2015). Conversely, the fundamental objective of agricultural development is to enhance agricultural productivity and the incomes of small-scale farmers (Mollier et al., 2017; Jägermeyr, 2020;

Herrmann & Rundshagen, 2020). Given the limitations imposed by agricultural technology and extreme weather conditions, food production in developing nations remains inadequate, requiring substantial agricultural investment (Morea & Balzarini, 2018).

Poverty Reduction

Poverty is characterised by multiple dimensions. According to Friedman (1996), being impoverished entails a form of disempowerment across three realms: social, political, and psychological. Social disempowerment denotes the limited access of impoverished individuals to crucial resources necessary for sustaining their livelihoods. Political disempowerment refers to the absence of a clear political voice and agenda among the poor. Psychological disempowerment entails an internalized sense of worthlessness and passive obedience to authority among impoverished individuals. Similarly, Rao (1991) defines poverty in terms of (i) insufficient purchasing power falling below a monetary poverty line, (ii) inadequate calorie intake of 2500 calories or less per capita per day, and (iii) low levels of health, education, and housing conditions.

Mbaya (2000) presents poverty as being either absolute, relative, or a combination of both. Absolute poverty denotes a severe lack or deficiency in access to fundamental necessities for normal life, including food, clothing, housing, healthcare, and education, as outlined by the African Medical and Research Foundation (AMREF). On the other hand, relative poverty pertains to the comparison of an individual, household, group, or community against a specific reference point, standard, or parameter, such as the group or region's

average, a predefined standard or objective, or its ranking based on certain criteria. Ultimately, Mbaya suggests that all notions of poverty are inherently relative in nature. Poverty is a complex issue that extends beyond mere financial hardship (Nishimwe-Niyimbanira, 2020). It involves various aspects that includes restricted access to education, healthcare, clean water, sanitation, adequate housing, and essential infrastructure. Hence, successful poverty alleviation efforts must tackle these diverse aspects concurrently.

Given its complexity, poverty has been defined in various ways. A common approach is to gauge it through monetary measures and related proxies associated with income and consumption estimates (DFID, 2001). In this context, a basket of goods and services is employed to determine poverty indicators like:

Household final consumption: this measure aligns with the World Bank's definition of poverty, which is described as "the inability to reach the subsistence level of life" measured in terms of basic consumption needs (World Bank, 1990). This indicator also evaluates the complete spending by households on essential goods and services required for daily life, encompassing items like food, clothing, housing, education, and healthcare (Hone & Marisennayya, 2019). A greater level of household final consumption usually signifies improved living standards and economic well-being.

Life expectancy: This measure of poverty evaluates the overall health and longevity of a population. It is influenced by various factors, including access to healthcare, nutrition, sanitation, education, income levels, and lifestyle choices (Chetty et al., 2016). Higher life expectancy rates typically indicate

better health outcomes and quality of life for individuals within a society (Chetty et al., 2016).

GDP per capita: GDP per capita quantifies the economic productivity (the value of goods and services generated) per individual within a nation (Kankwannda et al., 2000). It offers an understanding of the typical income level and quality of life. A higher GDP per capita signifies increased economic prosperity (Boulhol et al., 2008).

Based on the aforementioned concepts and definitions, the involvement of impoverished individuals in economic advancement hinges on various factors, including access to healthcare and education, the development of rural infrastructure, and the establishment of equitable opportunities for engagement in decision-making processes. Consequently, frameworks aimed at reducing poverty serve as direct pathways to positively impacting the lives of those experiencing poverty.

Empirical Review

The empirical literature on the nexus between foreign aid, agricultural sector development and poverty reduction is reviewed in this section.

Foreign aid and poverty reduction

A vast body of studies has been done to evaluate the efficiency of foreign aid, but the results are mixed when it comes to how beneficiaries' poverty levels are affected by it. There is a viewpoint that maintains a causal relationship between foreign aid and the decrease of poverty. Based on the aforementioned supposition, Mahembe and Odhiambo (2019) performed a comprehensive review of literature on the foreign aid-poverty reduction nexus. The survey results shows that foreign aid positively impacts poverty, according to the

majority of studies using both monetary and non-monetary poverty measures. This proposes that, overall, foreign aid helps reduce poverty, regardless of the type of poverty measure applied. However, due to the limited number of studies, further research is recommended. Specifically, studies should (i) explore the effect of foreign aid on poverty utilising various poverty metrics, including recently developed multidimensional measures; and (ii) explore the pathways through which foreign aid impacts poverty.

Hongli and Vitenu-Sackey (2023) assessed the effectiveness of foreign aid on Africa's development, analyzing data from 50 African countries spanning 1996 to 2017 using a panel study approach. They employed robust methodologies, including the generalized linear model (GLM), Generalized Method of Moments (GMM), and Granger causality, to capture both linear and dynamic relationships among variables. While the expectation was for Official Development Assistance (ODA) to positively impact growth, their findings provided an alternative perspective, revealing an undesirable and statistically significant relationship between ODA and growth. Based on these results, the authors recommended that policymakers consider diversifying aid types, such as prioritizing technical assistance alongside financial aid.

Critically, while the study contributes valuable insights, its broad regional focus may obscure country-specific dynamics that influence the effectiveness of aid, such as governance quality, absorptive capacity, and institutional frameworks. Additionally, although the study highlights the potential of technical assistance, it does not explore how such assistance can be tailored to address Africa’s unique development challenges, particularly in sectors like agriculture and education. These gaps emphasize the need for

further research that not only disaggregates aid types but also examines sector-specific impacts and contextual factors

Ilyas, Banaras, Javaid, and Rahman (2023) studied the impact of FDI and Trade Openness on poverty alleviation in Burundi, a Sub-Saharan African country. Using annual data from 1990 to 2021 from the WDI database, they examined the long-term and short-term effects of these variables on SSA countries through an autoregressive and Lag Distributive (Co-integration) model. The outcome showed that FDI and GDP negatively influenced the poverty headcount ratio in the long run. Evidence also showed that FDI had no significant short-term effect on poverty. Additionally, GDP, trade openness, and inflation were found to effectively reduce poverty in the short term, with inflation encouraging investment in the production sector, ultimately reducing joblessness and poverty. In a related work, Maruta et al. (2020) explored the influence of sector-specific foreign aid and institutional quality on the economic growth of 74 developing nations across Africa, Asia, and South America, spanning the years 1980 to 2016. The researchers examined bilateral aid directed towards education, health, and agriculture, finding that among these sectors, education aid demonstrated the greatest efficacy for recipient countries. This effect was contingent upon the prevailing level of institutional quality and exhibited significant variation across different regions. These findings carry significant policy implications for donor nations and international aid organizations, suggesting a preference for reallocating aid towards the agricultural sector as institutional quality advances.

Ugwuanyi et al. (2017) examined the influence of official aid on poverty reduction in Nigeria over the period from 1981 to 2014, utilizing the

Autoregressive Distributed Lag (ARDL) model to assess long-term dynamics and the Error Correction Model (ECM) for short-term dynamics. A Bound test was conducted to explore the long-term relationship between official aid flows and poverty. The results revealed the existence of a long-term relationship between these variables. However, both the short-term and long-term regression analyses indicated that official aid had a statistically non-significant positive effect on poverty reduction during the period under review. Furthermore, the findings showed that population growth adversely affected poverty reduction in both the short and long term, whereas labor force participation had a relatively positive influence on poverty reduction.

Critically, while the study provides insights into the dynamics of aid and poverty reduction in Nigeria, its focus on the aggregate effect of official aid overlooks the potential varying impacts of different aid modalities, such as bilateral or multilateral aid. Additionally, the analysis does not delve into contextual factors, such as governance quality or the absorptive capacity of institutions, which could explain the non-significant results.

Reviewing the disaggregated impact of aid on poverty, Edo, Matthew, and Ogunrinola (2023) analysed the standpoints of growth in SSA from both bilateral and multilateral aid standpoints. Their study uncovered that bilateral aid exhibited a positive and more pronounced effect compared to multilateral aid in the region. Similarly, Amoa (2020) considered the effectiveness of disaggregated ODA in Central Africa spanning from 1978 to 2010. Utilising a panel data model, the research evaluated the influence of both bilateral and multilateral aid on economic growth within the sub-region. The output suggested that aid from both bilateral and multilateral sources had a direct

negative impact on economic growth. Alvi and Senbeta (2012) also looked at the impact of foreign aid on poverty. Their findings indicated that aid has a notable poverty-reducing effect even when accounting for average income. In particular, foreign aid correlates with a decrease in poverty, as evidenced by reductions in the poverty rate and poverty gap index. Additionally, the authors discovered that the type of aid plays a significant role—multilateral aid and grants demonstrate greater effectiveness in poverty reduction compared to bilateral aid and loans.

Matete (2018) also explores the economic consequences of foreign aid on poverty within SSA nations. Through empirical analysis, the study confirms that foreign aid contributes to poverty reduction across 42 SSA countries spanning from 1980 to 2013. Panel estimation methods and instrumental variables were employed to address country-specific time-varying effects and endogeneity concerns. From the empirical findings, the author concludes that aid effectively diminishes poverty even when accounting for macroeconomic factors. Moreover, the results remain consistent across all measures of poverty.

Van Der Sluis and Durowah (2018) undertook a comparable investigation, evaluating the contribution of aid for trade (AFT) and foreign direct investment (FDI) to poverty alleviation. They examined these impacts across various income groups at the country level and distinguished between economies reliant on agriculture and those not reliant on agriculture. Utilizing data from 91 developing nations and employing fixed effects and random effects models, the empirical analyses revealed a consistent and favorable impact of AFT flows on poverty reduction. However, the magnitude of this impact varied among countries based on income groups, with the largest effect observed in

least developed countries (LDCs). The examinations additionally indicate that although Aid for Trade (AFT) can be efficacious, its effectiveness in poverty reduction hinges on the policies, institutional quality, and capacity within the recipient nation. AFT demonstrates its greatest efficacy in poverty reduction when it is allocated towards infrastructure development, industrialisation, and the enhancement of trade policies and regulations. Furthermore, its impact is particularly significant for economies with substantial dependence on agriculture.

Anetor et al. (2020) performed a study investigating the effect of foreign aid, trade and FDI on poverty across 29 selected SSA countries spanning from 1990 to 2017. The researchers analysed the effects of FDI, trade, and foreign aid on poverty reduction simultaneously within a single model, employing the Feasible Generalized Least Squares (FGLS) technique. The findings from the analysis revealed that both FDI and foreign aid exhibit a detrimental consequence on poverty reduction in the SSA countries examined. The authors suggested that the requisite level of FDI necessary for poverty alleviation has not been reached, and foreign aid has not been suitably directed, thus failing to translate into poverty alleviation. Nevertheless, the outcome indicated that Trade has a meaningful and positive effect on reducing poverty, especially in low-income countries.

Agricultural sector development and poverty reduction

When it comes to the association between the advancement of the agricultural sector and reducing poverty, earlier literature offers varied perspectives. While certain studies argue that progress in agriculture fosters job creation, thereby assisting in poverty alleviation, others present contrasting

opinions. Using cross-country panel data for developing countries, Imai, Cheng and Gaiha (2017) investigate how agricultural growth contributes to reducing inequality and poverty. They discovered that agricultural growth plays a more significant role in alleviating poverty than non-agricultural growth and as such, the need to reinforce the case for revival of agriculture in the post-2015 discourse other than migration and urbanisation as main drivers of growth and elimination of extreme poverty. In a similar study, Ogundipe et. al (2016) investigated how agricultural productivity impacts poverty alleviation in Africa by employing a dynamic panel data method known as System-GMM for the years 1991-2015. Their findings indicate that increasing agricultural value added per worker significantly reduces rural poverty in Africa. They propose that programs aimed at improving agricultural productivity should include provisions for accessing credit to enhance the asset base of rural or small-scale farmers, enabling them to engage in larger-scale commercial production. Imai et al. (2016) also explored the enduring impact of agricultural growth (both in agricultural and non-agricultural sectors) on diminishing inequality and poverty across 59 developing nations from 1969 to 2010. Their findings revealed that agricultural growth contributes to decreases in poverty headcount ratios and poverty gaps in middle-income and low-income countries, whereas the effect of non-agricultural growth on poverty reduction is uncertain. These outcomes underscore the significance of the agricultural sector in fostering comprehensive economic growth and poverty alleviation.

Victor and Akadiri (2019) conducted an empirical investigation into the dynamic relationship between agricultural sector value-added (AVA) and poverty reduction across a panel of nine countries in Southern Africa, utilizing

a second-generation panel approach for the period from 1990 to 2015. The empirical findings revealed that agricultural development is necessary but insufficient alone to effectively combat poverty, particularly in the short term. Therefore, the authors recommend the implementation of long-term economic programs and strategies, such as external financing or aid allocation (which are examined in the current study), to complement agricultural development efforts in alleviating poverty and fostering economic growth in the sampled region.

Ivanic and Martin (2018) examined the consequences of enhancing productivity in agriculture, industry, and services on global poverty. The authors found that, in low-income countries, improvements in agricultural productivity typically result in a bigger reduction in poverty compared to increases in industry or services. In a similar study Osabohien et al. (2019) explored agriculture's potential to create jobs and alleviate poverty in West Africa. The authors used the GMM econometric technique as an analytical technique for the panel data covering the period of 16 years (2000 to 2015). The study's findings indicated that agriculture offers the poor a chance to enhance their earnings and break free from the poverty cycle. However, whether or not the poor can take advantage of these agricultural opportunities hinges on their development of human capital.

There are other channels of growth that can also have poverty reducing effect on developing economies and as such, Diao, Hazell, and Thurlow (2020) investigated the impact of various avenues of growth on poverty reduction and overall economic growth in six low-income African countries. Their results indicated that agricultural growth is more effective in poverty reduction compared to industrial growth, primarily due to the fact that a large proportion

of the population (approximately 70%) resides in rural areas. The agricultural sector is advantageous as it offers greater employment opportunities for the impoverished. Furthermore, while the industrial sector is crucial for economic advancement, it fails to generate adequate job prospects for the poor and unskilled laborers. Moreover, the study highlighted that there is limited evidence to support the notion that African nations can achieve successful economic transformation without undergoing a widespread agricultural revolution.

An empirical investigation was conducted by Anríquez and Stamoulis (2016) highlighted the considerable potential of the agricultural sector in driving the alteration of the African economy. The research also recognised that predominant public policies in Africa have been directed at ensuring food security and the provision of agricultural raw materials essential for manufacturing, thereby facilitating sufficient employment and income opportunities. The study proposed measures such as extending credit to farmers, enhancing extension services, stabilizing prices, prioritizing agriculture to help the fight against hunger and poverty. Ogundipe et al. (2016) investigated the impact of agricultural productivity on poverty reduction in Africa. Employing the dynamic panel data approach, which addresses both time series and cross-sectional data, and the System-GMM technique, aimed at mitigating endogeneity and omitted variable bias, the authors analyzed data spanning from 1991 to 2015. The empirical findings indicated a significant contribution of agricultural value added per worker to poverty reduction in Africa. The study suggested that development programs aimed at enhancing agricultural productivity should include strategies to facilitate access to credit, thereby

bolstering the asset base of rural farmers for large-scale commercial production. Additionally, the implementation of appropriate macroeconomic policies and a robust institutional framework is essential to improve the provision of social services and ensure equitable access to land and credit.

On the other side**,** Lyatuu, Nie, and Fang (2015) conducted an examination of the role of agriculture in Tanzania's economic growth and poverty reduction from 1980 to 2014 through descriptive analysis. The research revealed that population growth (particularly in rural household sizes) and inadequate public services in rural areas exacerbated poverty conditions and prompted a shift from agriculture to non-agricultural activities, particularly among educated youth. The study recommended incentivizing more individuals to engage in farming in rural areas and providing soft loans to farmers if the nation aims to sustain high levels of achievement in providing arable land. Additionally, fostering a favorable climate conducive to increased food production would ensure a consistent supply of agricultural produce.

Foreign aid, agricultural sector development and poverty reduction

Numerous studies have also examined the relationships between the growth of the agricultural sector, the amount of agricultural output, and the inflow of foreign capital. The World Bank (2018) and the Institute of International Finance (2020) both list foreign aid, international trade, remittances, foreign aid, FDI, and external borrowing as important capital inflow categories.

Sikandar, Erokhin, Wang, Rehman, and Ivolga (2021) sought to elucidate the complex relationship between poverty, agriculture, and capital influxes by examining how various forms of capital influxes impact the

parameters of poverty reduction and agricultural development. The study utilized panel unit root tests and pool mean group estimation methods to examine the short-term and long-term across 14 developing economies in Latin America, Asia, and Eastern Europe. The analysis revealed that poverty reduction could benefit from increases in agricultural exports, FDI, and remittances from migrant workers. Additionally, the authors suggested that enhancing the level of agriculture could be achieved through deeper amalgamation of developing economies into global food supply chains, whether as suppliers or consumers of food and agricultural products.

In a comparable investigation, Sikandar et. al (2022) undertook research on the impact of foreign aid and governmental policies on the interplay between sustainable agriculture and the elimination of rural poverty in Pakistan. Their findings unveiled that foreign aid played a constructive role in moderating the relationship between sustainable agriculture practices and agricultural production. Moreover, governmental policies were found to have a negative, albeit statistically insignificant, moderating effect on the connection between agricultural production and poverty reduction. Furthermore, the results indicated that agricultural production significantly and positively mediated the relationship between sustainable agriculture practices and poverty alleviation.

Dhahri and Omri (2020) also employed the three-step approach proposed by Baron and Kenny (1986) to illustrate how FDI and four categories of foreign aid contribute to poverty reduction and ensure food security by fostering the expansion of the agriculture sector. Analyzing data from 50 developing countries spanning the period 1995–2015, the authors found, in the initial step of this methodology, that FDI and foreign aid exert a positive and

statistically significant impact on poverty reduction and food security, with the exception of NIA, which demonstrates an insignificant effect on food security. In the subsequent step, it was revealed that FDI and solely two categories of foreign aids (SIA and AFFA) exhibit favorable effects on agricultural output. In the final step, the researchers determined that agricultural output in developing nations serves as a mediating factor between FDI, SIA, AFFA, and poverty reduction. This mediation also clarifies the connection between FDI, SIA, and food security. Consequently, the authors concluded that alleviating poverty and addressing hunger in developing nations hinges on the advancement of the agriculture sector, the influx of FDI, and the allocation of foreign aids provided to the recipient countries.

Petrikova (2015) and Slimane et al. (2016) viewed foreign capital inflows as viable means to address poverty and promote agricultural development. However, these inflows entail dual effects, both positive and negative, on poverty and agriculture. Petrikova (2015) contributed to this discussion by investigating the impact of development aid on food security, considering factors such as governance quality and aid type. Analyzing panel data from 85 developing countries between 1994 and 2011, utilizing GMM and 2SLS estimators, the study revealed that overall, aid has a modest positive effect on food security. Specifically, multilateral aid, grants, and social and economic assistance independently contribute positively to food security. Conversely, bilateral aid, loans, and agricultural assistance are more contingent on governance quality. Consequently, it is reasonable to conclude that foreign aid alone does not have a significant direct impact on poverty reduction, unless it interacts with other variables, resulting in a more pronounced effect.

Control variables

This study controls for macroeconomic indicators like trade openness, financial development, and inflation. These factors were chosen for their significance and influence on the relationship between FDI and poverty. Furthermore, these variables are widely acknowledged in the literature as fundamental elements that affect poverty reduction. Dhahri and Omri (2020) examined the role of agricultural production in the relationship between foreign capital and hunger and poverty, the study control for inflation (INF) which is measured by consumer prices (annual %). They discovered that inflation significantly contributes to the decline in well-being and reduction in consumption due to the high cost of food.

Dada and Akinlo (2021) also control for inflation, trade openness, and financial development in their research on "Foreign direct investment and poverty reduction in sub-Saharan Africa." The study revealed that while the coefficient of inflation was positive, it was statistically insignificant across all models, suggesting that inflation did not impact poverty during the study period. Conversely, financial development significantly contributed to poverty reduction, with its coefficient consistently significant at the 1% level across all models. This aligns with the findings of Sehrawat and Giri (2016), Boukhatem (2016), Rewilak (2017), and Keho (2017), who similarly found that financial development fosters poverty reduction. Additionally, trade openness was found to have a positive effect on poverty, indicating its contribution to poverty reduction. This finding resonates with the research of Onakoya, Johnson, and Ogundajo (2019), who observed that trade openness reduces poverty levels in sub-Saharan Africa.

Conceptual Framework

To add to the existing body of literature concerning the relationship between foreign aid, agricultural sector advancement, and poverty alleviation, the study conducted both conceptual and empirical examinations on the topic. As a result, the conceptual framework provided in figure 2 offers a visual depiction of the interconnection among these variables.

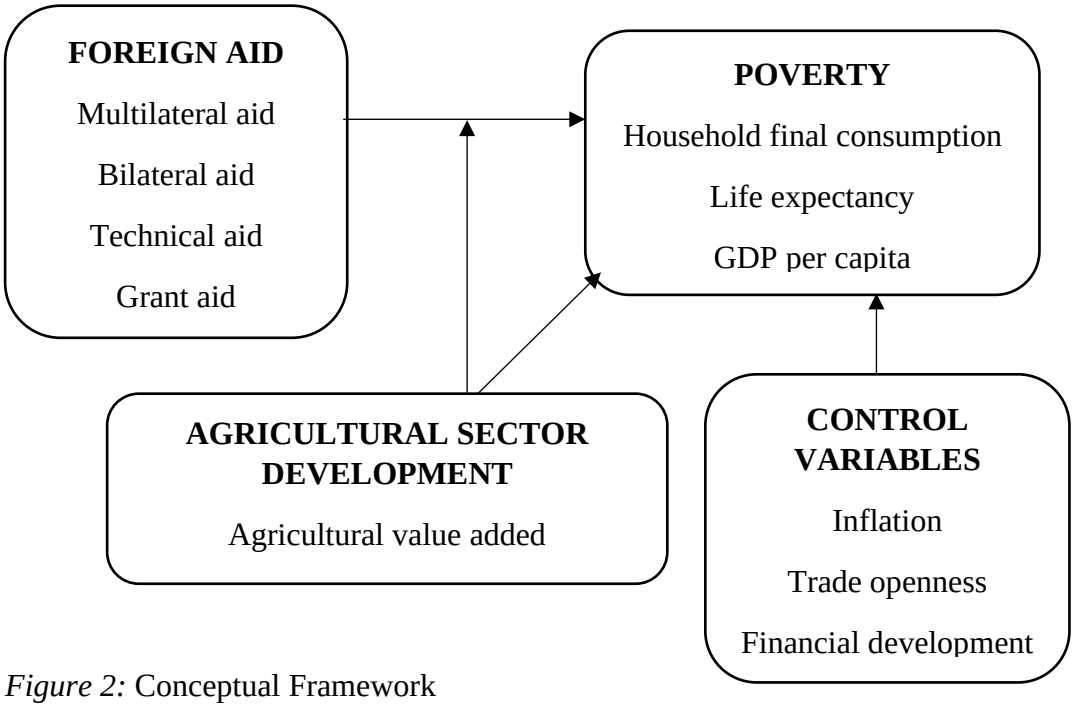

Figure 2: Conceptual Framework
Source: Author's construct (2024)

The framework posits that foreign aid serves as a critical input in fostering agricultural sector development through financial resources and technical assistance. Agricultural development, in turn, is positioned as a pivotal mechanism for poverty reduction in Sub-Saharan Africa. This relationship is moderated by increased agricultural productivity levels for farming communities. Additionally, the framework suggests that agricultural development creates a feedback loop, where improved agricultural outcomes enhance the absorptive capacity of recipient nations, allowing them to leverage foreign aid more effectively. This interplay is supported by modernization and

absorptive capacity theories, which emphasize structural transformation and the importance of institutional readiness, respectively.

Gaps in Literature

The literature review indicates that foreign aid is theoretically significant for economic growth and poverty alleviation. However, current discussions often suggest reducing developing countries' reliance on foreign aid. Various theoretical mechanisms explain how aid can influence economic growth and poverty reduction have also been postulated. However, there is a mixed result in the existing empirical works that has been done and one contributing factor involves the measurement of aid.

Empirically, the majority of studies concentrated on the impact of total ODA on poverty reduction (Mahembe & Odhiambo, 2019; Dhahri & Omri, 2020; Ugwuanyi et al. 2017; Matete, 2018). The impact has been beneficial in certain countries and detrimental in others. However, there has been limited focus on the impact of disaggregate ODA on poverty reduction. The fewer studies that have examined the disaggregated effect of aid on poverty reduction also focus on only monetary measures of aid (Maruta et al., 2020; Dhahri & Omri, 2020; Wambaka, 2023). Although these studies provide some important policy directions, the focus was on only monetary measures of aid without any focus or attention on other form of aid such as technical aid and it effect on poverty reduction.

Specifically, whereas literature on the effect of composite aid on growth and poverty has been modest to date, empirical literature on disaggregated aid such as bilateral aid, multilateral aid, grant aid and technical aid is sparse. The oversight remains conspicuous despite the fact that these categories of foreign

aid represent substantial proportions of aid to the SSA region. Therefore, it is important to take on further study that would emphasize the effect of disaggregate ODA which include technical assistance or aid as another form aid on poverty reduction of developing economies. Disaggregating foreign aid into its components (e.g., bilateral, multilateral, grant, and technical aid) is crucial because different forms of aid have varying impacts on poverty reduction and agricultural development. Policymakers in SSA often design strategies based on aggregate data, which can obscure the nuanced effects of specific aid types. For instance, bilateral aid and technical aid may directly target agricultural productivity, whereas multilateral aid often comes with complex conditionalities that might limit its direct impact. Understanding these distinctions enables policymakers to prioritize aid types that align with their development goals, ensuring that resources are allocated more efficiently and effectively.

On the other hand, empirical studies have not thoroughly scrutinized the role of agricultural sector development in the relationship between foreign aid and poverty reduction. The emphasis on agricultural sector development as a critical driver of poverty reduction addresses structural challenges unique to SSA, where a significant proportion of the population depends on agriculture for their livelihood. By identifying this gap, the study highlights the need for tailored aid programs that address issues such as land tenure security, access to markets, and resilience to climate change. For development practitioners, this means designing interventions that go beyond financial transfers to include capacity-building, infrastructure development, and innovative agricultural technologies.

Among the few known studies that have examined the role of agriculture towards growth or development and poverty reduction in Sub-Saharan Africa are Erokhin (2017), Ahmed et al. (2018) and Erokhin and Ga (2019). These few works that have examine this nexus looked at data between 1973 and 2015, which have provided a less timely estimate of the foreign aid and agriculture's impact on poverty. The economic and political landscapes of these countries have evolved rapidly over an extended period. It is crucial to assess the effects using the latest available data. It is expected to add and expand the existing knowledge on aid and poverty reduction nexus by looking the role played by agricultural sector development in the relationship between aid and poverty reduction in Sub-Saharan Africa.

Chapter Summary

This chapter analysed pertinent information on the connections between foreign aid and poverty reduction as well as agricultural sector development. The dual gap theory and the modernization theory were the theories used in the study, and they were all explained in the chapter. Along with the control variables employed in the study, the chapter also provided empirical reasons for the relationships among foreign aid, poverty reduction as well as agricultural sector development.

CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter discusses the structured methods employed to elucidate how foreign aid and agricultural sector development contribute to poverty reduction in SSA. It focuses on outlining the research paradigm, design, approach, definitions, sources, and measurement techniques for variables, model specifications, justifications, as well as the procedures for data processing and analysis.

Research Paradigm

The concept of a research paradigm, as initially defined by Kuhn (1962), refers to a shared conceptual framework among a group of researchers. This framework offers a convenient model for analysing problems and discovering solutions within a study. In essence, it can be defined as a research environment characterized by shared views, morals, and assumptions among a group of scholars concerning the nature and execution of a study (Rahi, 2017; Antwi & Hamza, 2015; Kuhn, 1962). The research paradigm reflects the philosophical foundations of a scientific inquiry and the methodological approach considered most apposite for the research's objectives, context, and scope (Hallebone & Priest, 2017).

Positivism and interpretivism represent the two primary globally recognized approaches within the research paradigm. Positivists assert that reality exists objectively and can be measured using properties independent of the researcher and their tools; thus, knowledge is considered objective and quantifiable (Meredith et al., 1989). Conversely, interpretivists argue that reality

is subjectively determined, shaped by the individual researchers' subjective experiences with the external world; consequently, interpretivism is seen as socially constructed (Ryan, 2018; Saunders, Lewis, & Thornhill, 2012). Post-positivism, a metatheoretical perspective, opposes and builds upon positivism (Vargha et al., 2016). Unlike positivists, who prioritize the independence between the researcher and the unit of analysis, post-positivism acknowledges the constraints of strict empiricism and acknowledges that human observation and interpretation are subjective, influenced by factors like cultural background, personal biases, and theoretical frameworks (Omodan, 2022).

To attain objectivity, positivists emphasize the use of systematic methods to minimize biases and ensure the reliability of findings (Panhwar, Ansari, & Shah, 2017). Within the positivist theoretical framework, researchers employ structured and standardized approaches, such as mathematical models and statistical techniques, to achieve clarity and precision in their analyses (Panhwar, Ansari, & Shah, 2017). Positivism underscores the importance of testing theories and hypotheses through empirical observation and measurement, ensuring that results are replicable and generalizable.

Kairembo (2018) argues that the positivist paradigm's reliance on a deductive approach allows researchers to formulate mathematical models grounded in theoretical assumptions. These models serve as tools to validate hypotheses and establish causal relationships between variables. By adhering to this paradigm, researchers can objectively evaluate the interactions among foreign aid, agricultural development, and poverty reduction using robust statistical techniques, ensuring that the study's findings are both credible and scientifically rigorous.

This study aligns with the positivist research paradigm, which emphasizes objective, measurable, and empirical investigation to explain phenomena and uncover causal relationships. Advocates of the positivist paradigm argue for the use of systematic and structured methodologies to ensure reliability and validity in findings (Lim, 2023). The study aims to provide a clear and evidence-based understanding of the interactions among foreign aid, agricultural sector development, and poverty reduction in SSA. This is accomplished through the collection and analysis of quantitative data, employing statistical techniques to test hypotheses, and establishing relationships based on statistical significance.

This paradigm also directly influences the choice of statistical techniques, including the GMM, as it prioritizes methods that can rigorously test hypotheses using empirical data. GMM aligns with the positivist approach because it is designed to address specific econometric challenges, such as endogeneity, which arises when explanatory variables are correlated with the error term. Endogeneity can compromise the validity of causal inferences, a critical concern within positivist research, which seeks objective and reliable findings. By using instrumental variables within the GMM framework, the technique ensures that the estimated relationships between variables are unbiased and robust.

Research Design

According to Zikmund, Babin, Carr, and Griffin (2013, p.66), a research design functions as a detailed plan delineating the methods and protocols for collecting and analyzing necessary information. It offers a systematic framework or roadmap for carrying out the study. Research design encompasses

exploratory, descriptive, or explanatory approaches (Saunders et al., 2012). An optimal design should demonstrate adaptability, flexibility, cost-effectiveness, and strive to minimize errors and biases while improving the precision of collected data (Cooper & Schindler, 2014).

Saunders et al. (2012) categorise empirical studies seeking to create cause-and-effect relationships between variables as explanatory research. This design is centered on exploring a situation to clarify the connections between variables. In this particular study, explanatory research was utilized to elucidate the relationship among foreign aid, agricultural sector development, and poverty reduction in economies of SSA.

The explanatory research design was chosen for this study because it aligns with the objective of identifying and analyzing causal relationships between foreign aid, agricultural sector development, and poverty reduction in SSA. Unlike exploratory research, which seeks to investigate phenomena where little prior knowledge exists, this study builds upon a substantial body of literature and aims to explain how specific variables interact. Similarly, while descriptive research focuses on providing a detailed account of a phenomenon, it does not delve into causal linkages, which are central to the study's objectives. The explanatory design thus offers a more appropriate framework for testing hypotheses and understanding the mechanisms underlying these relationships.

However, the explanatory approach is not without limitations. One potential issue is the risk of biases in causality assumptions. For example, while statistical techniques like the Generalized Method of Moments (GMM) are employed to address endogeneity and ensure robust results, the possibility of omitted variable bias or measurement errors in variables remains.

Research Approach

Creswell (2014) delineates three main research approaches: quantitative, qualitative, and mixed methods. This study opted for the quantitative research approach due to its focus on investigating the impact of foreign aid on poverty reduction in SSA, as well as the role of agricultural sector development in this dynamic. The quantitative approach enables the researcher to structure the social world within a framework of causality, thereby mitigating the influence of human subjectivity. Additionally, this approach was deemed suitable as it allows for the generalisation of findings from the sample to the entire population. This is facilitated through the use of quantitative tools, such as multivariate statistical analysis, which was utilised in this study for data analysis. Furthermore, this approach allows for the replication of the same phenomenon with a higher level of reliability, and it emphasises how a manipulated variable affects another variable under specific conditions and settings (Plonsky & Oswald, 2014).

Population and Sample

The study seeks to assess the relationship between foreign aid, agricultural sector development, and poverty reduction in Sub-Saharan African (SSA) economies. With this goal in mind, the study population comprises all 46 countries located within Sub-Saharan Africa. Ultimately, the study focused on only 40 Sub-Saharan African countries as sample size, chosen based on the availability of data for the relevant period. The sample size after excluding these countries remains sufficiently large and geographically diverse to capture the variation in agricultural development, foreign aid, and poverty reduction across

the region and as such does not compromise the validity or representativeness of the findings.

Data Collection Procedures and Sources

The type of research conducted requires the utilisation of secondary data. To achieve this, the study gathered annual secondary data on the specified variables, along with additional macroeconomic indicators, from reputable sources covering 40 countries in Sub-Saharan Africa from 2000 to 2022. These sources encompass datasets from the WDI and OECD-DAC. These datasets are noteworthy for their comprehensive coverage of various variables that assess the performance, scale, and effectiveness of financial intermediaries and markets (Ajide, 2016).

Model Specification

In the field of econometrics, the utilization of panel data analysis has turn out to be a prevalent method due to its effectiveness in analysing the performance of different units, often countries. Panel data typically amalgamate both time series data and cross-sectional data. Our research also follows a similar approach by using a panel dataset to investigate the relationship between foreign aid, agricultural sector development and poverty reduction. The research methodology is aligned with Teixeira and Queirós (2016) and adopts the standard specification of the cross-country equation. Thus, the baseline models for this study are specified as

$$POV_{i,t} = \beta_1 POV_{i,t-1} + \alpha_1 AGD_{i,t} + \alpha_2 FAID_{i,t} + \alpha_3 trade_{i,t} + \alpha_4 Inf_{i,t} + \alpha_5 FD_{i,t} + \mu_i + \varepsilon_{i,t} \quad (1)$$

where $POV_{i,t}$ is used to represent poverty in country i during time t. $POV_{i,t-1}$ is the lag one of poverty, *AGD* for agricultural sector development, *FAIDi* for

foreign aid and *trade, inf* and *FD* are the control variables that is connected with *FAID*, μ_i connotes country-specific effect, $\varepsilon_{i,t}$ is the error term. Meanwhile, the research aims to investigate whether agricultural sector development exacerbates or enhances the connection between foreign aid and the reduction of poverty. To explore this, Equation 2 is augmented with an interaction term and additional control variables, as specified in equation 2:

$$POV_{i,t} = \beta_1 POV_{i,t-1} + \alpha_1 AGD_{i,t} + \alpha_2 FAID_{i,t} + a_3 (AGD * FAID)_{i,t} + \alpha_4 trade_{i,t} + \alpha_5 Inf_{i,t} + \alpha_6 FD_{i,t} + \mu_i + \varepsilon_{i,t} \quad (2)$$

where trade refers for trade openness, FD stands for financial development, and inf stands for inflation, AGD*FAID stands for the interaction term of agricultural sector development with foreign aid. All other variables are still as previously stated. Indicators utilised in the study are those that are frequently found in foreign aid-poverty literature. According to Equation 2, a positive value of a_3 indicates that the interplay of agricultural sector development and foreign aid helps to alleviate poverty in SSA, whereas a negative value of a_3 indicates that the combination of agricultural sector development and foreign aid makes poverty worse. The inclusion of control variables such as trade openness, inflation, and financial development is essential for isolating the specific impact of foreign aid and agricultural sector development on poverty reduction in Sub-Saharan Africa. These control variables help account for other factors that may influence poverty reduction, ensuring that the relationship between foreign aid, agricultural development, and poverty reduction is not confounded by these external variables.

Grounded on the theoretical and empirical literature reviewed in Chapter 2, Table 1 displays the expected signs of the variable.

Table 1: Apriori Expected Signs of the Variables

Variables	Expected Sign
Foreign aid (FAID)	+
Agricultural Sector Development (AGD)	+
AGD*FAID	+

Source: Author's construct (2024)

Data Processing Tool and Analysis Technique

This study necessitates the estimation of a panel data model. The panel data used in the study was processed using Stata version 15.0 while we employed the system Generalized Method of Moments (GMM) as our main chosen estimation method. One of the commonly employed techniques for estimating panel data regressions includes pooled least squares (PLS), fixed effect (FE), and random effect (RE) models (Zulfikar & STP, 2018). While the PLS model serves as a prevalent yardstick for estimating panel data regressions, the choice between fixed effect and random effect methods often hinges on the standard Hausman test. The fixed effect approach was not utilized due to its inability to address endogeneity issues associated with the lag of the regressand affecting the regressand. The random effect model was considered inappropriate for this study because the data used was unbalanced.

Arellano and Bond (1991) evaluated panel data equations by employing the first differences of variables and the levels of lagged values of time-varying variables as instruments for the equations in differences. This method effectively removed country fixed effects and eliminated unobservable

simultaneity bias (Law & Azman-Saini, 2012; Miletkov & Wintoki, 2012). Additionally, Blundell and Bond (1998) argued that lagged levels of variables were ineffective instruments for equations in first differences. They also noted that if the instruments used in traditional first-difference GMM are not sufficiently robust, there is a risk that the results from the within-groups approach may be biased. Blundell and Bond introduced system GMM estimation, which involves combining equations in levels with those in first differences. This method utilizes the lagged differences of the regressors as additional instruments for the levels equation to estimate the system.

The estimator is appropriate to use when the cross-sectional data (number of countries) greatly exceeds the time series data (number of periods) according to Roodman (2009). This approach used in the current study would yield precise and dependable results since the number of time series observations (T = 23) is less than the number of cross-sections (N = 40) (Dada, 2021). One of the significant advantages of GMM is its capability to address various estimation challenges effectively.

Arellano and Bond (1991) developed a dynamic panel GMM estimator known as the first difference GMM, which employs only the first difference series as instruments. However, this method has limitations, such as a susceptibility to severe "weak instruments" in finite samples, which can render the estimated results unreliable. The risk of overfitting when using too many instruments. GMM estimations require the use of instruments, but the inclusion of a large number of instruments relative to the number of observations can lead to overfitting. This occurs when the model becomes excessively complex, and the instruments become too tailored to the sample data, leading to overfitting

rather than providing useful generalizable results. Blundell and Bond (1998) highlighted that the difference GMM method may yield biased estimates when dealing with persistent series, as the instruments may not effectively predict the endogenous changes. To address this issue, Blundell and Bond (1998) introduced the system GMM, which utilizes both the level and first difference of variables as instruments. The system GMM approach provides more efficient estimates by leveraging both level and first difference series to overcome the challenges associated with weak instruments. System GMM estimation comes in two variations: one-step and two-step estimations, based on different choices of the weight matrix. In our estimation, we opted for the two-step system GMM. The two-step System Generalised Methods of Moments by Roodman (2009a, 2009b) was employed to investigate the relationship among the variables under study. The two-step System GMM extends the approach used by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998).

The selection of the two-step System GMM approach is driven by the following justifications, which have garnered substantial support from prior research studies (Abass & Fosu, 2019; Agyei, Marfo-Yiadom, Ansong, & Idun, 2020; Abeka, Andoh, Gatsi, & Kawor, 2021; Nutassey, Nomlala, & Sibanda, 2023). Aluko and Ajayi (2018) emphasized that the two-step system GMM method produces superior asymptotically efficient results, particularly in the presence of autocorrelation, when compared to the one-step system GMM estimator. This choice is particularly relevant to our study as it effectively addresses the issue of endogeneity inherent in the foreign aid, agricultural sector development and poverty relationship.

Endogeneity Test

Table 2: Durbin-Wu-Hausman (DWH) test results

Null hypothesis (H_0): *Variables are exogenous*

Variable	DWH test Cofficient	DWH Test P-value	Test results
Bilateral Aid	16.9791	0.0000	Failed to accept at 5% significance level
Multilateral Aid	3.26302	0.0712	Failed to accept at 10% significance level
Technical Aid	6.32894	0.0120	Failed to accept at 5% significance level
Grant Aid	7.35991	0.0068	Failed to accept at 5% significance level
Agricultural Sector Value Added	12.1764	0.0005	Failed to accept at 5% significance level

Author's Construct (2024)

Table 2 offers a thorough analysis of endogeneity in each independent variable. Endogeneity can occur if a relevant variable that affects both the dependent and independent variables is omitted from the model, the error term will capture the effect of this omitted variable, leading to correlation between the explanatory variable and the error term. The STATA command "estat endog" was used to assess endogeneity. The Durbin Wu-Hausman (DWH) test served as a diagnostic tool to check for endogeneity among the variables. The null hypothesis tested whether all independent variables including bilateral aid, multilateral aid, technical aid, grant aid, and agricultural sector value added were exogenous, meaning they were not correlated with the error term.

The results showed that the p-values for all independent variables (except for multilateral aid which was rejected at 10%) were below 0.05, leading to the rejection of the null hypothesis and indicating endogeneity in all variables. This implies a significant correlation with external factors not included in the

model, which could impact the estimation results. These findings suggest that the instrument used in the model is valid and meets the endogeneity assumption necessary for achieving consistent and unbiased estimates through the chosen estimation method. As a result, the study employed the two-step GMM method, using instrumental variables to address the identified issue of endogeneity.

Diagnostic Tests

To investigate the potential problem of over-identification, the approach utilizes the Sargan test of overidentifying restrictions. In this test, the null hypothesis posits the validity of these restrictions. Essentially, this means that all instruments used are considered valid, and ideally, the null hypothesis should not be refuted. Additionally, Obuobi et al. (2021) specified that, apart from the Sargan test, the system GMM necessitates the Arellano-Bond test for serial correlation. In this context, the null hypothesis is that there is "no serial correlation." It is expected that the null hypothesis regarding the absence of first-order serial correlation in first differences (AR (1) test) will be disproved, while the null hypothesis concerning higher-order serial correlation in first differences (AR (2)) will not be disproved. Additionally, the Difference in Hansen Test (DHT) is employed to evaluate the exclusion restriction of the exogenous variable.

Measurement of Variables

The selection of measurement for all variables was influenced by their widespread use in existing literature. The explained variable in this study is poverty reduction, which is measured using three indicators. The first indicator is household final consumption expenditure per capita (HCE), a measure

previously utilized by Odhiambo (2009), Dhrifi et al. (2020), and Dada and Fanowopo (2020). The second variable is life expectancy (LEX), which has also been employed by Magombeyi and Odhiambo (2018a, 2018b). The third measure is GDP per capita. Data for household final consumption, GDP per capita, and life expectancy are sourced from the World Bank Development Indicator (WDI) for the year 2019. While some studies have used alternative measures like poverty headcount ratio (e.g., Zaman et al., 2012; Mahmod & Chaudhay, 2012; Shamim et al., 2014) and poverty gap (e.g., Bharadwaj, 2014; Calvo & Hernandez, 2006) to assess poverty, data on these indicators are scanty for Sub-Saharan African countries. Agricultural sector development which is the moderating variable, is define as a continuous variable measuring the percentage of a country's agricultural net output in its GDP**.** It is measured using agricultural value added (% of GDP).

Foreign aid is the independent variable in this study, is taken from the World Bank Development Indicator (2019). Foreign aid displays the financial or technical help given by one country's government to another country to assist social and economic development or to respond to a disaster. Along with foreign aid, we have added a number of controls, such as trade openness, inflation, and financial development. These control variables were chosen based on their significance and roles in connection to the association between foreign aid and poverty. Additionally, these control variables are widely acknowledged in the research as important elements in the explanation of the decline in poverty. The value of exports and imports combined, expressed as a percentage of GDP, is used to determine trade openness. Trade openness serves as an indicator of the degree to which an economy is open to aid and other foreign investment, and it

is anticipated to exert a positive influence on poverty reduction. The annual percentage change in the consumer price index is used to calculate inflation.

The amount of domestic credit given to the private sector is used to measure financial development. Trade openness is included as a control variable because it can influence both the agricultural sector and poverty levels in Sub-Saharan Africa (SSA). Open trade policies can enhance access to international markets, allowing agricultural producers to expand their reach, gain access to new technologies, and improve productivity. Trade openness can also stimulate economic growth, which in turn has the potential to reduce poverty. The inclusion of trade openness aligns with the study's objective to understand how foreign aid and agricultural development influence poverty reduction, as trade can be an indirect pathway through which these variables interact. Financial development is another crucial variable because it influences the ability of the agricultural sector to access capital for investment, modernization, and scaling. In many SSA countries, inadequate access to finance is a major constraint on agricultural development. Financial systems that are well-developed provide the necessary capital and infrastructure to support agricultural growth, which in turn can contribute to poverty alleviation.

The analysis includes data from 40 different countries and spans the years 2000 through 2021. For a complete list of the nations that were considered for the study, please see the appendix. It's important to inform that the selections of the study's sample size and time frame were constrained by the data's availability. Table 3 provides a summary of variables and their measurements.

Table 3: Variables definition, measurements and sources

Variables	Definition	Measurement	Data source

Dependent Poverty reduction	It is reducing low income, poor education, and poor health facilities among residents in an economy.	Household final consumption Life expectancy GDP per capita	World Development Indicators 2000-2022
Independent Foreign aid	It displays the financial or technical help given by one country's government to another country to assist social and economic development.	Bilateral aid Multilateral aid Technical aid Grant aid	World Development Indicators 2000-2022
Moderating Agricultural sector development	A continuous variable measuring the percentage of a country's agricultural net output in its GDP	Agricultural value added (% of GDP)	World Development Indicators 2000-2022
Control Inflation	It is the yearly percentage change in the average customer's cost of purchasing a basket of goods and services.	consumer price index (annual %)	World Development Indicators 2000-2022

Table 4: Cont'd

Trade openness	It is lowering barriers to international trade in products and services.	The value of exports and imports combined, expressed as a percentage of GDP	World Development Indicators 2000-2022
Financial development	The expansion and enhancement of financial institutions, markets, and instruments	Domestic credit to private sector (as a % of GDP)	World Development Indicators 2000-2022

Author's Construct (2024)

Chapter Summary

This chapter outlines the research methods utilised in conducting the study, which is grounded in the positivism research paradigm and adopts a quantitative research approach. Employing an explanatory research design, the study aims to explain the association among foreign aid, agricultural sector development, and poverty reduction in the SSA region. It's important to note that due to data availability, the study only covers 40 out of the total 48 SSA economies. The research developed two baseline models: the first model seeks to establish the relationship between foreign aid and poverty reduction in SSA economies, the second model evaluates the role of agricultural sector development on this relationship. The study predominantly utilises GMM estimation techniques to estimate all models, enabling control for endogeneity issues.

CHAPTER FOUR

RESULTS AND DISCUSION

Introduction

This chapter of the thesis presents the findings based on the objectives and research hypotheses of the study. It also comes in addition with the discussion of the results. The discussions of the various models estimated in the study are then presented in the chapter. The chapter started with the summary statistics of data used, correlation analysis, regression results based on the system GMM and lastly a summary of the chapter.

Descriptive statistics

Idrees (2018) argued that in order for the researcher to understand the distribution of the data, the descriptive data of the numerous indicators used in the study should be presented before any empirical analysis and discussion can take place. Specifically for this study, the mean, standard deviation, minimum, maximum, skewness and kurtosis values for the variables used in SSA nations were all included in the descriptive statistics presented in Table 4. Forty (40) Sub-Saharan African economies are represented in this sample, which covers the years 2000–2022. A list of the sample SSA economies used in the study may be found in the Appendix A.

Table 5: Descriptive statistics

Variables	Obs	Mean	Std. Dev.	Min	Max	Skew.	Kurt.	Jarque-bera
BiAID	920	75300000	69900000	59999.99	4.470e+08	1.35	5.058	287547.8
MuAID	920	7.140e+08	9.360e+08	450000	1.200e+10	3.794	31.408	3805378
TecAID	920	79600000	68900000	1190000	3.766e+08	1.266	4.489	211239.4
GrAID	920	6.050e+08	8.600e+08	2780000	1.139e+10	4.511	38.999	4818949
AGSVA	920	20.677	13.028	.893	60.61	.336	2.588	-50872.3
HFC	920	44.223	18.306	0	84.815	-1.166	6.495	450145
LEX	920	38.687	7.45	0	77.237	-1.384	14.591	1520296
GDP	920	1.537	5.109	-36.778	55.59	.782	23.219	2687246
TRADE	920	67.25	35.478	0	235.82	1.518	6.403	467588.2
INF	920	10.421	36.656	-16.86	557.202	10.536	128.63	1676057
CREDIT	920	20.687	23.6	0	142.422	2.798	11.1	1103978

Source: Author's construct, (2024)

Bilateral aid which is one of the measures of foreign aid averagely contributes about $75 million to the region, this is the average amount of bilateral aid received by countries in SSA. The minimum value represents the smallest amount of bilateral aid received by any country in Sub-Saharan Africa. In this case, the minimum amount is $59,999. This suggests that even countries in SSA that receives the least amount of bilateral aid is equally receiving some level of assistance. The maximum value represents the largest amount of bilateral aid received by countries in SSA. In this case, the maximum amount is $447,000,000 (expressed in scientific notation as 4.470e+08). Multilateral aid which is another greater form of assistance to the region has an average of about $447,000,000 (expressed in scientific notation as 7.140e+08) with a minimum and a maximum value of $450000 and $1.2 billion respectively. This is similar to grant aid and technical aid which is averaged at $605million and $79.6

million respectively. The above statistics evidence that SSA region receives substantial amount of foreign aid.

Furthermore, the average value added to the agricultural sector (AGSVA) in SSA is 20.67%, which is quite low with lower and higher values of 0.893% and 60.61% respectively. The standard deviation is 13.028% which shows that the level of development in the agricultural industry in the SSA regions is highly varied with some of the countries being more developed than others as some nations recorded as low as 0.893% agricultural sector development. This could further be explained by the fact that most households in developing countries, especially SSA do not have enough money to finance the needs of their farms (Moyo, 2016; Adjognon et al., 2017).

The region's average household final consumption expenditure (HFC) is $44.223, with lower and higher values of 0 and 84.82 respectively with a wide variation of 18.31 and skewness and kurtosis of -1.16 and 6.495 respectively. The high standard deviation and negative skewness suggest significant variability in household final consumption levels, with a larger proportion of households experiencing lower consumption levels relative to the mean. This implies income inequality within Sub-Saharan Africa, with potential disparities in access to resources and opportunities. For poverty reduction, this implies that foreign aid and agricultural development efforts might disproportionately benefit those already above or near the consumption threshold, leaving the most impoverished segments with limited gains. The minimum value of 0 for household final consumption indicates the presence of households with no consumption expenditure, highlighting the existence of extreme poverty in the SSA region. The positive kurtosis suggests that the distribution of HFC is

leptokurtic, meaning it has heavier tails and is more peaked compared to a normal distribution. This indicates that while some households may experience extreme poverty, there may also be a segment of the population with relatively higher consumption levels.

The average life expectancy (LEX) is respectably at 38.69 with a minimum and a maximum of 0 and 77.23. This measure of poverty evaluates the overall health and longevity of a population. It is influenced by various factors, including access to healthcare, nutrition, sanitation, education, income levels, and lifestyle choices (Chetty et al., 2016). The minimum value of 0 suggests that in certain regions of Sub-Saharan Africa, access to healthcare, nutrition, sanitation, education, income, and quality of life is extremely limited. Conversely, some regions may benefit from better healthcare systems, nutrition, and overall well-being, contributing to longer life expectancies, as indicated by the maximum value. Similarly, the negative skewness in life expectancy (LEX) could indicate that a significant portion of the population enjoys relatively high life expectancy, while a smaller group experiences significantly lower outcomes due to poor healthcare access, malnutrition, or exposure to environmental risks. In SSA, these disparities are often exacerbated by structural challenges such as weak healthcare infrastructure and limited public health spending. For agricultural development to effectively contribute to poverty reduction, it must be aligned with broader developmental goals, such as improving health and nutrition outcomes for the poorest communities. The average GDP per capita for the area is 1.5%, which is reflecting relatively low growth rates in the sub-region when compared to other regions and this is also an indication that poverty is still on a rise in the region. The World Bank classifies countries with per

capita incomes of US$1,036 or less as low-income countries and those with US$1,035 to US$4,085 as lower-middle-income countries.

On average, the degree of financial development, represented by the proportion of credit available to the private sector as a percentage of GDP, stands at 20.687% in the selected SSA nations. This figure suggests that the level of financial development in these sampled countries in SSA is relatively modest. This observation aligns with the findings of Agyemang et al. (2018) and Abeka et al. (2022). Over the timeframe spanning 2000 to 2022, trade openness averages approximately 67%. This signifies that the economies of the sampled sub-Saharan African countries have embraced a more open approach to international trade. This could be attributed to the fact that organisations like the International Monetary Fund and the World Bank often aid developing nations contingent upon increased trade openness, as noted by Zahonogo (2018) and Abeka et al. (2022). SSA's level of trade openness is therefore comparable to that of other developing nations at a fair level. A kurtosis value as high as 128.64 suggests the presence of frequent extreme inflationary shocks in the data. Such heavy-tailed distributions imply that the model's residuals are prone to outliers, which can violate the assumptions of homoscedasticity and normality critical for many econometric techniques. These outliers can bias parameter estimates and lead to inefficient or unreliable results if not properly accounted for. GMM is designed to handle heteroskedasticity and is less sensitive to violations of normality assumptions. Finally, the average rate of inflation was 10.21%.

The results of the Jarque-Bera test indicate that none of the variables in the dataset follow a normal distribution, as all test statistics are substantially

large, suggesting significant deviations from normality. Variables such as Bilateral Aid (BiAID), Multilateral Aid (MuAID), Technical Aid (TecAID), and Grant Aid (GrAID) display extreme non-normality, likely due to the heterogeneous nature of foreign aid distribution across sub-Saharan Africa (SSA), where aid flows vary widely based on donor priorities and recipient needs. Similarly, macroeconomic indicators like Household Final Consumption (HFC), Life Expectancy (LEX), and Gross Domestic Product (GDP) exhibit non-normal distributions, reflecting the disparities in economic development and living standards across the region. The exceptionally high Jarque-Bera value for Inflation (INF) highlights the volatility and hyperinflation challenges in some SSA countries. These results suggest that the data distributions are heavily skewed or leptokurtic, likely influenced by outliers or structural variations within the region.

Correlation Analysis

Correlation measures the strength (weak or strong) and direction (positive and negative) of the association between two or more variables. The association between the variables does not imply causality and as such cannot deduce that any change in one variable is resulting from a change in another variable. To prevent multicollinearity in the model design, the correlations between the independent variables must be smaller than 0.90 according to Adam (2016). The correlation matrix for the variables used in this study is presented in Table 5.

The various measures of foreign aid exhibited a strong correlation with each other. Albeit the strong correlation, they also had a positive connection among themselves. Additionally, a cursory observation of the correlation matrix

unveils that there is generally a weak but positive correlation among the indicators of agricultural sector development (AGSVA), household final consumption (HFC) and the various measures of foreign aid with the exception of HFC which exhibited a moderate association with the agricultural sector value added at 0.529. Moreover, the other measures of poverty reduction which is life expectancy and GDP per capita also showed a weak and negative correlation with all the other variables used in the study with the exception of trade and credit, which exhibited a positive and weak association with LEX (at 0.208 and 0.322 respectively) and GDP (at 0.133 and 0.002 respectively). Inflation also showed a weak association with the other variables used in the study.

Therefore, upon a brief examination of the correlation matrix in Table 5, it becomes evident that there is generally a weak correlation among almost all the variables used in our study with the exception of the measures of foreign aid which showed a strong and positive correlation among themselves and also ranges from 0.730 to 0.834. These findings suggest that not all forms of foreign aid are equally effective at improving living standards in Sub-Saharan Africa (SSA), raising important questions about the mechanisms through which aid operates and the contexts in which it is deployed. Another factor to consider is the absorptive capacity of recipient countries. Limited institutional capacity, governance challenges, or inefficiencies in the allocation and utilization of aid resources can undermine the effectiveness of aid in translating financial inputs into tangible improvements in living standards. These relationships among the variables do not raise concerns of multicollinearity, as they all fall below the

recommended cutoff point of 0.90, in accordance with the guideline provided by Adam (2016).

Table 6: Correlation matrix

Variables	InBiAID	lnMuAID	lnTecAID	lnGrAID	lnAGSVA	lnHFC	lnLEX	lnGDP	lnTRADE	lnINF	lnCREDIT
lnBiAID	1.000										
lnMuAID	0.763***	1.000									
lnTecAID	0.730***	0.776***	1.000								
lnGrAID	0.844***	0.871***	0.797***	1.000							
lnAGSVA	0.450***	0.452***	0.380***	0.463***	1.000						
lnHFC	0.241***	0.198***	0.107**	0.217***	0.529***	1.000					
lnLEX	-0.124***	-0.180***	-0.129***	-0.151***	-0.310***	-0.228***	1.000				
lnGDP	-0.020	-0.005	-0.024	0.011	-0.096**	-0.116**	-0.026	1.000			
lnTRADE	-0.400***	-0.446***	-0.424***	-0.447***	-0.597***	-0.359***	0.208***	0.133**	1.000		
lnINF	0.144***	0.198***	0.139***	0.197***	0.076*	0.102**	-0.139***	0.047	-0.157***	1.000	
lnCREDIT	-0.024	-0.064*	0.060*	-0.054	-0.385***	-0.077**	0.322***	0.002	0.152	-0.127***	1.000

Source: Author's construct, (2024)

The Regression Results on the Relationship among Foreign aid, Agricultural Sector Development and Poverty Reduction in Sub-Saharan Africa

This subsection presents and discusses the empirical findings related to the study's objectives. The regression results are displayed in Tables 6 and 7. Table 6 shows the results of the separate influence of foreign aid and Agricultural Sector Development on Poverty Reduction in SSA economies. Table 7 presents the results for the role played by Agricultural Sector Development in the relationship between foreign aid and Poverty Reduction of SSA economies. The findings from both tables indicate that the past values of the variables being examined have a substantial impact on their present values in all the models, with a high level of significance at the 1% level. Intuitively, it is reasonable to assert that an economy's well-being is significantly affected by its prior level of poverty.

Table 7: Separate Effects of Foreign Aid and Agricultural Sector Development on Poverty Reduction of SSA Economies

	(1) lnHFC	(2) lnLEX	(3) lnGDP
L.lnHFC	0.666*** (0.0239)		
L.lnLEX		0.940*** (0.00251)	
L.lnGDP			0.187*** (0.0322)
lnBiAID	0.00808*** (0.00201)	0.000918*** (0.000179)	0.0564** (0.0243)
lnMuAID	-0.00631*** (0.00229)	-0.00168*** (0.000267)	0.104** (0.0439)
lnTecAID	0.0479*** (0.00697)	0.00103*** (0.000309)	0.318*** (0.0644)
lnGrAID	0.0132*** (0.00251)	0.00231*** (0.000307)	0.179*** (0.0253)

Table 8: Cont'd

lnAGSVA	0.103***	0.00352***	0.576***
	(0.00998)	(0.000760)	(0.120)
Control			
lnTRADE	0.0307***	0.00114*	0.922***
	(0.00755)	(0.000606)	(0.114)
lnINF	-0.0154***	-0.00135***	-0.0543*
	(0.00270)	(0.000193)	(0.0296)
lnCREDIT	0.0105*	0.000804**	0.137***
	(0.00566)	(0.000330)	(0.0385)
Constant	1.588***	0.213***	-10.29***
	(0.168)	(0.0131)	(1.946)
Observations	791	797	444
No. of instruments	36	36	37
AR1 (p-value)	0.0125	0.00489	0.00387
AR2 (p-value)	0.635	0.203	0.335
Hansen-J (p-value)	1.000	1.000	0.572

Source: Author's construct, (2024)

Foreign Aid and Poverty Reduction in SSA Economies

In assessing the impact of foreign aid on poverty reduction, four measures of aid were utilised as it is believed that different measures of aid may have different influence on poverty reduction. The results from columns 1 to 3 of table 6 reveals that there is both positive and negative relationship between foreign aid and the measures of poverty reduction depending on the type of aid used.

In column 1 to 3, bilateral aid which is the first measure of aid, has a positive and significant relationship with all the three measures of poverty reduction which are household final consumption (HFC), life expectancy (LEX) and GDP per capita. In other words, as bilateral aid increases, household consumption, life expectancy and GDP tend to rise.

Looking at bilateral aid and HFC, bilateral aid projects frequently involve infrastructure development initiatives, such as road construction, access to clean water, sanitation facilities, electrification, and market access improvements. These infrastructure upgrades facilitate the movement of goods and services, reduce transportation costs, and expand market opportunities for farmers and small businesses. Improved access to markets allows producers to sell their products at higher prices and reach a wider customer base. As rural incomes grow due to increased market access, households have greater purchasing power, leading to higher levels of consumption. Access to clean water and sanitation facilities also improve health outcomes, reduce medical expenses, and enhance productivity, freeing up household resources for consumption expenditures. As household consumption increases, poverty levels decline, as families are better equipped to withstand economic shocks and invest in their long-term well-being. Consequently, infrastructure development funded by bilateral aid contributes to poverty reduction by stimulating economic growth and enhancing household welfare.

In the second column of table 6, a 1% increase in bilateral aid leads to an increase in life expectancy by roughly 0.0009% in Sub-Saharan Africa. This measure of poverty evaluates the overall health and longevity of a population. It is influenced by various factors, including access to healthcare, nutrition, sanitation, education, income levels, and lifestyle choices (Chetty et al., 2016). Bilateral aid helps improve access to nutritious food and address food insecurity to ensure that individuals have an adequate diet and receive essential nutrients necessary for healthy growth and development. Adequate nutrition plays a crucial role in supporting immune function, reducing the risk of infectious

diseases, and enhancing overall health outcomes. Bilateral aid also exerts a positive contribution to GDP. This can be explained by the fact that improved health and education resulting from aid can enhance human capital. A healthier and more educated population is more productive. This in turn, contributes to GDP growth and creates job opportunities, lifting households out of poverty.

To substantiate this assertion, a recent report published on the UK government website on September 27, 2019, by the Department for International Development revealed that the UK Government introduced a new bilateral aid package aimed at enhancing access to finance for countries in sub-Saharan Africa. The newly announced UK aid package aims to mobilise £500 million in private sector investment and generate 50,000 jobs across sub-Saharan Africa. Additionally, the aid package will provide support to financial start-ups and entrepreneurs, fostering economic growth and reducing poverty rates in the region. Furthermore, it will extend financial services, including bank accounts and loans, to 12.5 million people across Africa, enhancing their economic opportunities.

This initiative is particularly beneficial for SSA, as millions of African adults, particularly women, lack access to essential modern financial services necessary for purchasing food, settling bills, and remitting funds to family members. Women, in particular, stand to benefit as they are more prone to earning less and are less likely than men to possess a bank account. The UK aid package also aims to catalyze an additional £244 million of investment from both the private and public sectors into initiatives such as housing, healthcare, and education. Consequently, bilateral aid to SSA countries plays a pivotal role in poverty alleviation. This conclusion is further corroborated by the research

of Edo, Matthew, and Ogunrinola (2023), whose findings indicate that bilateral aid outperforms multilateral aid in fostering growth, with both forms of aid complementing the efforts of the private and government sectors in the growth process.

As shown by the negative coefficients in table 6's first and second columns, multilateral aid does not reduce poverty when measured by life expectancy or household consumption expenditure, but it does reduce poverty when measured by GDP per capita. Therefore, it is anticipated that a 1% increase in multilateral aid will result in a 0.104% decrease in poverty in the aforementioned region. With regards to GPD growth, multilateral aid often supports infrastructure projects such as roads, bridges, ports, and energy facilities. Improved infrastructure enhances productivity, facilitates trade. As a result, industries become more efficient, leading to increased production and economic activity. This contributes to GDP growth by boosting output in sectors such as manufacturing, agriculture, and services.

On the other side, multilateral aid often comes with conditionality requirements and focuses on broader policy objectives rather than direct service delivery. This means that multilateral aid may be directed towards structural reforms, governance improvements, or macroeconomic stabilization measures rather than directly targeting health or household welfare. If the conditions are not well-aligned with the recipient country’s needs or priorities, aid may not lead to effective poverty reduction. When aid is tied to specific policy changes, recipient governments may prioritise meeting those conditions over addressing critical poverty-related issues. They may feel compelled to comply rather than tailoring solutions to their specific context. As a result, the immediate impact

on the wellbeing and household consumption expenditure may be limited, especially if the conditions are not effectively implemented or do not address the root causes of poverty and health disparities. While these measures aim to improve economic stability, they can inadvertently reduce government spending on critical social sectors like health and education, thereby undermining improvements in life expectancy and household consumption. Additionally, the focus on economic reforms may shift resources and attention away from localized, poverty-targeted interventions that are essential for enhancing living standards.

For example, Ethiopia is a significant recipient of multilateral aid, however Ethiopia has faced criticism for its human rights record and political repression (Adane, 2015). Aid conditions related to governance and human rights may not always lead to poverty reduction if they do not address underlying structural issues. These findings corroborate with the assertion made by Kwemo (2017) and Park (2019) that there are problems associated with multilateral aid. These issues stem from donor countries attaching conditions to aid, which might not align with the best interests of African nations. Consequently, while foreign aid can be beneficial, it also presents challenges for economic development in Africa. Given these points, it is clear that multilateral aid does not consistently lead to poverty reduction.

Technical aid which is the third measure of foreign aid shows a positive and significant relationship with the first measure of poverty reduction in column one of table 6, which is household consumption expenditure (HFC) at the coefficient of 0.0479. This indicate that 1% increase in technical aid increases household consumption by 0.0479%. In the real world, technical

assistance to SSA often includes training programs aimed at enhancing the technical skills of individuals by equipping people with the necessary skills in various sectors such as agriculture, healthcare, technology, and business management. The influx of technical aid helps individuals become employable or start their own businesses as a result of the skills acquired. On the other these newly acquired skills can make individuals more competitive in the job market further boosting household income. Increased household income allows families to meet basic needs for food, shelter, clothing, and healthcare lifting them out of poverty.

Technical aid also shows a positive and significant relationship with the second and third measure of poverty reduction in column two and three of table 6 respectively. Technical assistance can support the training of healthcare workers, improve health infrastructure in rural areas, and facilitate the distribution of essential medicines and equipment. This strengthens healthcare systems and accessibility, impacting and improving on the life of the individual. Technical aid can also help in the implementation of water, Sanitation, and Hygiene (WASH) programs, promoting better hygiene practices and access to clean water. This reduces the spread of waterborne diseases, improving overall health. Technical assistance can help develop and implement educational campaigns on topics like nutrition, disease prevention, and safe motherhood practices. This empowers communities to make informed health choices, leading to better health outcomes.

On the other hand, technical assistance to SSA can contribute to infrastructure projects by providing expertise in areas like planning, construction, and maintenance. This ensures efficiency and avoid costly

mistakes, leading to better quality infrastructure for less money. The construction of efficient transportation networks and communication infrastructure allow for easier movement of goods and services within a country and across borders which also facilitates trade and increases market access for businesses. The improved infrastructure like transportation networks and reliable energy supplies, makes a country more attractive to foreign investors. This increased investment creates jobs and stimulates economic activity, boosting GDP which also leads to reduction in the poverty level.

There are numerous regional and continental initiatives aimed at promoting collaboration and capacity building across African countries. For instance, the African Union (AU) and regional economic communities (RECs) often facilitate technical cooperation and knowledge sharing among member states to address common challenges and promote regional integration. In an effort to end world hunger and avert further food crises in sub-Saharan Africa, the United States Agency for International construction (USAID) and Ireland's Irish Aid program announced support for the construction of more sustainable agricultural systems in a recent study. In order to combat hunger and food insecurity worldwide, the United States and Ireland have long maintained a collaboration, which is strengthened by this project. AIM for Climate (Agricultural Innovation Mission for Climate) Innovation Sprint will be initiated by USAID, Ireland, and private sector partners as part of this investment. The initiative will offer technical aid or assistance to smallholder farmers to enable them to increase and diversify their agricultural output. The absorptive capacity of recipient countries also significantly affects the effectiveness of technical aid, particularly in Sub-Saharan Africa (SSA), where

institutional weaknesses often pose substantial challenges. Institutional weaknesses can also lead to inefficiencies, such as misallocation of aid resources, lack of accountability, and limited stakeholder engagement, further diluting the impact of technical aid. Without transparent governance and well-functioning institutions, it becomes challenging to ensure that technical aid reaches its intended beneficiaries or is used for its designated purposes.

Grant aid also help in the fight against poverty in the region as shown by the positive and significant coefficients in table 4. In the real world, grant aid provides immediate financial resources that can be used to address urgent needs, such as food security, healthcare, and emergency response during crises like natural disasters or conflicts. Grants can also enhance healthcare services by funding clinics, medical supplies, vaccination programs, and training for healthcare workers, which improves overall health and productivity.

According to the dual-gap theory, investment is a necessary condition for economic development, but investment reliant solely on domestic savings is insufficient to propel growth and development. The theory further highlights that for sustainable economic development and poverty reduction to be attained there would be the need for external financing or foreign aid, by way of borrowing or development assistance. The results in Table 6 do not fully support the dual-gap theory, as multilateral aid—one measure of foreign aid—did not contribute to poverty reduction when poverty was assessed using life expectancy and household consumption expenditure in the sampled SSA economies. The findings do not conform with the work of Mahembe and Odhiambo (2019) who performed a comprehensive review of literature on the foreign aid-poverty reduction nexus. They found that in general, foreign aid

reduces poverty, irrespective of the type of poverty measures used. The findings are also consistent with the work of Amoa (2020) who found that the composition of aid matters for Africa.

Agricultural Sector Development and Poverty Reduction in SSA Economies

Table 6 further presents the findings on the impact of agricultural sector development on poverty reduction in SSA economies. The results from column 1, 2 and 3 of Table 6 showed that, at a 1% significance level, the indicator of agricultural sector development which is agricultural value added had a positive and significant effect on poverty reduction in SSA economies as indicated by the coefficient of the AGSVA. It is perceived that improvement or development in the agricultural sector of SSA region would improve upon the household consumption expenditure and also standard living of the poor because Agricultural sector development generates higher crop production which can lead to increased incomes for farming households. As farmers produce more crops or engage in higher value-added agricultural activities, they earn more money from sales. This additional income can be used to meet basic needs such as food, shelter, healthcare, and education, thereby improving living standards and reducing poverty levels.

It is also perceived that Agricultural development would lead to an increase in the life expectancy of the people of SSA region. Increased crop production means more food available for consumption. Improved food security reduces the prevalence of hunger and malnutrition, leading to better health outcomes and increased productivity among household members. When families have reliable access to nutritious food, they are less vulnerable to illness

and can allocate resources to other areas of need, such as education and investments in income-generating activities. In addition, a higher agricultural productivity can lead to greater dietary diversity and improved nutrition outcomes. When households have access to a variety of nutritious foods, including fruits, vegetables, and animal products, they are better able to meet their dietary needs, leading to improved health outcomes, especially among children and pregnant women. Better nutrition contributes to lower rates of stunting, wasting, and micronutrient deficiencies, thereby improving overall well-being and life expectancy of the people in SSA.

Agricultural sector development also showed a positive contribution to GDP growth in the sampled SSA economies. In the real word, Agriculture plays a crucial role in driving economic growth. Increased agricultural productivity stimulates demand for inputs such as seeds, fertilizers, machinery, and agrochemicals, thereby supporting growth in related industries. Additionally, higher agricultural incomes lead to increased demand for goods and services in rural economies, creating additional employment opportunities and stimulating overall economic activity. This, in turn, contributes to GDP growth and poverty reduction at the national level. These findings corroborate with the works of Imai, Cheng and Gaiha (2017) and Imai et al. (2016) who found that agricultural growth is more important in reducing poverty than non-agricultural growth and as such, the need to reinforce the case for revival of agriculture in the post-2015 discourse other than migration and urbanization as main drivers of growth and elimination of extreme poverty. Diao, Hazell, and Thurlow (2020) also found that because a large portion of the population—roughly 70%—lives in rural regions, agricultural expansion is more successful in alleviating poverty than

industrial growth. The agriculture industry benefits the underprivileged by providing more job options. Additionally, it was observed that while the industrial sector plays a significant role in stimulating the economy, it does not provide as many jobs as agriculture does for the underprivileged and unskilled laborers.

Results of the Control Variables for the Models Assessing their Separate Effects on Foreign Aid and Poverty Reduction in SSA

Three macroeconomic variables—trade openness, inflation, and financial development as shown by the private sector's credit availability—are controlled for in all of the models in Table 6. Trade openness had a positive and significant effect on all the three measures of poverty reduction in column 1, 2 and 3. This relationship implies that when countries in SSA engage in international trade by opening up their markets, it can lead to reduced poverty levels in the region. In the real world, trade can create jobs in export-oriented industries, providing employment opportunities for low-skilled workers. This is consistent with the results of Anetor et al. (2020) who found that that trade has a positive and significant impact on poverty reduction, especially in low-income countries. The results also support the findings Dada and Akinlo (2021) who contended that allowing more trade will help to combat poverty since it will pump more capital into the economy. To put it another way, a nation with strong trade barriers is more likely to be ensconced in the pit of poverty.

Financial development significantly contributed to poverty reduction as shown in all the three measures of poverty as its coefficient is significant at 10%, 5% and 1% respectively in column 1, 2 and 3. This is in line with Sehrawat and Giri (2016), Boukhatem (2016), Rewilak (2017) and Keho (2017) who

found that financial development enhances poverty reduction. According to Keho, financial development can directly alleviate poverty by facilitating transactions and providing the poor with access to financial services that increase their income. He also noted that even if the poor cannot access credit facilities from financial institutions, these institutions still offer transaction services and savings opportunities that enhance the income of the poor, thereby reducing poverty. Shahbaz et al. (2019) and Inoue and Hamori (2016) also asserted that providing the poor with access to credit and financial services strengthens their productive assets by enabling the use of productivity-enhancing technologies or investments in education and health. This, in turn, increases their income and reduces the poverty rate

A negative relationship was found between inflation and all the three measures of poverty reduction in table 6. This means that an increase in inflation do not lead to a poverty reducing effect in SSA. In the real World, high Inflation reduces the purchasing power of money, meaning that the same amount of money buys fewer goods and services over time. For poor households, this can be particularly devastating as they spend a larger proportion of their income on basic necessities like food, shelter, and healthcare. As prices rise, their ability to afford these essentials diminishes, exacerbating poverty. Rising prices also make it more expensive for households to maintain their standard of living. When the cost of living increases faster than wages or income, it results in a decline in real income. Poor and vulnerable populations are the hardest hit because they lack the financial buffers to cope with rising costs, leading to decreased consumption, poorer health outcomes, and lower quality of life.

These findings support the work Dhahri and Omri (2020) who discovered that inflation significantly contributes to the decline in well-being and reduction in consumption due to the high cost of food. On the other side Ilyas, Banaras, Javaid and Rahman (2023) revealed that inflation is also effective at reducing poverty in the short term, as inflation encourages investors to increase investment in the production sector, which ultimately decreases unemployment and poverty.

Diagnostics on the Models Assessing the Effects of Foreign Aid and Agricultural sector development on Poverty Reduction in SSA

The AR(1) and AR(2) tests are used to check for the presence of first- and second-order autocorrelation in the error term of the first-stage regression, respectively. The presence or absence of autocorrelation is crucial for validating the model. In most cases, the null hypothesis for the AR(1) process in initial differences is rejected, but not the null hypothesis for the AR(2) process, according to Mileva (2007). At the 5% level of statistical significance, all of the p-values for the AR(1) process revealed rejection of the null hypothesis of no autocorrelation, whereas the p-values for the AR(2) process did not. This proves that none of the models have autocorrelation. The Hansen test is performed to check the validity of the instruments. A non-rejection of the null hypothesis gives confidence in the instrument validity and the reliability of the GMM estimates if the p-value of the Hansen test is high (typically greater than 0.05). In conclusion, the instruments used in Table 6 are valid, as indicated by the probability values from the Hansen test, which did not reject the null hypothesis that the instruments are collectively valid and uncorrelated with the error term.

The non-significance of the Hansen test further confirms that the instruments employed in the GMM calculations are appropriately excluded.

The Role of Agricultural Sector Development in the Relationship between Foreign Aid and Poverty Reduction in SSA economies

Table 7 depicts the role of agricultural sector development in the relationship between foreign aid and poverty reduction in SSA. The interaction between bilateral aid and AGSVA showed a statistically significant positive coefficient of 0.0244 at the 1% level. This implies that targeting bilateral aid towards agricultural development tends to maximize its impact on poverty alleviation in SSA. It also implies that the growth of the agricultural sector enhances or directs bilateral aid's ability to reduce poverty. It is perceived that bilateral aid can fund the introduction of high-yield crop varieties, better farming techniques, and improved irrigation systems, which can significantly boost agricultural productivity. Higher productivity leads to increased food production, lower food prices, and higher incomes for farmers, directly reducing poverty. Bilateral source of aid can also be used to build rural roads, storage facilities, and marketplaces, which are essential for farmers to access larger markets. Better market access can lead to higher prices for farmers' products, increasing their income and reducing poverty.

To support this finding, a recent press release on the 13th of April 2023 indicates that the USAID and Irish Aid, have announced funding to create more sustainable food systems to combat global hunger and avert future food crises in SSA. USAID will collaborate with Congress to provide $38.6 million, while Irish Aid will contribute at least $37 million. This funding aims to transform food systems to be more climate resilient, supply more nutritious food, initiate

a green energy transition from agricultural waste, and support sustainable economic growth, including increased income for farmers, particularly female farmers. The above initiative explains the importance of agriculture in SSA and its role towards poverty reduction in the region.

Table 9: The Role of Agricultural Sector Development in the Relationship between Foreign Aid and Poverty Reduction in SSA economies

	(1) lnHFC	(2) lnLEX	(3) lnGDP
L.lnHFC	0.386***		
	(0.0288)		
L.lnLEX		0.926***	
		(0.00724)	
L.lnGDP			0.0766*
			(0.0435)
lnBiAID	0.0566***	0.00963***	2.513***
	(0.0124)	(0.00295)	(0.496)
lnMuAID	-0.0646***	-0.0273***	1.847***
	(0.0207)	(0.00712)	(0.553)
lnTecAID	-0.281***	-0.0136**	-1.190**
	(0.0362)	(0.00605)	(0.461)
lnGrAID	0.227***	0.0329***	-3.744***
	(0.0310)	(0.00778)	(0.808)
lnAGSVA	0.235**	0.0580**	5.797***
	(0.114)	(0.0255)	(1.590)
lnBiAIDlnAGSVA	0.0244***	0.00565***	1.174***
	(0.00422)	(0.00165)	(0.221)
lnMuAIDlnAGSVA	0.0240***	0.0105***	0.654***
	(0.00852)	(0.00265)	(0.212)

Table 7: Cont'd

lnGrAIDlnAGSVA	0.0791***	0.00966***	1.587***
	(0.0119)	(0.00290)	(0.336)
lnTecAIDlnAGSVA	0.0813***	0.00774***	0.492***
	(0.0132)	(0.00275)	(0.137)
Controls			
lnTRADE	0.0992***	0.00982***	1.857***
	(0.0243)	(0.00347)	(0.319)
lnINF	-0.0170***	-0.000730*	-0.581***
	(0.00470)	(0.000364)	(0.125)
lnCREDIT	0.0158**	0.00266***	0.484***
	(0.00630)	(0.000723)	(0.0975)
Constant	2.610***	0.237***	7.857
	(0.327)	(0.0723)	(5.731)
Observations	791	797	444
No. of instruments	39	39	39
AR1 (p-value)	0.0917	0.000571	0.000119
AR2 (p-value)	0.472	0.0791	0.232
Hansen-J (p-value)	0.843	0.830	0.229

Source: Field data, (2024)

The interaction of multilateral aid and agricultural sector development has a positive effect on poverty reduction in SSA as indicated by all the three measures of poverty in column 1, 2 and 3 in table 7. It implies that coordinated international efforts focused on agriculture can significantly enhance economic and social outcomes for the region's poorest populations. This positive interaction suggests that when multilateral organizations such as the World Bank, International Monetary Fund (IMF), and African Development Bank (AfDB) provide targeted support to agricultural initiatives, they can effectively address the structural issues that perpetuate poverty. it is perceived that, multilateral aid directed towards developing the agricultural sector in SSA can lead to substantial improvements in agricultural productivity. By investing in advanced agricultural technologies, irrigation systems, and sustainable farming

practices, aid from multilateral source helps farmers increase crop yields and reduce losses. This productivity boost not only ensures food security but also generates surplus produce that can be sold in markets, thereby increasing farmers' incomes. Higher incomes enable farming households to afford better healthcare, education, and other necessities, leading to overall improvements in living standards and poverty reduction. Multilateral aid can also facilitate the development of critical agricultural infrastructure, such as roads, storage facilities, and marketplaces. Improved infrastructure reduces the cost and time associated with transporting goods to markets, thus enhancing the efficiency and profitability of agricultural activities. This infrastructure development also stimulates broader economic activity, creating employment opportunities and fostering inclusive economic growth that benefits the wider population.

The interaction of technical aid and agricultural sector development has a positive effect on poverty reduction in SSA, it signifies the profound impact that skill-building and knowledge transfer can have when combined with sector-specific improvements. This synergy indicates that technical assistance, which often includes training, expertise, and technological support, is essential in unlocking the full potential of agricultural initiatives and also building upon the absorptive capacity. When farmers and agricultural stakeholders receive the necessary technical skills and knowledge, they can better utilize resources, adopt innovative practices, and ultimately increase productivity and income, leading to significant reductions in poverty. Technical assistance enhances the effectiveness of agricultural development by providing farmers with the latest knowledge and techniques. This includes training in sustainable farming practices, pest and disease management, and efficient use of inputs like water

and fertilizers. With these skills, farmers can increase crop yields and reduce losses, which directly boosts food security and household incomes.

Moreover, it is perceived that technical assistance supports the adoption of advanced technologies and innovations in agriculture. This includes the introduction of high-yield crop varieties, improved irrigation systems, and modern farming equipment. Technical aid facilitates the transfer and implementation of these technologies by training farmers on how to use them effectively. As a result, farmers can achieve higher efficiency and productivity, reducing their vulnerability to climate shocks and market fluctuations. This technological advancement leads to more resilient agricultural systems that can sustain and improve livelihoods over the long term, contributing to poverty reduction. This comprehensive support not only increases farmers' incomes but also creates jobs in related sectors, such as industrialisation, transportation, processing, and retail, thereby driving broader economic development and poverty alleviation. The interaction of grant aid with agricultural sector development also contribute significantly to poverty reduction in the said region. Grants can provide resources for agricultural development, such as improved seeds, tools, training, and access to markets. Enhanced agricultural productivity can lead to better food security and increased incomes for rural populations. Grant aid, being non-repayable, provides significant flexibility for recipient countries to allocate resources toward long-term developmental goals, particularly in agriculture—a sector critical for reducing poverty in Sub-Saharan Africa (SSA). Grant aid also supports capacity-building initiatives, such as farmer training programs, extension services, and research into climate-resilient crops. These initiatives empower farmers with the knowledge and tools

needed to adopt modern farming practices, improve yields, and diversify income sources. Additionally, grants can fund programs that improve access to affordable inputs like fertilizers and seeds, further driving productivity.

Another critical area where grant aid proves valuable is in supporting inclusive agricultural development programs that prioritize smallholder farmers. Grants can fund initiatives aimed at strengthening farmer cooperatives, facilitating access to credit, and enhancing women's participation in agricultural activities—efforts that directly address inequality and promote sustainable poverty reduction.

Investments in agricultural infrastructure, such as irrigation systems, roads, and storage facilities, are among the most impactful uses of grant aid. These investments address critical bottlenecks in agricultural production and distribution, enhancing productivity and reducing post-harvest losses. For example, irrigation systems increase resilience against erratic rainfall, a common challenge in SSA, while improved roads facilitate access to markets, enabling farmers to sell their produce at competitive prices. Storage facilities help to preserve surplus production, ensuring food security and stabilizing incomes.

The modernization theory also posits that societies progress through a series of stages of development, moving from traditional agrarian economies to modern and developed societies (Rostow, 1959). The theory emphasizes the importance of economic growth through structural transformation and also the use of modern technology in their activities. Proponent of the theory, both in the macro and micro streams, argue that poor countries need help from rich countries to speed up their development process (Thaha & Galib, 2022).

Support should be given in the form of capital, technology, technical expertise, and education, which are essential for the diffusion of modern agricultural practices. This approach is anticipated to foster development and economic growth in impoverished countries, leading to job creation, poverty alleviation, and the adoption of cultural, social, political, and economic structures akin to those in the Western world.

These findings also corroborate with the work of Santangelo (2018) and Ssozi et al. (2019) who found that foreign aid to the agricultural sector contributes significantly to poverty reduction. He also cited foreign aid as a key determinant of agricultural sector development through transfers in technology and managerial skills that can be beneficial to farmers. The findings are also in line with that of Dhahri and Omri (2020) who found that foreign aid is not only limited to reduce poverty, but also promotes the agriculture sector.

In conclusion, the interaction between foreign aid and agricultural sector development on poverty reduction showed a positive and significant effects, as evidenced by its positive coefficients. This suggests that foreign aid directed towards the advancement of the agricultural sector has a beneficial impact on reducing poverty. The positive coefficients in all the measures indicate that as foreign aid to the agricultural sector increases, there is a corresponding decrease in poverty levels. This implies that investments in agricultural development, supported by foreign aid, lead to improvements in the livelihoods of people engaged in agriculture, ultimately contributing to poverty reduction in SSA since about 75% of the poor population live in rural areas and draws their livelihood and food from agriculture.

Results of the Control Variables for the Models Assessing the Role of Agricultural Sector Development in the Relationship between Foreign Aid and Poverty Reduction in SSA economies

The same macroeconomic indicators that were accounted for in table 6 were also adjusted for in all the models in tables 7. Trade openness exhibited a positive and significant impact on all the measures of poverty reduction resulting in a reduction of poverty in the region at a 1% level of significance. In the real world, trade can create jobs in export-oriented industries, providing employment opportunities for low-skilled workers. This is consistent with the results of Anetor et al. (2020) who found that that trade has a positive and significant impact on poverty reduction, especially in low-income countries. The results also support the findings Dada and Akinlo (2021) who contended that allowing more trade will help to combat poverty since it will pump more capital into the economy. Or to put it another way, a nation with strong trade barriers is more likely to be ensconced in the pit of poverty.

Financial development significantly contributed to poverty reduction as shown in all the three measures of poverty as its coefficient is significant at 10%, 5% and 1% respectively in column 1, 2 and 3. This is in line with Sehrawat and Giri (2016), Boukhatem (2016), Rewilak (2017) and Keho (2017) who found that financial development enhances poverty reduction. According to Keho (2017), financial development can directly alleviate poverty by facilitating transactions and providing the poor with access to financial services that increase their income. He also noted that although the poor might not have access to credit facilities from financial institutions, these institutions still offer transaction services and savings opportunities, which enhance the income of the poor and thus help reduce poverty.

A negative relationship was found between inflation and all the three measures of poverty reduction in table 7. This means that an increase in inflation do not lead to a poverty reducing effect in SSA. In the real World, high Inflation reduces the purchasing power of money, meaning that the same amount of money buys fewer goods and services over time. For poor households, this can be particularly devastating as they allocate a larger share of their income to essential needs such as food, shelter, and healthcare. As prices rise, their ability to afford these essentials diminishes, exacerbating poverty. Rising prices also make it more expensive for households to maintain their standard of living. When the cost of living increases faster than wages or income, it results in a decline in real income. Poor and vulnerable populations are the hardest hit because they lack the financial buffers to cope with rising costs, leading to decreased consumption, poorer health outcomes, and lower quality of life. These findings support the work Dhahri and Omri (2020) who discovered that inflation significantly contributes to the decline in well-being and reduction in consumption due to the high cost of food.

Diagnostics on the Models Assessing the Role of Agricultural Sector Development in the Relationship between Foreign Aid and Poverty Reduction in SSA economies

The AR (1) and AR (2) are used to check for the presence of first and second order autocorrelation in the error term of the first-stage regression respectively. The presence or absence of autocorrelation is crucial for validating the model. In most cases, the null hypothesis for the AR (1) process in initial differences is rejected, but not the null hypothesis for the AR (2) process, according to Mileva (2007). At the 5% level of statistical significance, all of the p-values for the AR (1) process revealed rejection of the null hypothesis of no

autocorrelation, whereas the p-values for the AR (2) process did not. This proves that none of the models have autocorrelation. The Hansen test is performed to check the validity of the instruments. A non-rejection of the null hypothesis gives confidence in the instrument validity and the reliability of the GMM estimates If the p-value of the Hansen test is high (typically greater than 0.05). In conclusion, the instruments used in Table 7 are valid, as indicated by the probability values from the Hansen test, which did not reject the null hypothesis that the instruments are collectively valid and uncorrelated with the error term. The non-significance of the Hansen test further confirms that the instruments employed in the GMM calculations are appropriately excluded.

Agglomerating Effect in all the Models

In order to account for the gradual adjustment of poverty reduction towards its long-term equilibrium level, the lagged form of poverty reduction variables was included in each model. This decision reflects the understanding that poverty reduction is an ongoing process, with past poverty rates influencing current ones. Across all models examined in this chapter, it was observed that the coefficient of the lagged poverty reduction variable was both significant and positive. The consistent positive sign of these coefficients across all models suggests that past levels of poverty in SSA economies have had a positive impact on present levels. The significance of the lagged dependent variable indicates that the system GMM serves as an appropriate estimator, lending credibility to the empirical findings for statistical inference.

Chapter Summary

The chapter first presented a trend analysis examining the relationship between foreign aid and poverty reduction in SSA economies. Subsequently, it

provided a descriptive analysis of the study's variables. The descriptive research revealed that the SSA region received the highest amount of foreign aid between 2000 and 2021, surpassing other regions, although its impact on the region was relatively modest. The chapter then delved into the separate impacts of foreign aid and agricultural sector development on poverty reduction in SSA economies. The findings demonstrated that both foreign aid and agricultural sector development play crucial roles in addressing poverty in the region. Additionally, the chapter explored how the interaction between foreign aid and agricultural sector development affects poverty rates in SSA economies. The study emphasized that foreign aid targeting agricultural sector advancement has a positive effect on poverty reduction. The positive coefficients across all measures suggest that an increase in foreign aid to the agricultural sector corresponds to a decrease in poverty levels.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The key findings from the entire study are presented in this chapter. This chapter also includes a summary of the findings, conclusions, recommendations, and suggestions for further research.

Summary of the Research

The UN Sustainable Development Goals (SDGs) are premeditated to be universal objectives pertinent to both developed and developing countries, as highlighted by Gasper et al. (2019). In 2015, the United Nations General Assembly established 17 SDGs along with 169 targets to accomplish by 2030. The primary objective, SDG1 and SDG2 known as "no poverty" and "zero hunger" respectively, strives to eliminate poverty and hunger, ensure food security, enhance nutrition, and advance sustainable agriculture worldwide. Concerning this goal, SSA nations present a significant case for examination due to the acute poverty prevalent, with millions of individuals surviving on less than $1.90 per day (World Bank, 2018). While there exists an opportunity for SSA countries to reduce the rate of poverty, the historical context reveals a persistent challenge as these economies have recorded higher inflows of aid rates as compared to other regions but yet, poverty is still prevalent in the region. Consequently, it is crucial to devise prompt solutions to alleviate poverty before the situation worsens any further.

The literature offers various factors that could potentially alleviate poverty in SSA. However, a notable gap in existing literature lies in disaggregating aid based on the source and type as it enables policymakers and

international aid organizations to pinpoint the most effective type of aid to foster growth and alleviate poverty and also, recognizing the pivotal role of the agricultural sector development within the intricate dynamics linking foreign aid and poverty reduction in SSA economies. Understanding how the development of the agricultural sector leverages the impact of foreign aid is a crucial aspect that demands further exploration and consideration in the scholarly discourse.

In the context of SSA, the literature presented supportive ideas and empirical evidence regarding the relationship between foreign aid, agricultural sector development and poverty reduction. The study specifically used the dual-gap theory, modernization theory and the absorptive capacity theory. The empirical review indicated that the evidence on the connection between foreign aid and poverty reduction in SSA was inconclusive.

This is due to the fact that earlier research has mostly focused on aid effectiveness by combining various forms of foreign assistance, including humanitarian, military, educational, healthcare, agricultural, and other types, into a unified sum (% of GNI). Therefore, it is not feasible to ascertain the distinct contribution of any particular type and source of aid on poverty reduction. On the other hand, the difference in findings could also be as a result that these empirical works have not thoroughly assessed the role of agricultural sector development in the relationship between foreign aid and poverty reduction.

To examine whether the development of the agricultural sector influences the connection between foreign aid and poverty alleviation in SSA economies, this study interacted foreign aid with agricultural sector

development across sampled SSA economies. The research adopted a post-positivist paradigm and employed quantitative methodology as its foundation. An explanatory research design was utilised for estimating various models in the study. Due to data constraints, the study included 40 out of 48 SSA economies.

The study established two baseline models. The first model investigated the relationship between foreign aid and poverty reduction in SSA economies. The second model explored the role of agricultural sector development in strengthening the connection between foreign aid and poverty reduction in SSA economies. The study used the system GMM estimation approach to estimate each model due to its distinct advantages in addressing the research objectives and dealing with inherent econometric challenges. One of the primary challenges in analyzing the relationship between foreign aid, agricultural development, and poverty reduction is endogeneity, which may arise from reverse causality or omitted variable bias. For instance, while foreign aid may reduce poverty, poverty levels can also influence the amount of aid received. System GMM effectively addresses this issue by using internal instruments, such as lagged values of the variables, to ensure unbiased and consistent parameter estimates.

Summary of Key Findings

Upon analysing the data, the study yielded several important findings with practical implications. The results are presented in the same sequence as they were discussed. The study's primary objective was to find out how foreign aid contribute to poverty reduction in the SSA region. The second objective looked at the relationship between agricultural sector development and poverty

reduction. The third objective focused on the moderating impact of agricultural sector development in the relationship between foreign aid and poverty reduction in the SSA economies. The table below provides a summary of the results for these objectives.

Table 10: Summary of Results on the Hypothesis

Hypothesis		Confirmation
$H_1$1:	There is a positive significant effect of foreign aid on poverty reduction of SSA economies.	**Accepted**
$H_1$2:	There is a positive significant relationship between agricultural sector development and poverty reduction of SSA economies	**Accepted**
$H_1$3:	Agricultural sector development plays a significant role in the relationship between foreign aid and poverty reduction	**Accepted**

Source: Field Survey, (2024)

Regarding the first objective, the study revealed that foreign aid had a poverty reducing effect depending on the measure of aid. The study further revealed that bilateral aid, technical aid and grant aid had a positive and significant effect on poverty reduction while multilateral aid failed to contribute to poverty reduction in the SSA region during the period under study. This could be as a result of the fact that multilateral aid often comes with conditionality requirements and focuses on broader policy objectives rather than direct service delivery. This means that multilateral aid may be directed towards structural reforms, governance improvements, or macroeconomic stabilization measures rather than directly targeting health or household welfare. If the conditions are not well-aligned with the recipient country's needs or priorities, aid may not lead to effective poverty reduction. For instance, conditionalities attached to aid disbursement, such as governance reforms or economic liberalization, can dilute

the focus on poverty alleviation, diverting resources toward meeting donor-imposed benchmarks rather than addressing the specific needs of vulnerable populations.

Additionally, broader macroeconomic constraints could hinder the effectiveness of multilateral aid. For example, structural issues such as weak institutional frameworks, inadequate absorptive capacity, and limited infrastructure in SSA may impede the efficient utilization of aid resources. These challenges are exacerbated by the centralized nature of multilateral aid, which often lacks the flexibility to adapt to localized contexts. The findings do not conform with the work of Mahembe and Odhiambo (2019) who performed a comprehensive review of literature on the foreign aid-poverty reduction nexus. They found that in general, foreign aid reduces poverty, irrespective of the type of poverty measures used. The findings are also consistent with the work of Amoa (2020) who found that the composition of aid matters for Africa.

Additionally, with the second objective, it was discovered that agricultural sector development significantly boosted poverty reduction in the SSA economies. This shows that the development in the agricultural sector of SSA region would improve upon the household consumption expenditure and also standard living of the poor because agricultural sector development generates higher crop production which can lead to increased incomes for farming households. This additional income can be utilised to fulfill basic needs like food, shelter, healthcare, and education, thereby improving living standards and reducing poverty levels.

The study also looked at the role agricultural sector development played in the connection between foreign aid and the alleviation of poverty. Results

from the third objective showed that countries that engage in agricultural activities when they receive aid and channel this aid towards the development of this sector, its impact on poverty reduction is higher. It also implied that coordinated international efforts focused on agriculture can significantly enhance economic and social outcomes for the region's poorest populations. The positive interaction between the measures of aid and AGSVA suggests that when multilateral organizations such as the World Bank, IMF, and AfDB provide targeted support to agricultural initiatives, they can effectively address the structural issues that perpetuate poverty in the SSA region. The research draws attention to regional variations in agricultural development within SSA, emphasizing the need for context-specific strategies. Policymakers should consider localized factors such as governance quality, climate conditions, and infrastructure availability when formulating policies. For example, in regions with favorable climates but weak infrastructure, aid programs could focus on improving transportation networks to facilitate market access for agricultural products.

Conclusion

Drawing from the study's findings, it is concluded that not all type or source of aid has a poverty reduction effect in the SSA region. Aid from multilateral source do not contribute much towards poverty reduction, while bilateral aid, technical aid and grant aid enhanced poverty reduction in the region. For instance, conditionalities attached to aid disbursement, such as governance reforms or economic liberalization, can dilute the focus on poverty alleviation, diverting resources toward meeting donor-imposed benchmarks rather than addressing the specific needs of vulnerable populations.

Additionally, broader macroeconomic constraints could hinder the effectiveness of multilateral aid. These challenges are exacerbated by the centralized nature of multilateral aid, which often lacks the flexibility to adapt to localized contexts.

Thus, Bilateral and grant aid typically focus on achieving immediate and tangible impacts, such as improving healthcare, education, and infrastructure. Technical aid provides expertise and capacity building that directly enhance local capabilities. The positive impact of these types of aid on poverty reduction indicates that immediate and practical assistance can be crucial for improving life expectancy, household consumption, and overall economic well-being of the people within the region.

It was also found that, multilateral aid, which is often channeled through large international organisations, may come with more rigid conditions and may prioritize macroeconomic stability and structural reforms over direct poverty alleviation. These programs may not always align closely with the urgent needs of the poor or may be hindered by bureaucratic inefficiencies and implementation challenges.

Additionally, the study concluded that the agricultural sector development plays a vital role in the economies of SSA, where a large proportion of the population relies on farming for their livelihoods. Agricultural development empowers rural populations by providing them with more stable and higher incomes. This economic empowerment enables them to invest in their futures, improve their resilience to economic shocks, and break the cycle of poverty. As the majority of the poor in SSA live in rural areas, focusing on

agricultural development directly addresses the needs of the most vulnerable populations.

Finally, the study concluded that foreign aid is more effective in reducing poverty when it is channeled towards agricultural sector development. Because agriculture is the backbone of most economies in SSA, employing a significant proportion of the population, particularly in rural areas where poverty is most prevalent. Developing the agricultural sector directly impacts the livelihoods of millions, making it a critical pathway for poverty reduction. A well-developed agricultural sector enhances food production, reducing dependency on food imports and mitigating food insecurity. Improved access to food also contributes to better health and nutrition, which are essential for breaking the cycle of poverty. This suggests that aid programs that prioritize agriculture can have a more substantial impact on poverty reduction compared to those that do not. By focusing on agriculture, aid can directly address the livelihoods of a large segment of the population in SSA who rely on farming for their income.

Recommendation

Relying on the results and conclusions drawn, the study made the following recommendations. To accomplish a substantial number of the SDGs, SSA countries' governments should establish strong monitoring and evaluation (M&E) systems to assess the impact of aid programs on poverty reduction. This includes setting clear, measurable indicators, regularly collecting data, and conducting independent evaluations to ensure transparency and accountability. The study recommends that policymakers in Sub-Saharan African (SSA) countries prioritize the alignment of foreign aid programs with their national

agricultural development strategies. This can be achieved by developing comprehensive agricultural sector plans that clearly articulate priority areas for investment, such as infrastructure development, technology adoption, and market access. Policymakers should actively engage in dialogue with multilateral organizations, such as the World Bank, IMF, and AfDB, to ensure that aid agreements reflect these priorities. By taking a proactive approach, recipient governments can better utilize aid to address the specific needs of their agricultural sectors and enhance its impact on poverty reduction.

Moreover, the governments should support agricultural research and development to introduce high-yield and climate-resilient crop varieties and also improve rural transportation networks and storage facilities to reduce post-harvest losses and increase market access for farmers. The study also recommends the Promotion of agro-processing and value addition activities to increase the profitability of agricultural products. This would create jobs in rural areas and reduce poverty as such.

Since a large segment of the population in SSA rely on farming for their income, donors and multilateral organizations should prioritize agricultural development in their aid programs. By channeling more resources towards agriculture, aid can directly benefit the large proportion of the population that depends on farming for their livelihoods. This can also be done by developing comprehensive agricultural strategies that include investments in infrastructure (irrigation systems, rural roads), access to quality seeds and fertilizers, extension services, and market access. These strategies should be tailored to the specific needs of different regions and farming communities.

Given the varying agricultural conditions, economic structures, and socio-political environments in different sub-regions, the Eastern part of Africa, with its significant reliance on export crops such as coffee and tea, could benefit from initiatives that strengthen global market access and fair trade practices. Furthermore, Eastern Africa faces recurrent droughts, making investments in irrigation systems, water conservation techniques, and drought-resistant crops particularly critical. Given the dominance of staple crops like maize, millet, and cassava, interventions in West Africa should focus on improving smallholder farming productivity through access to high-quality inputs, such as seeds and fertilizers, and fostering the adoption of mechanized farming. Additionally, addressing land tenure issues and expanding access to local and regional markets could significantly impact agricultural productivity and poverty reduction.

In relation to theory, this study emphasizes the need to refine existing frameworks such as modernization theory, absorptive capacity theory, and the dual-gap model to better reflect the unique dynamics of Sub-Saharan Africa. Modernization theory should explicitly account for the critical role of agricultural development in poverty reduction, recognizing the structural importance of agriculture in rural economies. Absorptive capacity theory can be enhanced by focusing on how sector-specific factors, such as agricultural infrastructure and technological adoption, improve the effective utilization of aid. Furthermore, the dual-gap model requires reconsideration to incorporate the conditionalities and alignment of aid with sectoral development priorities, particularly in agriculture, to explain variations in aid effectiveness. These

theoretical refinements also align with achieving SDG 1 (No Poverty) and SDG 2 (Zero Hunger).

Suggestion for Further Studies

Future studies should explore new forms of aid delivery, such as impact investment or blended finance, which may address some of the limitations found in traditional foreign aid models. Furthermore, the study could be expanded to include other developing and developed economies.

REFERENCES

Abas, A., & Fosu, A. (2019). Domestic credit and export diversification: Africa from a global perspective.

Abeka, M. J., Andoh, E., Gatsi, J. G., & Kawor, S. (2021). Financial development and economic growth nexus in SSA economies: The moderating role of telecommunication development. *Cogent Economics & Finance*, *9*(1), 1862395.

Abeka, M. J., Gatsi, J. G., Appiah, M. O., & Agyemang, O. S. (2022). Trade openness and financial development in sub-Saharan Africa: The role of institutional structures. *Thunderbird International Business Review*, *64*(1), 67-80.

Achterbosch, T. J., van Berkum, S., Meijerink, G. W., Asbreuk, H., &

Oudendag, D. A. (2014). *Cash crops and food security: Contributions to income, livelihood risk and agricultural innovation* (No. 2014-15). LEI Wageningen UR.

Ackah, C. G., & Lambon-Quayefio, M. (2023). Domestic savings in sub-Saharan Africa.

Adams, R., Jeanrenaud, S., Bessant, J., Denyer, D., & Overy, P. (2016). Sustainability-oriented innovation: A systematic review. *International Journal of Management Reviews*, *18*(2), 180-205.

Adane, H. (2015). Foreign aid and its impact on democracy in post-1991 Ethiopia. *Open Access Library Journal*, *2*(5), 1-16.

Adeyeye, S. A. O., Ashaolu, T. J., Bolaji, O. T., Abegunde, T. A., & Omoyajowo, A. O. (2023). Africa and the Nexus of poverty, malnutrition and diseases. *Critical Reviews in Food Science and Nutrition*, *63*(5), 641-656.

Adjognon, S. G., Liverpool-Tasie, L. S. O., & Reardon, T. A. (2017). Agricultural input credit in Sub-Saharan Africa: Telling myth from facts. *Food policy*, *67*, 93-105.

Adusah-Poku, F. (2016). Which form of foreign capital inflows enhance economic growth? Empirical evidence in Sub-Saharan Africa. *Asian Economic and Financial Review*, *6*(10), 557.

Adusei, E. (2020). The impact of Foreign Aid on Economic Growth in Sub-Sahara Africa: The mediating role of Institutions.

Agyei, S. K., Marfo-Yiadom, E., Ansong, A., & Idun, A. A. A. (2020). Corporate tax avoidance incentives of banks in Ghana. *Journal of African Business*, *21*(4), 544-559.

Agyemang, O. S., Gatsi, J. G., & Ansong, A. (2018). Institutional structures and financial market development in Africa. *Cogent Economics & Finance*, *6*(1), 1488342.

Ahmed, M. T., Bhandari, H., Gordoncillo, P. U., Quicoy, C. B., & Carnaje, G. P. (2018). Factors affecting extent of rural livelihood diversification in selected areas of Bangladesh. *SAARC Journal of Agriculture*, *16*(1), 7-21.

Ajide, F. M. (2016). Financial innovation and sustainable development in selected countries in West Africa. *Journal of Entrepreneurship, Management and Innovation*, *12*(3), 85-112.

Ajieroh, V., Onabolu, A., Ezekannagha, O., & Adeyemi, O. (2023). Fostering an enabling environment for nutrition-sensitive agriculture and food systems in Nigeria. *Food and Nutrition Bulletin*, 03795721231173852.

Ali, M., & Zeb, A. (2016). Foreign Aid: Origin, Evolution and its Effectiveness in Poverty Alleviation. *Dialogue (Pakistan)*, *11*(1).

Alimi, A. S. (2018). Foreign aid and poverty level: Does public investment matter in Sub-Saharan African Countries. *Global Journal of Management and Business Research: B Economics and Commerce*, *18*(1), 1-10.

Aluko, O. A., & Ajayi, M. A. (2018). Determinants of banking sector development: Evidence from Sub-Saharan African countries. *Borsa Istanbul Review*, *18*(2), 122-139.

Alvarado, R., Iñiguez, M., & Ponce, P. (2017). Foreign direct investment and economic growth in Latin America. *Economic Analysis and Policy*, *56*, 176-187.

Alvi, E., & Senbeta, A. (2012). Does foreign aid reduce poverty?. *Journal of International Development*, *24*(8), 955-976.

Amoa, A. M. N. B. (2020). Effectiveness of bilateral and multilateral official development assistance on economic growth in CEMAC: an expansion variable analysis method. *Theoretical Economics Letters*, *10*(2), 322-333.

Amusa, K., Monkam, N., & Viegi, N. (2016). Foreign aid and Foreign direct investment in Sub-Saharan Africa: A panel data analysis. *Economic Research Southern Africa (ERSA)*, *612*, 1-23.

Anetor, F. O., Esho, E., & Verhoef, G. (2020). The impact of foreign direct investment, foreign aid and trade on poverty reduction: Evidence from Sub-Saharan African countries. *Cogent Economics & Finance*, *8*(1), 1737347.

Anríquez, G., & Stamoulis, K. G. (2016). Rural Development and Poverty Reduction: Is Agriculture Still Key?. *eJADE: electronic Journal of Agricultural and Development Economics*, *4*(853-2016-56113), 5-46.

Antwi, S. K., & Hamza, K. (2015). Qualitative and quantitative research paradigms in business research: A philosophical reflection. *European journal of business and management*, *7*(3), 217-225.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The review of economic studies*, *58*(2), 277-297.

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of econometrics*, *68*(1), 29-51.

Arita, S., Grant, J., Sydow, S., & Beckman, J. (2022). Has global agricultural trade been resilient under coronavirus (COVID-19)? Findings from an econometric assessment of 2020. *Food Policy*, *107*, 102204.

Asongu, S. A., & Ezeaku, H. C. (2022). Aid grants versus technical cooperation grants: Implications for inclusive growth in Sub-Saharan Africa, 1984–2018. *Journal of Public Affairs*, *22*(3), e2587.

Asongu, S. A., & Nwachukwu, J. C. (2017). Foreign aid and inclusive development: Updated evidence from Africa, 2005–2012. *Social Science Quarterly*, *98*(1), 282-298.

Asongu, S. A., & Odhiambo, N. M. (2019). Inclusive development in environmental sustainability in sub-Saharan Africa: Insights from governance mechanisms. *Sustainable Development*, *27*(4), 713-724.

Asongu, S. A., Uduji, J. I., & Okolo-Obasi, E. N. (2020). Foreign aid volatility and lifelong learning. *International Journal of Education Economics and Development*, *11*(4), 370-406.

Ayoo, C. (2022). Poverty reduction strategies in developing countries. *Rural development-education, sustainability, multifunctionality*, 17-57.

Bahar, N. H., Lo, M., Sanjaya, M., Van Vianen, J., Alexander, P., Ickowitz, A., & Sunderland, T. (2020). Meeting the food security challenge for nine billion people in 2050: What impact on forests. *Glob. Environ. Chang*, *62*, 102056.

Banda, L. G. (2020). Limitations of the Use of Modernization Theory in Formulating and Implementing Development Policies in Africa–The case of Tanzania and Malawi. *Journal of Development Economics, Forthcoming*.

Bharadwaj, A. (2014). Reviving the globalization and poverty debate: Effects of real and financial integration on the developing world. *Advances in Economics and Business*, *2*, 42-57.

Birch, I. (2018). Agricultural productivity in Kenya: barriers and opportunities.

Bird, G., & Choi, Y. (2020). The effects of remittances, foreign direct investment, and foreign aid on economic growth: An empirical analysis. *Review of Development Economics*, *24*(1), 1-30.

Biscaye, P. E., Reynolds, T. W., & Anderson, C. L. (2017). Relative effectiveness of bilateral and multilateral aid on development outcomes. *Review of Development Economics*, *21*(4), 1425-1447.

Bjornlund, V., Bjornlund, H., & Van Rooyen, A. F. (2020). Why agricultural production in sub-Saharan Africa remains low compared to the rest of the world–a historical perspective. *International Journal of Water Resources Development*, *36*(sup1), S20-S53.

Blandford, D. (2019). Meeting Future Food Needs in Sub-Saharan Africa. In *Global Challenges for Future Food and Agricultural Policies* (pp. 105-123).

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of econometrics*, *87*(1), 115-143.

Boukhatem, J. (2016). Assessing the direct effect of financial development on poverty reduction in a panel of low-and middle-income countries. *Research in International Business and Finance*, *37*, 214-230.

Boulhol, H., De Serres, A., & Molnar, M. (2008). The contribution of economic geography to GDP per capita.

Calvo, C. C., & Hernandez, M. A. (2006, April). Foreign direct investment and poverty in Latin America. In *Prepared to be Delivered at the Globalisation and Economic Policy Fifth Annual Postgraduate Conference Leverhulme Centre for Research on Globalisation and Economic Policy University of Nottingham*.

Chaudhary, A. R. (2012). A contribution of foreign direct investment in poverty reduction in Pakistan. *Middle East Journal of Scientific Research*, *12*(2), 243-248.

Chenery, H. & Strout, A. (1967). Foreign assistance and economic development. In *Capital movements and economic development* (pp. 268-292). London: Palgrave Macmillan UK.

Chetty, R., Stepner, M., Abraham, S., Lin, S., Scuderi, B., Turner, N., & Cutler, D. (2016). The association between income and life expectancy in the United States, 2001-2014. *Jama*, *315*(16), 1750-1766.

Clements, B., Gupta, S., Pivovarsky, A., & Tiongson, E. R. (2004). Development Issues-Foreign Aid: Grants versus Loans-Why a shift of development aid from loans to grants should be accompanied by institutional strengthening in developing countries. *Finance and Development-English Edition*, *41*(3), 46-49.

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative science quarterly*, *35*(1), 128-152.

Cooper, D. R., & Schindler, P. (2014). *Business research methods*. Mcgraw-hill.

Cordero P, L., & Ferreira, J. J. (2019). Absorptive capacity and organizational mechanisms: A systematic review and future directions. *Review of International Business and Strategy*, *29*(1), 61-82.

Dada, J. T. (2021). Asymmetric effect of exchange rate volatility on trade in sub-Saharan African countries. *Journal of Economic and Administrative Sciences*, *37*(2), 149-162.

Dada, J. T., & Akinlo, T. (2021). Foreign direct investment and poverty reduction in sub-Saharan Africa: does environmental degradation matter?. *Future Business Journal*, *7*(1), 21.

Davijani, M. H., Banihabib, M. E., Anvar, A. N., & Hashemi, S. R. (2016). Optimization model for the allocation of water resources based on the maximization of employment in the agriculture and industry sectors. *Journal of Hydrology*, *533*, 430-438.

de Janvry, A., & Sadoulet, E. (2020). Using agriculture for development: Supply-and demand-side approaches. *World development*, *133*, 105003.

Dhahri, S., & Omri, A. (2020). Foreign capital towards SDGs 1 & 2—Ending Poverty and hunger: The role of agricultural production. *Structural Change and Economic Dynamics*, *53*, 208-221.

Dhahri, S., & Omri, A. (2020). Foreign capital towards SDGs 1 & 2—Ending Poverty and hunger: The role of agricultural production. *Structural Change and Economic Dynamics*, *53*, 208-221.

Dhrifi, A., Jaziri, R., & Alnahdi, S. (2020). Does foreign direct investment and environmental degradation matter for poverty? Evidence from developing countries. *Structural Change and Economic Dynamics*, *52*, 13-21.

Diao, X., Hazell, P., & Thurlow, J. (2020). The role of agriculture in African development. *World development*, *38*(10), 1375-1383.

Dibua, J. I. (2017). *Modernization and the crisis of development in Africa: the Nigerian experience*. Routledge.

Dreher, A., & Langlotz, S. (2020). Aid and growth: New evidence using an excludable instrument. *Canadian Journal of Economics/Revue canadienne d'économique*, *53*(3), 1162-1198.

Ducastel, A., Bourblanc, M., & Adelle, C. (2023). Why development finance institutions are reluctant to invest in agriculture and why they keep trying. *Financializations of Development: Global Games and Local Experiments*.

Dynan, K., & Sheiner, L. (2018). *GDP as a measure of economic well-being* (Vol. 43, No. 1, pp. 1-52). Hutchins Center Working Paper.

Easterly, W. (1999). Life during growth. *Journal of economic growth*, *4*, 239-276.

Easterly, W. (2003). Can foreign aid buy growth?. *Journal of economic Perspectives*, *17*(3), 23-48.

Easterly, W. (2006). Reliving the 1950s: the big push, poverty traps, and takeoffs in economic development. *Journal of Economic Growth*, *11*, 289-318.

Edo, S., Matthew, O., & Ogunrinola, I. (2023). Bilateral and multilateral aid perspectives of economic growth in sub-Saharan Africa. *African Journal of Economic and Management Studies*, *14*(1), 1-17.

Eisenstadt, S. N. (1974). Studies of modernization and sociological theory. *History and Theory*, *13*(3), 225-252.

Elisha, O. D., & Felix, M. J. (2021). Destruction of coastal ecosystems and the vicious cycle of poverty in Niger Delta Region. *Journal of Global Agriculture and Ecology*, *11*(2), 7-24.

Erokhin, V. (Ed.). (2017). *Establishing food security and alternatives to international trade in emerging economies*. IGI Global.

Erokhin, V., & Gao, T. (Eds.). (2019). *Handbook of research on globalized agricultural trade and new challenges for food security*. IGI Global.

Etuk, E. A., & Ayuk, J. O. (2021). Agricultural commercialisation, poverty reduction and pro-poor growth: evidence from commercial agricultural development project in Nigeria. *Heliyon*, *7*(5).

FAO, IFAD, UNICEF, et al. (2019) *The State of Food Security and Nutrition in the World 2019. Safeguarding Against Economic Slowdowns and Downturns*. Rome: FAO.

FAO. (2017). OECD-FAO Agricultural Outlook 2017-2026. OECD Publishing, Paris

Findley, M. G., Milner, H. V., & Nielson, D. L. (2017). The choice among aid donors: The effects of multilateral vs. bilateral aid on recipient behavioral support. *The Review of International Organizations*, *12*, 307-334.

Friedmann, J. (1996). Rethinking poverty: empowerment and citizen rights. *International Social Science Journal*, *48*(148), 161-172.

Galistcheva, N. (2023). Foreign Aid. In *World Economy and International Business: Theories, Trends, and Challenges* (pp. 793-802). Cham: Springer International Publishing.

Gasper, D., Shah, A., & Tankha, S. (2019). The framing of sustainable consumption and production in SDG 12. *Global Policy*, *10*, 83-95.

Hagen, E. E. (1962). On the theory of social change: How economic growth begins.

Hallebone, E., & Priest, J. (2017). *Business and management research: paradigms and practices*. Bloomsbury Publishing.

Hemathilake, D. M. K. S., & Gunathilake, D. M. C. C. (2022). Agricultural productivity and food supply to meet increased demands. In *Future Foods* (pp. 539-553). Academic Press.

Herrmann, B., & Rundshagen, V. (2020). Paradigm shift to implement SDG 2 (end hunger): A humanistic management lens on the education of future leaders. *The international journal of management education*, *18*(1), 100368.

Hone, Z., & Marisennayya, S. (2019). Determinants of Household Consumption Expenditure in Debremarkos Town, Amhara Region, Ethiopia. *American Academic Scientific Research Journal for Engineering, Technology, and Sciences*, *62*(1), 124-144.

Hongli, J., & Vitenu-Sackey, P. A. (2023). Assessment of the effectiveness of foreign aid on the development of Africa. *International Journal of Finance & Economics*, *28*(1), 79-92.

Hussain, N. (2016). *Impact of foreign aid to agriculture sector on agricultural productivity in developing countries in the context of second goal of SDGs* (Doctoral dissertation, KDI School).

Idrees, Muhammad Abdullah. "Foreign capital inflows and economic growth in SAARC." *Journal of Business Studies* 5.2 (2018): 81-107.

Ilyas, A., Banaras, A., Javaid, Z., & Rahman, S. U. (2023). Effect of Foreign Direct Investment and Trade Openness on the Poverty Alleviation in Burundi–Sub African Country: ARDL (Co-integration) Approach. *Pakistan Journal of Humanities and Social Sciences*, *11*(1), 555-565.

Imai, K. S., Cheng, W., & Gaiha, R. (2017). Dynamic and long-term linkages among agricultural and non-agricultural growth, inequality and poverty in developing countries. *International Review of Applied Economics*, *31*(3), 318-338.

Inkeles, A., & Smith, D. H. (1974). *Becoming modern: Individual change in six developing countries*. Harvard University Press.

Inoue, T., & Hamori, S. (2016). Financial access and economic growth: Evidence from Sub-Saharan Africa. *Emerging Markets Finance and Trade*, *52*(3), 743-753.

Institute of International Finance. Capital Flows to Emerging Markets Report (2020). Available online: https://www.iif.com/Research/ Capital-Flows-and-Debt/Capital-Flows-to-Emerging-Markets-Report

Ivanic, M., & Martin, W. (2018). Sectoral productivity growth and poverty reduction: National and global impacts. *World Development*, *109*, 429-439.

Iwegbu, O., & Dauda, R. O. (2022). Effectiveness of foreign aid in poverty reduction in Africa: The role of fiscal policy. *CBN Journal of Applied Statistics*, *13*(1), 55-92.

Jägermeyr, J. (2020). Agriculture's historic twin-challenge toward sustainable water use and food supply for all. *Frontiers in Sustainable Food Systems*, *4*, 35.

Jama, B., & Pizarro, G. (2008). Agriculture in Africa: Strategies to improve and sustain smallholder production systems. *Annals of the New York Academy of Sciences*, *1136*(1), 218-232.

Janz, T., Augsburg, B., Gassmann, F., & Nimeh, Z. (2023). Leaving no one behind: Urban poverty traps in Sub-Saharan Africa. *World Development*, *172*, 106388.

Kairembo, R. J. (2018). *Researcher's Clarity of Research Paradigmatic Philosophical Conceptions Influencing Dissertations Quality Performance in Tanzania Universities: Grounded Theory Perpectives* (Doctoral dissertation, The Open University of Tanzania).

Kalibata, A. (2010). Agricultural aid to Africa is living aid. *Available on the internet at http://blog. bread. org/2010/10/listen-to-these-african-voices-as-ourgovernments-take-actionwe-need-the-international-community-to-do-its-partas-we. html*.

Karangwa, A., & Su, Z. (2023). Towards a Multidimensional Model for Evaluating the Sustainable Effect of FDI on the Development of Host Developing Countries: Evidence from Africa. *Sustainability*, *15*(5), 4662.

Keho, Y. (2017). Financial development and poverty reduction: evidence from selected African countries. *International journal of financial research*, *8*(4), 90-98.

Khan, N., Ray, R. L., Sargani, G. R., Ihtisham, M., Khayyam, M., & Ismail, S. (2021). Current progress and future prospects of agriculture technology: Gateway to sustainable agriculture. *Sustainability*, *13*(9), 4883.

Kharas, H. (2020). The impact of COVID-19 on global extreme poverty.

Kuhn, T. E. (1962). *Public enterprise economics & transport problems*. Univ of California Press.

Kwemo, A. B. (2017). *Making Africa great again: Reducing aid dependency. Brookings*.

Lane, P. J., Koka, B. R., & Pathak, S. (2006). The reification of absorptive capacity: A critical review and rejuvenation of the construct. *Academy of management review*, *31*(4), 833-863.

Law, S. H., & Azman-Saini, W. N. W. (2012). Institutional quality, governance, and financial development. *Economics of governance*, *13*, 217-236.

Lerner, D. (1958). The passing of traditional society: Modernizing the Middle East.

Levy, R. A. (1967). Relative strength as a criterion for investment selection. *The Journal of finance*, *22*(4), 595-610.

Liebrand, J., Beekman, W., de Bont, C., & Veldwisch, G. J. (2021). Global flows of investments in agriculture and irrigation-related technologies in sub-Saharan Africa. In *Handbook of translocal development and global mobilities* (pp. 90-107). Edward Elgar Publishing.

Lim, W. M. (2023). Philosophy of science and research paradigm for business research in the transformative age of automation, digitalization, hyperconnectivity, obligations, globalization and sustainability. *Journal of Trade Science*, *11*(2/3), 3-30.

Liu, Z., Hasan, M. M., Xuan, L. I., Saydaliev, H. B., Lan, J., & Iqbal, W. (2023). Trilemma association of education, income and poverty alleviation: managerial implications for inclusive economic growth. *The Singapore Economic Review*, *68*(04), 1469-1492.

Lockie, S., Fairley-Grenot, K., Ankeny, R., Botterill, L., Howlett, B., Mcbratney, A., & Woodhead, I. (2020). *The future of agricultural technologies*. Australian Council of Learned Academies (ACOLA).

Lundahl, M. (2021). The economics of being poor: The gospel according to Theodore W. Schultz. *Poverty in Contemporary Economic Thought*, 103-124.

Lyatuu, E. T., Nie, F., & Fang, C. (2015). The role of agriculture in the economic growth and poverty reduction in Tanzania.

Magombeyi, M. T., & Odhiambo, N. M. (2017b). Causal relationship between FDI and poverty reduction in South Africa. *Cogent Economics & Finance*, *5*(1), 1357901.

Magombeyi, M. T., & Odhiambo, N. M. (2018a). Dynamic impact of FDI inflows on poverty reduction: Empirical evidence from South Africa. *Sustainable Cities and Society*, *39*, 519-526.

Mahembe, E., & Odhiambo, N. M. (2018). *Does foreign aid reduce poverty in Sub-Saharan Africa? A dynamic panel-data analysis* (No. 23614).

Mahembe, E., & Odhiambo, N. M. (2019). Foreign aid and poverty reduction: A review of international literature. *Cogent Social Sciences*, *5*(1), 1625741

Mahembe, E., & Odhiambo, N. M. (2021). Does foreign aid reduce poverty? A dynamic panel data analysis for sub-Saharan African countries. *The Journal of Economic Inequality*, *19*, 875-893.

Martin, W. (2019). Economic growth, convergence, and agricultural economics. *Agricultural Economics*, *50*, 7-27.

Maruta, A. A., Banerjee, R., & Cavoli, T. (2020). Foreign aid, institutional quality and economic growth: Evidence from the developing world. *Economic Modelling*, *89*, 444-463.

Mary, S. (2019). Hungry for free trade? Food trade and extreme hunger in developing countries. *Food Security*, *11*(2), 461-477.

Mascagni, G. (2016). Aid and taxation in Ethiopia. *The Journal of Development Studies*, *52*(12), 1744-1758.

MATETE, T. R. (2018). *The Economic impact of foreign aid on poverty* (Doctoral dissertation, KDI School).

Mba, S., & Amassoma, D. (2014). The linkage between foreign aid and economic growth in Nigeria. *International Journal of Economic Practices and Theories*, *4*(6), 1007-1017.

Mbaya, K. (2000). Poverty eradication: where stands Africa?. *(No Title)*.

McCullough, E. B. (2017). Labor productivity and employment gaps in Sub-Saharan Africa. *Food policy*, *67*, 133-152.

Meier, G. M., & Stiglitz, J. E. (Eds.). (2001). *Frontiers of development economics: the future in perspective*. World Bank Publications.

Meredith, J. R., Raturi, A., Amoako-Gyampah, K., & Kaplan, B. (1989). Alternative research paradigms in operations. *Journal of operations management*, *8*(4), 297-326.

Miletkov, M., & Wintoki, M. B. (2012). Financial development and the evolution of property rights and legal institutions. *Emerging Markets Review*, *13*(4), 650-673.

Mileva, Y., Bruhn, A., & Weickert, J. (2007). Illumination-robust variational optical flow with photometric invariants. In *Pattern Recognition: 29th DAGM Symposium, Heidelberg, Germany, September 12-14, 2007. Proceedings 29* (pp. 152-162). Springer Berlin Heidelberg.

Mkpado, M. (2013). The status of African agriculture and capacity development challenges for sustainable resilience from global economic shocks. *Journal of Sustainable Development Studies*, *3*(1).

Mollier, L., Seyler, F., Chotte, J. L., & Ringler, C. (2017). End hunger, achieve food security and improved nutrition and promote sustainable agriculture: SDG 2. *A Guide to SDG Interactions: From Science to Implementation; ICSU: Paris, France*.

Morea, D., & Balzarini, M. (2018). Financial sustainability of a public-private partnership for an agricultural development project in Sub-Saharan Africa. *ZEMEDELSKA EKONOMIKA*, *64*(9), 389-398.

Moyo, S. (2016). *Family farming in sub-Saharan Africa: its contribution to agriculture, food security and rural development* (No. 150). Working paper.

Nabarro, D., & Lasbennes, F. (2019). The zero hunger challenge, an initiative of Ban Ki-moon in 2012. *From Fome Zero to Zero Hunger*, 58.

Nidup, J. (2016). *Growth, poverty, and inequality: essays on the Bhutanese economy* (Doctoral dissertation, RMIT University).

Nishimwe-Niyimbanira, R. (2020). Income poverty versus multidimensional poverty: Empirical insight from Qwaqwa. *African Journal of Science, Technology, Innovation and Development*, *12*(5), 631-641.

Njangang, H., Nembot Ndeffo, L., Noubissi Domguia, E., & Fosto Koyeu, P. (2018). The long-run and short-run effects of foreign direct investment, foreign aid and remittances on economic growth in African countries.

Nutassey, V. A., Nomlala, B. C., & Sibanda, M. (2023). Economic institutions, political institutions and public debt in Sub-Saharan Africa. *International Journal of Emerging Markets*

Obuobi, N. K., Gatsi, J. G., Appiah, M. O., Kawor, S., Amoah, E. K., & Abeka, M. J. (2022). Trade liberalization policies and foreign direct investment inflows in Africa: Evidence from new measures of trade liberalization. *The Journal of International Trade & Economic Development*, *31*(3), 394-409.

Odhiambo, N. M. (2009). Finance-growth-poverty nexus in South Africa: A dynamic causality linkage. *The Journal of Socio-Economics*, *38*(2), 320-325.

OECD (2019). What is ODA? Publications of development co-operation directorate, (April), 1–8.

OECD, F. (2016). Agriculture in Sub-Saharan Africa: prospects and challenges for the next decade. *OECD-FAO Agricultural Outlook*, *2025*(181), 1-39.

Ogundipe, A., Oduntan, E. A., Adebayo, O., & Olagunju, K. (2016). Agricultural productivity, poverty reduction and inclusive growth in Africa: Linkages and pathways. *Poverty Reduction and Inclusive Growth in Africa: Linkages and Pathways (October 20, 2016)*.

Ojiya, E. A., Okoh, S. A., Mamman, A. B., & Chukwuemeka, N. J. (2017). An empirical analysis of the effect of agricultural input on agricultural productivity in Nigeria. *Int J Agric Sc Food Technol*, *3*(4), 077-085.

Olaoye, O., Ibukun, C. O., Razzak, M., & Mose, N. (2023). Poverty prevalence and negative spillovers in Sub-Saharan Africa: a focus on extreme and multidimensional poverty in the region. *International Journal of Emerging Markets*, *18*(9), 2993-3021.

Omodan, B. I. (2022). A Model for Selecting Theoretical Framework through Epistemology of Research Paradigms. *African Journal of Inter/Multidisciplinary Studies*, *4*(1), 275-285.

Onakoya, A., Johnson, B., & Ogundajo, G. (2019). Poverty and trade liberalization: empirical evidence from 21 African countries. *Economic research-Ekonomska istraživanja*, *32*(1), 635-656.

Organization for Economic Cooperation and Development & Food and Agriculture Organization. (2016). Agriculture in sub-Saharan Africa: Prospects and challenges for the next decade. In OECD/FAO agricultural outlook 2016-2025 (pp. 91). Paris: OECD Publishing. https://doi.org/10.1787/agr_ outlook-2016-en

Osabohien, R., Matthew, O., Gershon, O., Ogunbiyi, T., & Nwosu, E. (2019). Agriculture development, employment generation and poverty reduction in West Africa. *The Open Agriculture Journal*, *13*(1).

Panhwar, A. H., Ansari, S., & Shah, A. A. (2017). Post-positivism: An effective paradigm for social and educational research. *International Research Journal of Arts and Humanities*, *45*(45), 253-259.

Park, J. D., & Park, J. D. (2019). Assessing the role of foreign aid, donors and recipients. *Re-Inventing Africa's Development: Linking Africa to the Korean Development Model*, 37-60.

Parsons, T. (1971). *The system of modern societies* (p. 80). Englewood Cliffs, NJ: Prentice-Hall.

Pernechele, V., Balié, J., & Ghins, L. (2018). *Agricultural policy incentives in sub-Saharan Africa in the last decade (2005–2016). Monitoring and Analysing Food and Agricultural Policies (MAFAP) synthesis study* (No. 2143-2019-4790).

Petrikova, I. (2015). Aid for food security: does it work?. *International Journal of Development Issues*, *14*(1), 41-59.

Phiri, M. W. (2017). The impact of aid on the economic growth of developing countries (LDCs) in Sub-Saharan Africa. *Gettysburg Economic Review*, *10*(1), 4.

Pingali, P. (2007). Agricultural growth and economic development: a view through the globalization lens. *Agricultural Economics*, *37*, 1-12.

Plonsky, L., & Oswald, F. L. (2014). How big is "big"? Interpreting effect sizes in L2 research. *Language learning*, *64*(4), 878-912.

Putsenteilo, P., Klapkiv, Y., Karpenko, V., & Gvozdecka, I. (2020). The role of institutions in the development of agriculture.

Rahi, S. (2017). Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. *International Journal of Economics & Management Sciences*, *6*(2), 1-5.

Rakshit, B., Jain, P., Sharma, R., & Bardhan, S. (2023). An empirical investigation of the effects of poverty and urbanization on

environmental degradation: the case of sub-Saharan Africa. *Environmental Science and Pollution Research*, *30*(18), 51887-51905.

Rao, V. B. (1991). East Asian economies: Trends in poverty and income inequality. *Economic and Political Weekly*, 1029-1039.

Rewilak, J. (2017). The role of financial development in poverty reduction. *Review of development finance*, *7*(2), 169-176.

Roberts, N., Galluch, P. S., Dinger, M., & Grover, V. (2012). Absorptive capacity and information systems research: Review, synthesis, and directions for future research. *MIS quarterly*, 625-648.

Rommel, T., & Schaudt, P. (2020). First impressions: How leader changes affect bilateral aid. *Journal of Public Economics*, *185*, 104107.

Roodman, D. (2009). A note on the theme of too many instruments. *Oxford Bulletin of Economics and statistics*, *71*(1), 135-158.

Roodman, D. (2009). How to do xtabond2: An introduction to difference and system GMM in Stata. *The stata journal*, *9*(1), 86-136.

Rostow, W. W. (1959). The stages of economic growth. *The economic history review*, *12*(1), 1-16.

Ryan, G. (2018). Introduction to positivism, interpretivism and critical theory. *Nurse researcher*, *25*(4), 41-49.

Sachs, J. D., & Snowdon, B. (2005). A Global Compact to End Poverty: Jeffrey Sachs on stabilisation, transition and weapons of mass salvation.

Sakho-Jimbira, S., & Hathie, I. (2020). The future of agriculture in Sub-Saharan Africa. *Policy Brief*, *2*(3), 18.

Sarkar, D., Kar, S. K., Chattopadhyay, A., Rakshit, A., Tripathi, V. K., Dubey, P. K., & Abhilash, P. C. (2020). Low input sustainable agriculture: A

viable climate-smart option for boosting food production in a warming world. *Ecological Indicators*, *115*, 106412.

Sarkodie, S. A., & Strezov, V. (2019). Effect of foreign direct investments, economic development and energy consumption on greenhouse gas emissions in developing countries. *Science of the total environment*, *646*, 862-871.

Saunders, M., Lewis, P., & Thornhill, A. (2012). Research methods for business students. *Essex: Prentice Hall: Financial Times*.

Sehrawat, M., & Giri, A. K. (2016). Financial development, poverty and rural-urban income inequality: evidence from South Asian countries. *Quality & Quantity*, *50*, 577-590.

Sertoglu, K., Ugural, S., & Bekun, F. V. (2017). The contribution of agricultural sector on economic growth of Nigeria. *International Journal of Economics and Financial Issues*, *7*(1), 547-552.

Shahbaz, M., Shafiullah, M., & Mahalik, M. K. (2019). The dynamics of financial development, globalisation, economic growth and life expectancy in sub-Saharan Africa. *Australian Economic Papers*, *58*(4), 444-479.

Shimeles, A., Rebei, N., & Ndikumana, L. (2009). Computations of development financing gaps: Some conceptual and empirical issues. *Development Research Brief*, (6).

Sikandar, F., Erokhin, V., Wang, H., Rehman, S., & Ivolga, A. (2021). The impact of foreign capital inflows on agriculture development and poverty reduction: Panel data analysis for developing countries. *Sustainability*, *13*(6), 3242.

Sikandar, F., Erokhin, V., Xin, L., Sidorova, M., Ivolga, A., & Bobryshev, A. (2022). Sustainable agriculture and rural poverty eradication in Pakistan: The role of foreign aid and government policies. *Sustainability*, *14*(22), 14751.

Slimane, M. B., Huchet-Bourdon, M., & Zitouna, H. (2016). The role of sectoral FDI in promoting agricultural production and improving food security. *International economics*, *145*, 50-65.

Sridhar, A., Balakrishnan, A., Jacob, M. M., Sillanpää, M., & Dayanandan, N. (2023). Global impact of COVID-19 on agriculture: role of sustainable agriculture and digital farming. *Environmental Science and Pollution Research*, *30*(15), 42509-42525.

Ssekibaala, S. D., & Kasule, T. A. (2023). Examination of the poverty-environmental degradation nexus in Sub-Saharan Africa. *Regional Sustainability*, *4*(3), 296-308.

Ssozi, J., Asongu, S., & Amavilah, V. H. (2019). The effectiveness of development aid for agriculture in Sub-Saharan Africa. *Journal of Economic Studies*, *46*(2), 284-305.

Teixeira, A. A., & Queirós, A. S. (2016). Economic growth, human capital and structural change: A dynamic panel data analysis. *Research policy*, *45*(8), 1636-1648.

Temitope DADA, J., & Fanowopo, O. (2020). Economic growth and poverty reduction in Nigeria: The role of institutions. *Ilorin Journal of Economic Policy*, *7*(7), 1-15.

Thaha, R., & Galib, W. K. (2022). Analysis of Modernization Theory in the Perspective of Rostow's Economic Growth Theory. *Journal of Judikaltura*, *1*(1), 24-30.

The World Bank Environmental and Social Framework (ESF) Implementation Update, September 2020, https://thedocs.worldbank.org/en/doc/982711602165538091-0290022020/original/ESFImplementation UpdateOctober2020.pdf.

The World Bank, 'Standard form of Agreement for use by the World Bank Borrowers: Provision of Technical Assistance by FAO under Bank-Financed Projects', vol. 1 (May 2017)

Todaro, M. P., & Smith, S. C. (2020). *Economic development*. Pearson UK.

Todorova, G., & Durisin, B. (2007). Absorptive capacity: Valuing a reconceptualization. *Academy of management review*, *32*(3), 774-786.

Turvey, C. G. (2017). IFAD RESEARCH SERIES 10-Inclusive finance and inclusive rural transformation. *IFAD Research Series*.

Ugwuanyi, U. B., Ezeaku, H. C., & Ibe, I. G. (2017). The impact of official aid on poverty reduction: Empirical evidence from Nigeria (1981-2014) using the ARDL and bound test approach. *European Journal of Sustainable Development*, *6*(2), 111-111.

Umbadda, S., & Elgizouli, I. (2018). Foreign aid and sustainable agriculture in Africa. *Aid effectiveness for environmental sustainability*, 369-395.

Union, A. (2015). Agenda2063 report of the commission on the African Union Agenda 2063 The Africa we want in 2063.

Van Arendonk, A. (2015). The development of the share of agriculture in GDP and employment. *A case study of China, Indonesia, the Netherlands and*

the United States. Master's Thesis, Wageningen University, Wageningen, The Netherlands.

Van Der Sluis, E., & Durowah, O. (2018). Aid for Trade and Foreign Direct Investment: Effects on Poverty Reduction.

Vardi, L. (2012). *The Physiocrats and the World of the Enlightenment*. Cambridge University Press.

Vargha, A., Bergman, L. R., & Takács, S. (2016). Performing cluster analysis within a person-oriented context: Some methods for evaluating the quality of cluster solutions. *Journal for person-oriented research*, *2*(1-2), 78-86.

Victor Bekun, F., & Akadiri, S. S. (2019). Poverty and agriculture in Southern Africa revisited: a panel causality perspective. *Sage Open*, *9*(1), 2158244019828853.

Wambaka, K. (2023). Impact of Bilateral and Multilateral Aid on Economic Growth in Low and Middle-Income Sub Sahara African Countries: Mediating Role of Institutional Quality. *International Business Research*, *16*(1), 1-44.

Wehmeyer, H., Singleton, G. R., & Connor, M. (2023). Introduction—How Swiss Foreign Aid for International Development Benefits Agricultural Development Across Asia. In *Closing Rice Yield Gaps in Asia: Innovations, Scaling, and Policies for Environmentally Sustainable Lowland Rice Production* (pp. 1-26). Cham: Springer Nature Switzerland.

World Bank (2016) *Poverty and Shared Prosperity 2016: Taking on Inequality*. Washington, DC: World Bank. DOI: 10.1596/978-1-4648-0958-3.World Bank (2018) *Poverty and Shared Prosperity 2018: Piecing Together the Poverty Puzzle*. Washington, DC: World Bank.

World Bank Database. (2019). World Bank data. Retrieved from http://databank.worldbank.org/data/reports.aspx?source=world-developmentindicators

World Bank. (2020). *Poverty and shared prosperity 2020: Reversals of fortune*. The World Bank.

World Development Indictors [WDI]. (2019). World Bank data. Retrieved from http://databank.worldbank.org/data/reports.aspx?source=world-developmentindicators

Yiew, T. H., & Lau, E. (2018). Does foreign aid contribute to or impeded economic growth. *Journal of International Studies Vol*, *11*(3), 21-30.

Yu, Y., & Huang, J. (2021). Poverty reduction of sustainable development goals in the 21st century: A bibliometric analysis. *Frontiers in Communication*, *6*, 754181.

Zahonogo, P. (2018). Globalization and economic growth in developing countries: evidence from Sub-Saharan Africa. *The International Trade Journal*, *32*(2), 189-208.

Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of management review*, *27*(2), 185-203.

Zaman, K., Khan, M. M., & Ahmad, M. (2012). RETRACTED: The relationship between foreign direct investment and pro-poor growth policies in Pakistan: The new interface.

Zardoub, A., & Sboui, F. (2023). Impact of foreign direct investment, remittances and official development assistance on economic growth: panel data approach. *PSU Research Review*, *7*(2), 73-89.

Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2013). *Business research methods*. Cengage learning.

Zulfikar, R., & STp, M. M. (2018). Estimation model and selection method of panel data regression: an overview of common effect, fixed effect, and random effect model. *JEMA: Jurnal Ilmiah Bidang Akuntansi*, 1-10.

APPENDIX

List of sampled SSA countries

Angola	Congo, Dem. Rep.	Kenya	Senegal
Benin	Congo, Rep.	Lesotho	Seychelles
Botswana	Cote d'Ivoire	Madagascar	Sierra Leone
Burkina Faso	Equatorial Guinea	Mali	South Africa
Burundi	Ethiopia	Mauritania	Sudan
Cape Verde	Gabon	Mauritius	Tanzania
Cameroon	Gambia	Namibia	Togo
Central African Republic	Ghana	Niger	Uganda
Chad	Guinea	Nigeria	Zambia
Comoros	Guinea-Bissau	Rwanda	Zimbabwe