

OFFICIAL DEVELOPMENT ASSISTANCE, DOMESTIC SAVINGS AND ECONOMIC GROWTH

IN KENYA

BY

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SCHOOL OF ECONOMICS

UNIVERSITY OF NAIROBI

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DECLARATION

The research project presented herein is my original work and it has never been previously submitted to any institution.

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DEDICATION

This study is dedicated to my late father, Mr. Wellington Omenda and my brother Silas Omenda, this accomplishment would not have been possible without them.

ABSTRACT

Official Development Assistance (ODA) supports and targets the welfare and economic growth of developing nations. The primary argument for aid is to increase the recipient country's GDP. The significance of ODA in funding economic expansion and augmenting domestic savings is still debated on in the economics literature. Researchers haven't settled on a conclusive impacts of ODA on domestic savings and economic growth, as they have discovered a variety of contradictory findings. Since 1960, Kenya has been reliant on ODA. The country has been getting substantial ODA to help it deal with its economic problems. Despite the donor funding and government initiatives, the country's domestic savings and economic growth have remained poor, and poverty reduction has trailed behind growth. With this in mind, this research investigated whether ODA has any impact on Kenya's economic development and domestic savings. The research used quantitative design and utilized secondary data from the World Development Indicators 2022, the data spanned from 1960 to 2019. The study employed the Simultaneous equation model, which was analyzed using the 2-Stage least square method. The results showed that ODA affected economic growth of Kenya positively; however, the relationship was discovered to be statistically insignificant. The proxy used for economic growth was GDP per capita. It is computed as the sum of the gross value added by all producers residing in the country, and any appropriate taxes on products, deducting any unaccounted for subsidies excluded in the product values. Additionally, ODA affected Gross Domestic Savings positively and the relation was shown to be statistically significant. The research examined the impact of Trade Openness, GDS, and Government Spending on economic expansion. The results showed that all the three variables had a favorable impact on economic growth, although, only the impact of government spending was found to be statistically significant. Additionally, the research investigated how Trade Openness, Gross Capital Formation and economic expansion, affected GDS. Findings indicated that the variables impacted the dependent variable positively, however, the relationship between trade openness and gross domestic savings was discovered to be insignificant. The research recommends that the donor, the government and private stakeholders should ensure that ODA is only used for the development initiatives for which they were intended, according to the government and the donor community.

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LIST OF ABBREVIATION

2SLS:	<i>Two Stage Least Squares</i>
CV:	<i>Critical Value</i>
ADF:	<i>Augmented Dickey-Fuller</i>
ARDL:	<i>Autoregressive Distribution Lag</i>
DAC:	<i>Development Assistance Committee</i>
EAC:	<i>East African countries</i>
ECM:	<i>Error Correction Model</i>
FDI:	<i>Foreign direct investment</i>
GDP:	<i>Gross Domestic Product</i>
GDS:	<i>Gross Domestic Saving</i>
GNI:	<i>Gross national income</i>
LDCs:	<i>Least developed countries</i>
NGOs:	<i>Non-Governmental Organizations</i>
ODA:	<i>Official Development Assistance</i>
OECD:	<i>Organization for Economic Cooperation and Development</i>
OLS:	<i>ordinary least squares</i>
PRSP:	<i>Poverty Reduction Strategy Paper</i>
SEM:	<i>Simultaneous Equation Model</i>
SSA:	<i>Sub-Saharan Africa</i>
VAR:	<i>vector autoregression</i>
VECM:	<i>Vector Error Correction Model</i>
WWII:	<i>World War II</i>

CHAPTER 1

1.1 INTRODUCTION

The deliberate donation of funds from one country to another is referred to as foreign aid. It involves the movement of goods, services, and money from a government or institutions aimed at helping another country. Aid may come from private institutions, foundations, and other development charities as well as from formal government sources like *Official Development Assistance (ODA)*. *Development Assistance Committee (DAC)* of the *Organization for Economic Cooperation and Development (OECD)* define ODA as “government aid that promotes and explicitly targets the economic development and welfare of developing nations”. Aid comprises of "soft" loans, offering of technical help and grants. Aid can either be bilateral which involves a country supporting another country with resources or multilateral which entails many governments or through an international organization assisting a country. Donors' efforts are typically assessed against a general target in terms of the ODA to GNI ratio. The 0.7 per cent ODA/GNI ratio was established in 1970 and is still used as a broad target today. The main goal of ODA is to help developing nations develop socially and economically. However, existence of various debates on the impact of ODA on growth, from scholarly research projects, have shown mixed and inconclusive findings, resulting in a gap in knowledge of the impact that ODA has on the country's economy.

1.1.1 Historical Trend of Foreign Aid

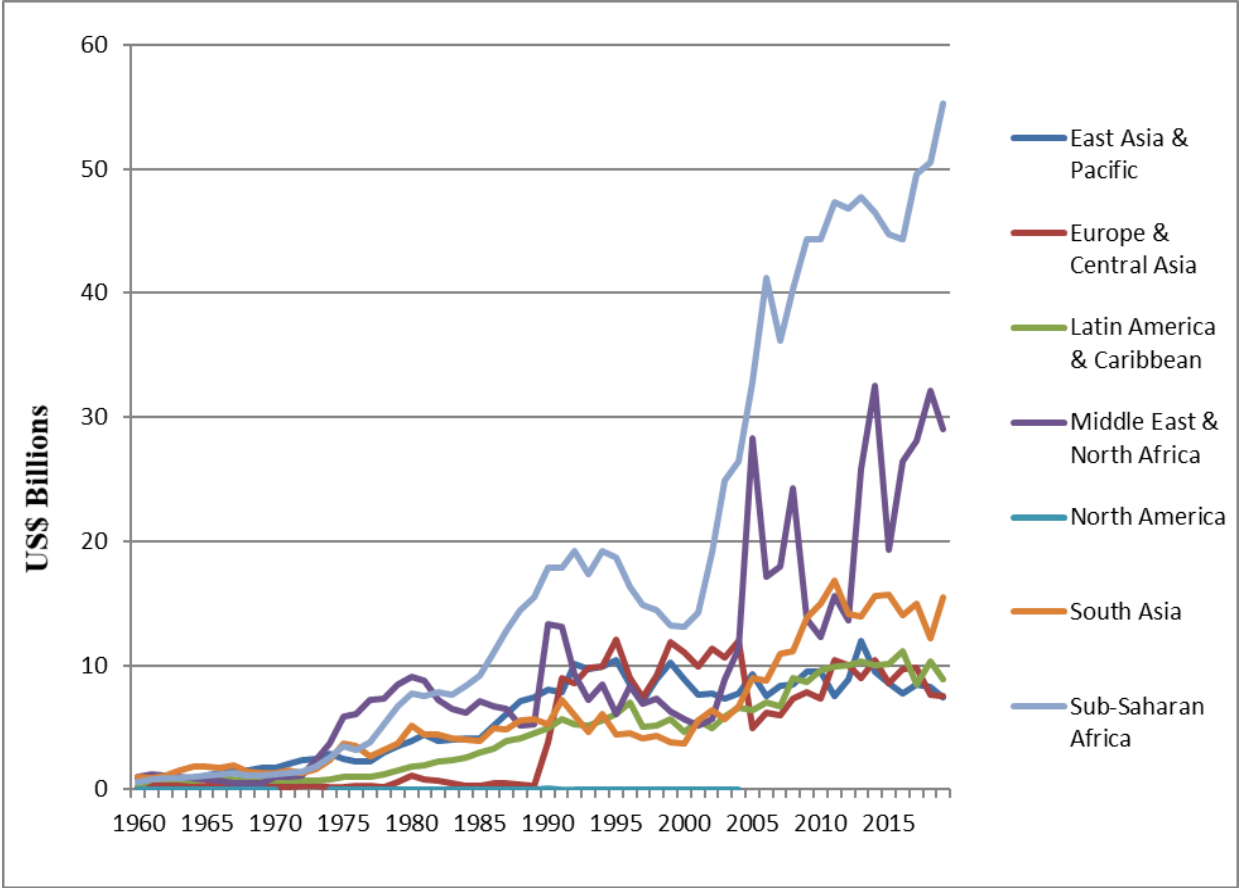
Following the devastation of World War II (WWII), the United States of America decided to support its most impacted allies in order to help them recover. In this light, foreign aid began in 1947, subsequent to WWII, with the institution of the Marshall Plan. George Marshall developed the plan, with the aim to offer financial support for European countries in their efforts to rebuild. The plan had policies geared to end hunger, poverty, desperation, and chaos. The Marshall Plan was effectively extended to other developing nations around the world by President Truman in 1949. The plan was successful on both humanitarian and strategic levels, as governments became more interested in assisting poor people and improving economic conditions in the world's poorest countries.

Foreign aid was administered by governments of recipients who had recently acquired independence and were generally entrusted to employ aid to tackle growth issues during the 1950s and early 1960s. As a result, aid agencies and donor countries ignored the measures related to workforce, productivity, and human capital, and aid inflows into large-scale, capital-intensive initiatives in developing nations. (Elakkad & Hussein, 2021). Conversely, aid policies were adjusted between the late 1960s and the early 1970s, due to numerous developments affecting the global ecosystem, for example, ineffectiveness in the major agricultural sectors among most African beneficiaries and the rise of bureaucratic corruption. As a result, donor countries started to decrease financial assistance in the late 1970s and established fund management measures (Elakkad & Hussein, 2021).

Aid policies were heavily impacted by academic research on the positive benefits of export expansion and trade liberalization on economic growth during the 1980s and early 1990s. As a result, official development assistance was conditional on accomplishment of receiving nations' open-door policies and the removal of international trade barriers. As donor nations grew more flexible in the 1990s, they adopted the "program ownership" approach and began to include recipient nations in the redesign and administration of aid programs (Zorigt, 2011). Additionally, Non-Governmental Organizations (NGOs) were advised to make aid more efficient by linking the donor agencies or governments and receiving countries at the start of the 2000s.

Despite the fact that humanity lives on the same planet, there exists 2 worlds on it: one for the wealthy and the other for the poverty-stricken (Raanan, 1986). Africa is the globe's biggest beneficiary of international aid, as depicted in figure 1, which shows Net ODA and official aid received by different regions from 1960 to 2019.

Figure 1: Net ODA and Official Aid Received by Regions (1960-2019) in Billions of US\$



Data from the *World Bank, World Development Indicators 2022*.

Figure 1 shows that Net ODA and the official aid flows received were equally steadily rising in all the seven (7) regions until the late 1980s when Sub-Saharan Africa (SSA) started receiving the greatest share. Between 1960 and 2000, over \$300 billion in ODA and official aid had flown into SSA. As observed in figure 1, SSA has received far more official development fund than any other region. In much of SSA, macroeconomic performance improved between 1999 and 2005, with increased growth and lower inflation. Aid to SSA rebounded from earlier declines at this time, debt relief gained traction, and donors began to shift to multi-donor budget support. During this period, the Poverty Reduction Strategy Paper (PRSP) was released in late 1999 (Independent Evaluation Office, 2007).

Africa receives billions of dollars in annual foreign aid and development support with the purpose of ending poverty, reducing hunger, enhancing the rule of law, democratic governance, and the

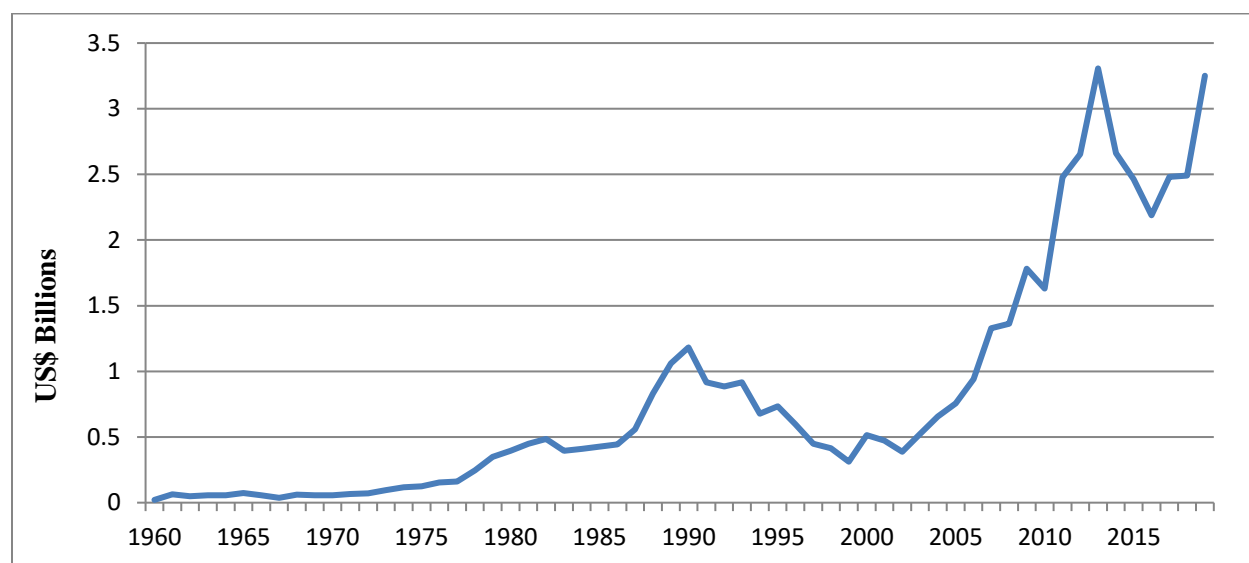
economy without jeopardizing the nation's tranquility. For decades, nevertheless, the influence of ODA on development has been criticized. Literature on the influence of Official Development Assistance on development has yielded no conclusive evidence of ODA's impact on economic growth and poverty alleviation since little exists to indicate the achievement in terms of development.

1.1.2 ODA Flows to Kenya

Since 1960, Kenya relies on Official Development Assistance. Some donors discontinued the aid to Kenya in 1991 because of the failure of the Government to honor its pledges to the donors. However, in 1993, the nation initiated a significant economic liberalization and reform program, that earned its donors' trust. The latter also halted developmental assistance when Kenya failed to comply with the International Monetary Fund's mandated governance reforms in 1997.

Following the 2002 general elections, ODA flows to Kenya began to revive. As discussed in the Consultative Group meetings in 2003 and 2005, higher assistance flows arose from increasing government borrowing to fund infrastructure projects and also grants to aid government initiatives in humanitarian and social acts (UNDP, 2006). As a result, the upsurge in foreign aid portrayed an image of renewed benefactor faith in the regime's attempts in effectively governing the nation while reducing corruption and graft (Herbertsson & Paldam, 2007). Figure 2 shows the net ODA and official aid received by Kenya from 1960 to 2019 in billions of US\$. Aid restrictions and external challenges like the world financial crisis and the rising oil price can explain the variation.

Figure 2 : Net ODA and official aid received by Kenya (1960-2019) in Billions of US\$



Data from: *World Bank, World Development Indicators 2022.*

Figure 2 illustrates that Official Development Assistance and official assistance flows grew from US\$394.79 million in 1980 to US\$1181.29 million in 1990, before plummeting to US\$ 311.25 million in 1999, and then recovering after. The drop was caused by multilateral and bilateral donors suspending ODA to Kenya in 1991 and 1997 (Mwega, 2009). Additionally, in 1993, Net ODA to Kenya significantly decreased as a result of the government breaking its promises to donors, with two significant episodes of donor withdrawal and "aid freezes." (Mule et al., 2002). The 2002 General Elections and commitments to changes hastened the recovery (Veledinah, 2014).

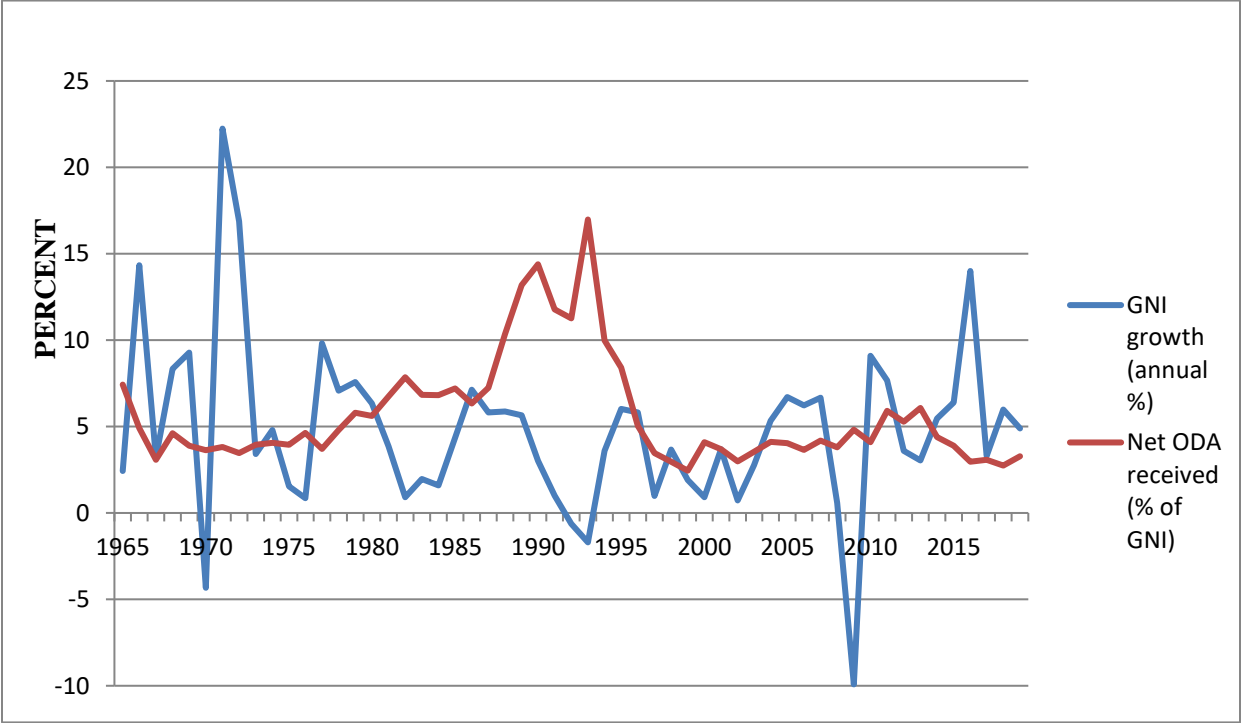
Kenya, like every other developing country, aims to maintain a sustainable economic growth rate. Kenya, on the other hand, has had a bumpy road to development, having gone through several turbulent periods. In the period from 1963 to the beginning of 1980, the country saw strong economic growth and notable social achievements. Aid was also plentiful during this time. From 1980 to 2002, there were macroeconomic imbalances, poor growth, social welfare losses, and rising poverty levels. It was marked by a freeze on aid and donor sanctions. Following the 2002 General Elections, Kenya's economy entered a new era, with a rebound in performance. In addition, ODA inflows increased throughout this same period.

A re-commitment of numerous donors enhanced aid to the nation in financial year 2004/2005. ODA dedications in the budget increased to roughly 5 percent of Gross Domestic Product

(Gichanga, 2018). During the fiscal year, budget deficits would have resulted in increased domestic borrowing, taxes, and a cut in government spending if donors had not intervened (Uneze, 2011). Despite the fact that Kenya's GDP grew by 6.9 percent in 2007, up from 0.5 percent in 2002, the post-election violence crisis had a detrimental effect on the nation, lowering it to 0.2 percent in 2008. In its 1st medium-term plan covering from 2008 to 2012), *Kenya Vision 2030* aimed for 10% growth rate; however, the yearly growth rate in 2012 was only 4.6 percent. The GDP remained unstable, where little to no changes was seen; in 2019 the GDP growth rate was 4.981 percent.

Figure 3 shows Kenya’s GNI growth (annual %) and Net ODA received (% of GNI) over the period (1965-2019)

Figure 3 : GNI growth (annual %) and Net ODA received (% of GNI) by Kenya (1965-2019)



Data Source: World Bank, World Development Indicators 2022.

The average annual growth rate between 1965 and 1980 was 7.11 percent. The decade 1980-2002 shows negative or slow GNI growth, which can be linked to severe droughts (1983-1984, 1991-1992), rising oil prices, a military coup attempt in 1982, aid embargos (1991 and 1997), and

unfavorable economic environment for investment (Valedinah, 2014). Despite the fact that Kenya's GNI grew at a pace of 6.68 percent in 2007, up from 0.73 percent in 2002 (because of the execution of the 2003-2007 strategy aimed at recovering wealth and creating jobs, as well as a favorable external environment), the post-election violence, drought, and the worldwide financial crisis had a detrimental impact on the nation, lowering it to 0.57 percent in 2008 and further to -9.9 percent in 2009. Growth accelerated to 9.1 in 2010 as a result of counter-cyclical demand management programs and favorable climate conditions that increased agricultural production. As a consequence of a rise in worldwide food and oil prices, and also drought in the republic, the nation's economy suffered since growth reduced to 7.67 per cent in 2011 and further to 3.04 per cent in 2013 (Kimenyi et al., 2015).

Consistent with its robust performance from 2014, Kenya's economy grew steadily in 2016. This was aided by the presence of a stable macroeconomic environment and high growth in economic sectors, including tourism, real estate, mining and quarrying, construction, electricity supply, and transport and storage (Kenya Economic Report, 2017). However, the country experienced a decline in growth to 3.3 percent in 2017 due to the prolonged electioneering period and continued drought effects experienced in the year (Kenya Economic Report, 2018).

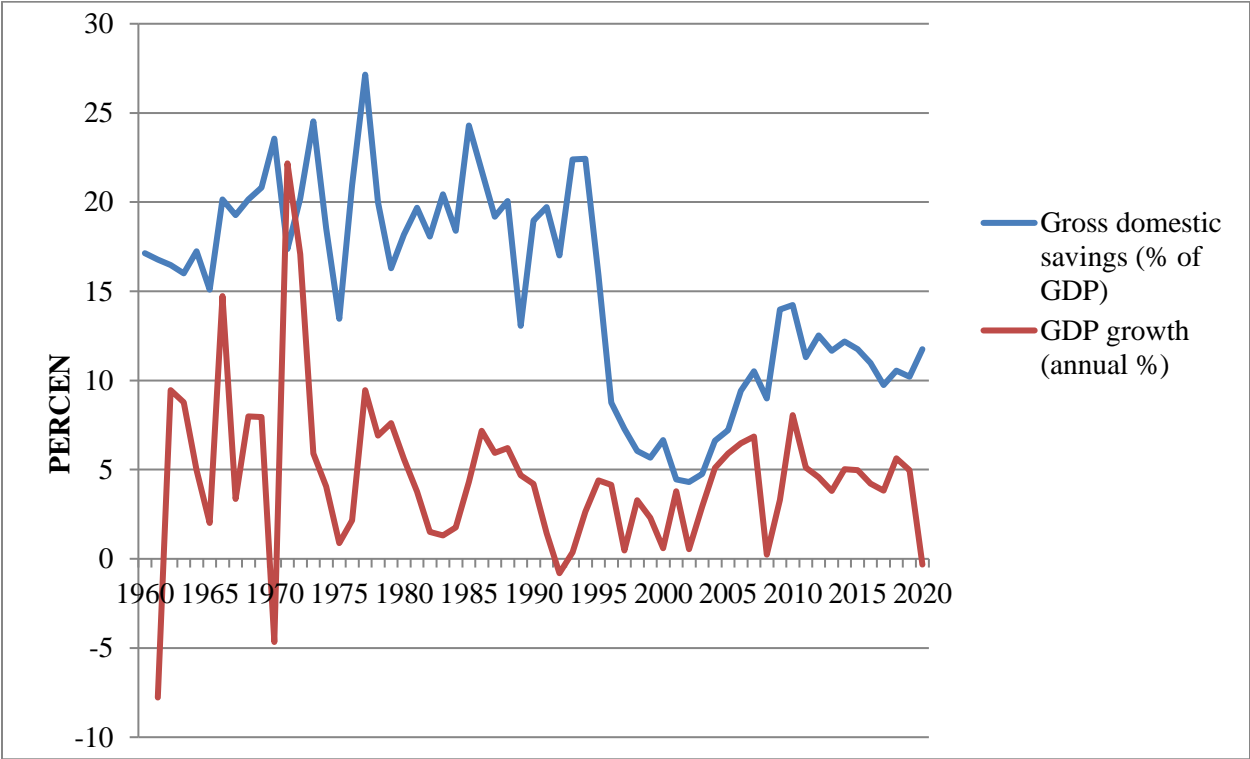
1.1.3 ODA and Domestic Savings

Since the commencement of the subject, investments and savings have been at the center of economic writings as a way of attaining economic progress. Higher investment and savings rates are linked to higher GDP growth rates across nations and over time, and vice versa. As a result, a critical prerequisite for attaining higher rates of economic development is to transfer savings to various investment areas (Morsi & Moscardini, 2001). Foreign borrowing or savings can be used to close a savings-to-investment gap, with foreign capital inflows coming in a variety of forms, including direct and indirect foreign investment, foreign aid and grants, and export returns (Thirlwall, 2004). If these inflows fail to occur, the nation's economic growth would be slowed, and domestic resources will be used inefficiently (Moreira, 2005).

Many African countries gained independence in the 1960s, but lack of human resources, foreign exchange, and savings impeded their development. As a result, foreign aid was seen as a tool for boosting market mechanisms and, as a result, stimulating economic growth through supporting

investments (Njoroge, 2020). As stated in the National Development Plan 1997-2001, Kenya realized the importance of domestic savings after the suspension of foreign aid in 1991, when ODA inflows decreased. The country’s savings rates have remained stubbornly low despite the republic's financial liberalization (Kahangi & Muturi, 2013). To address economic issues such as low domestic savings, the government created the Vision 2030 development roadmap, which indicates that oversee development assistance is one of the major ways for addressing the low savings to GDP ratio constraint (Republic of Kenya, 2007). Figure 4 depicts the behavior of domestic savings as a per centage of GDP and GDP growth, which displays significant variations in value from 1960 to 2020.

Figure 4 : Kenya’s Gross Domestic Savings (% of GDP) and GDP growth (annual %) from 1960 to 2020



Data Source: World Bank, World Development Indicators 2022.

The importance of domestic savings in enhancing economic growth was recognized in Kenya as early as 1963, when the country gained independence. Kenya's per capita income remained low (\$103.8) with the GDS standing at 16 percent at independence, making it difficult for people to make ends meet while also having enough money to invest and pay taxes. To boost domestic

investment, the government borrowed from foreign governments and international institutions (Republic of Kenya, 1965). Kenya achieved a growth rate of 19.7 percent in investment between 1964 and 1973, this was fuelled by the GDS which was averagely 19.5 percent during the aforementioned period, by that time, the country's rate of capital formation was ranked among the highest in the globe, and the government understood the need to cut consumption spending and reduce debt in order to promote more investment finance from within the republic, the nation's average annual growth rate was 8.2 percent. (Republic of Kenya, 1974).

The country experienced a sharp decline in GDS from 24.5% of GDP in 1973 to 13.5% in 1975, before rising to an all-time high of 27.1 per cent in 1977, the economy also experienced a noteworthy increase in GDP from 0.9% in 1975 to 9.5 per cent in 1977. After which, both the GDS and GDP developed a downward trend with GDS reducing to 16.3 percent and GDP growth declining to 7.6 percent in 1979, the economy experienced an uptick of the GDS in the early 1980s. The rising government deficit, exacerbated by the 1979 oil crisis, the early 1980s food crisis, the debt crisis, and the growing government wage bill, was responsible for the negative trend in domestic savings (Kibiru, 2008). The country experienced a drastic decline of GDS from 22.4% of GDP in 1994 to 4.5% in 2001. The National Development Plan (1997-2001) attributes the undesirable trend to; elevated levels of foreign and domestic debt, a lack of variety in savings instruments, insufficient institutional framework for capital markets, high taxes, prohibitions on foreign investment and low deposit interest rates. The country's GDS continued to rise gradually after the election of a new government in 2003, with the highest GDS of 14.2 percent and the highest economic growth of 8.1 percent occurring in 2010. In the period 2011-2020 the average GDS was 11.3 percent of GDP.

1.2 STATEMENT OF THE PROBLEM

The primary argument for aid is to increase the recipient country's GDP. The country is frequently confronted with inadequate domestic savings and poor foreign exchange income. These disparities implies that the nations will struggle to reach their economic development targets and are forced to seek capital assets which comes as ODA to keep the economy afloat (Guillaumont & Chauvet, 2001). Developing countries lack the financial means to successfully address their economic challenges; hence they rely on ODA to supplement their resources.

The significance of ODA in funding economic expansion and augmenting domestic savings has been debated in the economics literature. Researchers haven't settled on a conclusive impact of ODA on domestic savings and economic growth, as they have discovered a variety of contradictory findings. Some studies, for example, Durbary et al., (1998); and Juselius et al., (2014), indicate that ODA impacts economic growth positively. Over the period 1974 to 1996, Hatemi and Irandoust (2005) investigated the link between foreign aid and economic growth in a group of developing nations (Botswana, Ethiopia, India, Kenya, Sri Lanka, and Tanzania). They discovered that foreign aid had a beneficial and considerable impact on economic growth. Mckee and Bells (2013) state that ODA has a remarkable positive impact on economic growth. Also, Refaei and Sameti (2015) states that foreign aid has a positive, statistically significant, and sizable impact on economic growth in the long run, implying that it is more productive than domestic resources and other capital inflows.

According to Chenery and Strout (1966), developing nations are too impoverished to save enough for investment. They are defined by a subsistence agricultural economy in which all produce is consumed rather than saved or invested. As a result, they require foreign aid to make investments and achieve economic growth. Veledinah (2014) states that due to the inadequate financial resources in Africa, ODA is assumed to provide additional foreign exchange, supplement domestic savings, and aid in the development of domestic capability, to hasten growth and lower poverty.

In contrast, some scholars have argued that ODA has a negative impact on growth. In *Dead Aid*, Dambisa Moyo states that development aid has a negative link to growth; she states that official aid is cheap money that encourages corruption and destroys nations, resulting in a culture of dependence and economic laziness (Moyo, 2009). The development of government bureaucracies

and unpredictable macroeconomic policies are to blame for this failure. Foreign aid initiatives aimed at developing countries have produced a "vicious circle." due to some bad policies and mechanisms of implementation since the majority of foreign solutions offered through aid have harmed the receiving country's capabilities.

William Easterly (2006) contends that economic growth can be experienced in nations that do not receive aid. Bauer (2000) stated that poor countries are overly dependent on foreign aid which is used to finance the government and non-productive sectors, reducing their efforts to generate growth within their economies. Elakkad and Hussein (2021) from their research on the effect of ODA on domestic savings and economic growth in Egypt concluded that ODA has a beneficial effect on gross domestic savings and a detrimental effect on economic growth.

According to a study done by Kibiru (2008) on the impact of foreign aid on domestic savings in Kenya, the relationship between the two variables is negative and significant. Foreign aid inflows, according to Griffin and Enos (1970), would supplant domestic savings, acting as substitutes instead of complements. According to the researchers, the expected assistance inflows is seen as a rise in income, and will hence be utilized to boost consumption. Wako's (2011), findings indicated that ODA has a negligible effect on economic expansion. As a result, it's unclear if ODA contributes much to economic growth.

Kenya has been getting substantial ODA to help it deal with its economic problems. Despite the donor funding and government initiatives, the country's domestic savings and economic growth have remained poor, and poverty reduction has trailed behind growth. The fall in performance could be explained by a variety of qualitative and quantitative factors, but the downward trend implies that Kenya's economic problems go beyond its low-income base, and it also raises doubts about the impact of ODA on domestic savings and growth. With this in mind, this research investigated whether ODA had any significant impact on domestic savings and economic growth in Kenya.

1.3 OBJECTIVES OF THE STUDY

The general objective of this study was to examine the impact of ODA on domestic savings and economic growth in Kenya.

The specific objectives were to:

1. To examine the relationship between ODA and economic growth.
2. To examine the relationship between ODA and domestic savings.
3. To provide recommendations based on the findings of the study.

1.4 JUSTIFICATION OF THE STUDY

Kenya is still grappling with economic difficulties such as poverty, nearly 6 decades since independence (Kenya Economic Update, 2021). To supplement its limited domestic resources such as domestic savings, Kenya continues to rely on ODA. Despite the influx of ODA, social and economic growth remains stagnant. Therefore, as Kenya's government looks into receiving foreign aid from developed countries and international organizations to help expand the economy by providing infrastructure and other development projects, it's critical to assess the extent to which these aids can help the country flourish. The findings of this study provides insights, on whether ODA is a suitable tool for boosting Kenya's domestic savings and economic growth, especially for policymakers, since the findings provides policy makers in-depth knowledge on matters ODA, domestic savings and growth. The research serves as a foundation for policy creation, coordination, and implementation by decision makers.

Although this topic has been considered by other researchers, this study sheds fresh light on it by introducing a new variable i.e. domestic savings, since majority of the researchers have solely concentrated on the link between ODA and the growth of the economy and not ODA and domestic savings, the study used expanded data that spanned the years 1960 to 2019. The research aids in academic studies and advance the work of earlier researchers on the topic. The majority of studies in this area focus on cross-country aid-growth analysis and therefore, the paper concentrated solely on Kenya. This study is especially significant since it contributes to the literature on ODA effectiveness in Kenya and informs policy debates on the aid-growth and aid-domestic savings nexus.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This section shall concentrate on providing a succinct overview of relevant literature. The section starts with reviewing the theory, then moves on to the empirical research, and finally concludes with a summary of the literature.

2.2 THEORETICAL LITERATURE

Development and growth models show that the primary elements affecting long-term development and growth are the supply of labor and capital, along with their productivity and technical advancement. Low domestic savings in developing nations make it impossible for them to make the necessary investments, and their unsustainable current account deficits preclude them from importing capital goods for investment. The Harrod-Domar model, the big push theory, the two-gap model, and the Solow-Swan Growth Model are all discussed in this section.

2.2.1 The Harrod-Domar model

The primary theory to emphasize the part savings and investment play in economic development in developing nations was the Harrod-Domar model. According to the concept, the amount of savings and the capital-to-output ratio in a closed economy are the two main determinants of economic growth (Domar, 1946). Savings levels increase investment levels which in turn boost growth and lower capital-to-output ratios result in higher growth rates. According to Harrod and Domar, the low investment, output, and savings all feed into one other in a vicious cycle that contributes to the low levels of growth in developing nations. It is assumed that capital gained through investments drives economic growth, and that accumulation of savings makes this feasible. Hence, to attain growth, it is essential to increase savings, which will result in a dynamic cycle of self-sustainability.

The Keynesian macroeconomic theory, as stated by Senbet and Senbeta (2009), is where the theory originated because it concentrated on how investment plays a part in economic growth. The argument goes that ODA can be utilized as an investment to increase growth if savings are not

used for that purpose. The disadvantage of this model includes the fact that it's built on industrialized nations following the Great Depression and is thus impractical for developing nations because it will be impossible to affect savings in nations with extreme poverty. ODA can be utilized in place of savings because the model implies a relationship between savings, investments, and economic expansion in order to make it applicable to developing nations. Later, this model was improved to become the two-gap model.

2.2.2 The Big Push Theory

The big push theory was created by Professor Paul Rosenstein-Rodan in 1943, and in 1989, Murphy, Shleifer, and Robert Wvishny made modifications to it. According to the theory, poverty traps, which are caused by a variety of circumstances including poor savings, insufficient production capacity, and a big population, hinder economic growth and development. Consequently, a big push, including a short-term influx of capital in the form of ODA, boosts investment in numerous areas, resulting in a takeoff into self-sustaining growth. According to Rostow (1990), ODA was a requirement for the start of self-sustaining development. Sachs et al. (2004) argued that to boost economic growth and combat poverty, sub-Saharan Africa needs a big push from ODA. Additionally, Sachs explains that because countries are too impoverished to save, the growth rate is hampered (Sachs 2006). The theory further presupposes that a nation will cease receiving aid when it reaches self-sustaining growth. Sachs (2005) estimated that aid will end in 2025.

On the contrary, after reviewing Sachs' claims, Boone and Easterly concluded that they were incorrect. Easterly (2006) found minimal evidence to support take-offs brought about by aid and investment and no proof to substantiate poverty traps. He claimed that in contrast to Zaire and Chad, which did not expand or even fell while receiving large foreign aid, some poor countries, including China and India made pretty good progress out of poverty without much foreign help. According to Boone (1994), the big push theory is incorrect since infusing money just increases the purchasing power of low-income people, increasing consumption without generating any private investments.

2.2.3 The Two-Gap Model

The Harrod-Domar growth model states that a closed economy's full capacity growth rate is jointly defined by the capital-output ratio and the saving rate (Harrod, 1939; Domar, 1946). By adding a foreign exchange deficit, Chenery and Strout (1966) transformed the Harrod-Domar model into a 2-gap model. Foreign aid is seen as closing the smaller gap that is regarded as binding. The two-gap strategy for economic expansion is predicated on the notion that the savings gap and the foreign exchange gap are 2 distinct barriers to achieving a set level of expansion in developing nations. The first gap, known as the saving gap, was defined as the sum of investments needed to attain a specified degree of growth using domestic savings that are currently available. A savings gap occurs, according to Chenery & Bruno (1962) and Chenery & Adelman (1966), once local savings levels are less than the investment levels needed to attain the growth required. The economy can grow at the desired rate by bridging this savings gap with foreign aid. The second gap, known as the trade gap, referred to the discrepancy in the number of imports required to achieve a given production. The latter gap is also referred to as the foreign exchange gap if it happens as foreign exchange earnings. International aid can be employed to bridge the foreign exchange gap created if net export revenues are less than the foreign exchange needed.

The model presumes that a certain level of investment would boost growth. In order to reduce the disparity by foreign exchange, it is important for investment be confined in forms of incentives confined by liquidity and advantageous to invest in. Aid can just cover consumption costs when there are weak incentives to invest.

Bacha added the fiscal gap to the two-gap model, turning it into a three-gap model (Bacha, 1990). ODA was anticipated to fill the most critical funding shortages, spurring more investment and, in turn, economic growth and beginning the process of economic development. Weisskopf (1972) contends that aid substitute's domestic savings. The model is overly simplistic as it postulates that aid completely translates into an investment, which then completely translates into growth.

2.2.4 The Solow-Swan Growth Model

The Solow-Swan model was created by Solow and Swan in 1956, and it assumes that when capital, labor, and technology are used, a stable state of equilibrium is reached. This model, in contrast to the Harrod-Domar model, takes a different approach to understanding how economic growth, capital accumulation, and economic development are related. In contrast, the neo-classical theory postulates that investment will not result in economic growth due to diminishing returns from capital accumulation. The concept shows that a rise in either labor or capital results in diminishing returns; as a result, increasing capital will only temporarily boost economic expansion since it increases the ratio of capital to labor.

Three major assumptions underpin this model. It starts by assuming that an increased level of technology results in increased labor productivity, which in turn determines the production levels of an economy. Second, the application of capital and its accumulation are factors that affect growth. And finally, a rise in economic output is a result of labor and capital. The Cobb-Douglas production function forms the basis of the model (Cobb & Douglas, 1928). The model implies that improvements in technology result in higher per-unit labor productivity. However, the issue is that there is a shortage of workers and/or jobs, which raises the concern that if the economic output is solely dependent on the availability of labor, the output will be very constrained. However, the model assumes that technical breakthroughs will have multiple economic benefits, leading to higher rates of economic growth. Mester (2015) cites research in which variations in measured inputs only partially explained variations in GDP per capita to support his claim that sometimes empirical data and the neo-classical model agreed.

2.3 EMPIRICAL LITERATURE

The literature on aid-growth and aid-savings nexus has evolved, and views on the topic either finds a significantly negative or positive relationship, while others find a bi-directional and an insignificant relationship. The conflicting results of the research conducted at the micro- and macro levels are a seemingly insoluble paradox in the literature on aid efficacy. The empirical literature has been organized into three categories of thought; first, positive significant relationship; second, negative significant relationship; and third, bi-directional and insignificant relationship.

2.3.1 Positive significant relationship

In the 1950s and 1960s, Papanek (1973) conducted cross-sectional regression analyses on 34 and later 51 nations, respectively. His research indicates that domestic savings and all types of foreign flows are independent factors. Finally, he came to the conclusion that international aid has a beneficial effect on economic expansion because, unlike domestic savings, it could close both the foreign exchange and savings gaps.

A cross-sectional analysis was conducted on 80 least developed countries (LDCs) from 1971 to 1990 by Fayissa and El-Kaissy (1999). They concluded that because international aid supplements domestic savings rather than substituting for them, it has a beneficial impact on the growth of the economies of developing states. Cross-sectional data was employed in most research on the subject under study, such as those by Papanek (1973), Fayissa, and Elkaissy (1999). Bhattarai (2005) attempted to research on the effect of aid on Nepal's economic expansion and its link to savings, investment and per capita income and found that aid went hand in hand with growth, savings, and investment. Moreira (2005) explored the effect of foreign aid on economic expansion and concluded that the former had a beneficial effect on the latter. In addition, compared to the long run, aid had a lesser impact on economic expansion in the short run.

A study done by Sakyi (2011), on foreign aid, trade openness and economic growth in Ghana, using the ARDL bounds test approach to cointegration, showed that trade openness and foreign aid both significantly and positively influenced growth. Fasanya and Onakoya (2012) conducted a study using Nigeria as a case study to research on the effect of ODA on economic expansion in Africa. The researchers employed a neo-classical modeling analytical framework, combining numerous techniques, to concentrate on the period spanning 1970 and 2010. They concluded that the inflow of aid into the nation promoted economic growth by boosting domestic savings and investments, freeing up resources that improve domestic investment. Tofik (2012) undertook a study on ODA, public spending and economic growth in Ethiopia, with data from 1975 -2010 and found that ODA had a beneficial contribution to the development of Ethiopia. Mckee and Bells (2013) examined the combined impact of ODA and technical cooperation grants on GDP per capita in 30 sub-Saharan African nations. According to their analysis, growth over the studied period significantly increased with ODA, international trade, human capital and domestic investment.

They concluded that foreign aid, regardless of its source or form, should be focused on initiatives that will have the biggest impact, such as trade, job training, and public health and education initiatives.

In a research conducted by Bruckner (2013) of 47 LDCs between 1960 and 2000, the study concluded that real per capita GDP growth was significantly positively impacted on average by foreign aid, only after the growth regression has been corrected for the quantitatively significant detrimental reversible causal effect of per capita GDP growth on foreign aid. Mitra (2013) studied the long-term influence of foreign aid and Cambodia's development. As per the structural vector error correction model (VECM) estimations for the period 1971 to 2009, foreign aid stimulates the nation's expansion economically when the former is intended to help the industrial sector grow. Ojiambo (2013) studied how investment and economic expansion in Kenya from 1966 to 2010 were impacted by the predictability of foreign aid, where he employed the autoregressive distribution lag (ARDL) approach. He concluded that public investment and economical expansion in the nation were positively impacted by foreign aid.

Suphian and Kim (2017), assessed ODA affects the expansion of East African nations economically, between 1980 and 2014, the study used the ARDL approach. They concluded that ODA effects on the nations' expansions were positive and significant in all the countries in the long-term. However, in the short-term ODA effects on the expansions were negative and significant in Uganda and Kenya. Njoroge (2020) conducted a study with the main focus on how international aid affects Africa, with the central concentration on comparative analysis of both Angola and Ghana. According to the research, foreign aid enabled Ghana and Angola thrive economically by providing funds for important sectors including telecommunications, education, infrastructure, agriculture, and health. The results also showed that foreign aid reinforced government policies and promoted development in the studied nations.

2.3.2 Negative significant relationship

The ARDL approach was used by Ouattara to examine the effects of project aid and program aid influx on national savings in the case of Côte d'Ivoire during the years 1975 to 1999. The research discovered that project aid had a long-term detrimental effect on local savings while the programs have a favorable influence, both effects being statistically significant; Short-term growth in

domestic savings is linked to program aid inflows, while the impact of the project is negative, but insignificant. According to Djankov et al. (2006), international aid hurts economical development but has a good impact on government spending. The authors states that this unfavorable relationship can be attributed to the ease with which aid funds can be used for non-productive, non-investment-inducing activities. This implies that how these monies are distributed among the many economic sectors determines how effective they are in achieving economical expansion.

Mallik (2008) explored the relationship between international aid and economical expansion in his cointegration analysis of the 6 most impoverished African nations. In 5 of the 6 countries, it was discovered that there was an unfavorable relation between the two variables in the long term. Low tax revenue in the five nations and the use of aid to make up for it, the unpredictability of aid, and the utilization of assistance for humanitarian purposes instead of for investment were all factors in the negative association. Kibiru (2008), establish the presence of an adverse link between foreign aid and national savings, from her study on the impact of foreign aid on domestic savings in Kenya over the period 1970-2006. Foreign aid is not enough for developing nations; they also need wise economic management (Abuzeid, 2009). Foreign aid, according to Abuzeid, weakens governance; hence any aid efforts should be focused on enhancing governance before focusing on economic development, especially in developing nations with weak institutions.

Erega, Sede, and Ibidapo (2012) argue that the inefficiency of aid in the majority of developing African nations can be attributable to money being diverted to wasteful consumption. They used the pooled panel regression method to examine whether uncertainty affected the link between aid, investment, and growth in 10 ECOWAS nations and discovered that foreign aid hurts growth regardless of whether there is uncertainty or not, although the impact of uncertainty was not statistically significant. They concluded that to increase the efficiency of aid in the region, donor organizations and recipients should set up procedures for monitoring and auditing. Instead of using foreign aid as a way to encourage economic expansion, they advised using it to solve other issues that are harmful to regional economic progress. Foreign aid has a detrimental effect on the economical expansion of the East African countries (EAC), according to Liew et al (2012) analysis of five EAC countries from 1985 to 2010.

Sabra and Eltalla (2016), conducted a study on foreign aid, domestic savings and economic growth in 8 nations from 1977 – 2013, with the estimation employed being a simultaneous equation model (SEM) and dynamic panel data system analysis. They discovered that foreign aid and economic growth had a negative relationship and the former didn't complement national savings, instead it crowded it out. According to a study by Wolgast (2018), on foreign aid for economic growth, focusing on Uganda, with data from 1987 to 2011, demonstrated that international aid harms economical expansion over the long term.

2.3.3 Bi-directional and Insignificant relationship

Basnet (2013) researched on how foreign aid affected domestic savings and economic expansion in 5 south Asian nations. He discovered that while aid funds have favorable effects on economic expansions, their deleterious influence on local savings in the sample nations balances that out. He concluded that the growth rates of the 5 countries examined in the period spanning from 1960 to 2008 were favorably and significantly impacted by aid. However, rather than enhancing domestic savings, foreign aid crowds it out. Alamirew (2013), explored the influence of foreign aid on national savings in Ethiopia from 1981-2011, employing multivariate cointegration analysis. The findings indicate that multilateral and bilateral aid both impacts domestic savings positively and negatively, respectively. Hence foreign multilateral aid boosts economic growth, while bilateral aid is detrimental to the growth of the economy. Elakkad & Hussein (2021), explored the effect of ODA on domestic savings and economic growth in Egypt, from 1965-2020. They discovered that ODA hurts economic growth, but has a beneficial effect on national savings. According to research done by Erkinharju (2021) on the impact of ODA on the expansion of the economy, with a dataset comprising 169 countries from 1960-2019, the author concluded that the former variable had no effect on the latter.

Bowels (1987) used cross-sectional and time series data for 20 developing nations from 1960 to 1981 to conduct a Granger causality test on the nexus on the 3 variables under study. He discovered that the type and direction of causality varied among the studied nations, leaving the test results unclear. Additionally, he found that savings and foreign aid had no causal relationship in 10 countries. Burke and Ahmadi-Esfahani carried out research on 3 South East Asian nations between 1970 and 2000, through SEM in which growth and savings were predicted. They examined how international aid influenced economical expansion. They discovered that the former had an

insignificant effect on the latter. Additionally, aid did not replace domestic savings or even support them in these nations.

Rajan and Subramanian (2008) didn't discover any relationship between aid and growth. Even with sound institutional policies, they did not discover any data demonstrating that some forms of aid are more effective than others. The writers came to a conclusion that the connection between aid and growth needs to be reassessed. The distribution of results, the trend of aid effectiveness findings over time, and whether learning by doing has enhanced assistance effectiveness were all examined by Doucouliagos and Paldam (2009) employing meta-regression analysis. Their findings suggested that aid had little beneficial impact on growth, suggesting that despite ODA's 40-year history, aid has not been successful and that the aid business has not learned by doing. They came to the conclusion that the Dutch disease on exchange rates accounts for the observed inefficiency of aid.

Wako (2011) examined the sources of aid and studied the impacts of bilateral and multilateral aid on economical expansion in 42 SSA nations. He concluded that dividing up the various sources of aid does not make a difference because he discovered no discernible impact of any of the sources of aid on growth. Wako discovered, however, that other elements, such as sound institutional practices, trade openness, the buildup of physical capital, and foreign direct investment, were responsible for the growth of the economies. According to Ekpo and Afangideh (2012), study on ODA and economic performance in Nigeria from 1970-2010, authors concluded that ODA and economic development had a positive but insignificant relationship.

Kolawole (2013) used the two-gap model, the augmented Dickey-Fuller (ADF) test, the error correction model (ECM), and other econometric approaches to study the link between ODA, FDI, and real economical expansion in Nigeria from 1980 to 2011. According to his findings, FDI negatively impacts growth in Nigeria while ODA does not affect it. According to a study conducted by Gichaga (2018), on how ODA impacted Kenya's expansion economically between 1970- 2016, employing the ARDL Bounds test, she stated that ODA had a beneficial and insignificant effect on GDP. Abdou-Razak, Cheng and Watara, analyzed the ODA-growth nexus in Togo, for the period 1970-2018, using the unrestrictive vector autoregression (VAR) approach and discovered

that ODA had a negative and insignificant impact on the economy of the nation studied. The Granger causality test showed that there was no causal nexus between the variables.

2.4 OVERVIEW OF THE LITERATURE

The section discussed 4 theories in relation to the aid, savings and growth discussion. The first theory is the Harrod-Domar model, which suggests that increased savings will result in increased investments, which would eventually spur growth. The second theory is the big push theory, it recommends injecting a lot of aid into an economy to kick-start its transition to economic self-sustainability. The third theory is the two-gap model which augments the Harrod-Domar model in that aid may be used to close any gaps between a nation's needed investment expenditure and savings. The fourth theory is the Solow-Swan Growth model, which states that economic output is driven by both labor and capital, and that a capital increase will just temporarily boost economic growth. Concerns about the potential inapplicability of some of the theories were raised.

Examining the studies on the link between aid, savings and growth reveal that there is still much to learn about this topic. Diverse scholars that conduct empirical evidence-based research have differing opinions about the theoretical literature. On the issues of aid, savings, and growth, the arguments haven't managed to come to a firm conclusion. However, the one point on which the majority of academics agree is that to ensure the effectiveness of aid, top-notch institutes are necessary. Others discovered that ODA hinders savings and growth, while yet others discovered an insignificant positive or negative association between ODA, savings and growth. Some researchers discovered that ODA promotes savings and growth, but only in the presence of sound macroeconomic policy. Therefore, some findings depict a significant relationship (positive and/or negative) while others show a negligible relationship in the aid, savings and growth debate.

The majority of earlier research combined all the developing nations and treated them as a single homogenous group, despite the fact that developing nations varied greatly in both observable and unobservable ways. The socioeconomic, economical, and political aspects of developing nations vary according to their level of development. Therefore, the studies don't satisfactorily answer to country-specific questions about the political, institutional, administrative, infrastructural, and policy environments due to the reliance on cross-sectional data. Clearly, this limitation is to blame for the disparate effects of aid and savings on global growth. To fill this gap, my study focused

solely on Kenya. The majority of research on the topic conducted in Kenya solely looked at ODA and economic growth, thus my analysis contributes to the literature by using expanded data that covers the years 1960 to 2019 and by including a new variable, namely domestic savings, due to the fact that most research have only examined the relationship between ODA and economic growth and not domestic savings. In addition, although humanitarian help and military aid are not intended to promote growth, some country-specific studies in the literature employ total aid in the analysis, and while others take a short period into consideration. These shortcomings are addressed in this analysis by taking into account ODA intended to promote growth and development over a longer time period (1960 to 2019).

CHAPTER 3

METHODOLOGY

3.1 Introduction

This section details the research methodology. The research design, theoretical framework, model specifications, data sources, descriptions of the various variables and data analysis are highlighted and discussed in this chapter. The chapter also discusses Time Series Data Analysis and diagnostic tests.

3.2 Research Design

This was a quantitative study that made use of secondary data gathered via desk research. It employed a descriptive, correlational and non-experimental design and to establish any relationships between ODA, domestic savings and economic growth.

3.3 Theoretical Framework

The empirical model is motivated by the two-gap model and is utilized to provide a bridge between theory and empirical research. The main premise of the two-gap model is the discrepancy between a nation's own resource supply and its capacity for absorption. The aforementioned differences results in the Savings Gap and the Foreign Exchange Gap. The amount of investment and capital creation that can be done will be constrained by whichever of the two gaps is binding (or is the largest). The "Two-Gap model" is when external funding (loans or grants) supplements domestic resources. Its main assumption is that most developing nations either don't have enough domestic savings to bolster investment prospects or are constrained by foreign exchange requirements to finance the necessary intermediate and capital goods. The Savings Gap is experienced when savings are insufficient to invest properly and productively. The Foreign Gap is experienced when foreign exchange profits are insufficient to pay for the essential foreign components, materials, etc.

The fundamental macroeconomic identity: Aggregate Expenditure is equated to Aggregate output. Consequently, presuming there isn't a public sector.

$$Y = C + I + (X - M) \dots\dots\dots (1)$$

Where Y = Gross National Product (GNP), C = Consumption, I = Investment, X = Exports and M = Imports.

And the sources of resources employed in the nation are equal to the employment of resources in the nation (expenditure targets).

$$Y + M = C + I + X \dots\dots\dots (2)$$

Deducting Consumption from all sides results in equation 3

$$Y - C + M = I + X \dots\dots\dots (3)$$

Subsequently $Y - C = S \dots\dots\dots (4)$

S stands for savings (domestic)

Substituting equation 4 for equation 3 results in equation 5

$$S + M = I + X \dots\dots\dots (5)$$

With (S + M) being the withdrawals and (I + X) being the injections.

Equation 5 can further be stated below

$$M - X = I - S \dots\dots\dots (6)$$

Equation 6 (M – X) shows the Foreign Exchange gap and (I – S) shows the Savings gap. The gaps comprise 2 distinct constraints. Reducing one doesn't eliminate the other. Using equation 6 shows how the gap can come into existence; the country might not be able to do as much I as it would otherwise be able to because S is too little. So there would be a Savings Gap; and the country might not be able to employ the M needed to utilize all of the nation's resources because X is too little. So there would be a Foreign Exchange Gap. Despite the fact that the two gaps are unique from one another, both can be filled through international transfers. Therefore, the model suggests that foreign aid and foreign direct investment are the most effective approaches in ending the cycle of poverty and deal with the 2 gaps simultaneously. Since the analysis is based on the assumption that domestic savings as well as foreign capital inflows can be used to fund domestic investment.

If I let $(M - X) = F \dots\dots\dots (7)$

F is the foreign capital inflow, then equation 6 can be represented as follows;

$$F = I - S \dots\dots\dots (8)$$

Therefore;

$$Y = C + I + X - M \dots\dots\dots (9)$$

$$I - S = M - X = F \dots\dots\dots (10)$$

Foreign aid and grants are two examples of the various ways that foreign capital might flow to a nation. These foreign flows enable imports to surpass exports, allowing investment to outpace domestic savings. Therefore, according to the model, an increase in ODA will increase savings which will then lead to the growth of the economy. Most developing nations have gross savings rates that are below what is required, Kenya is no exception, whereas per the “*World Bank database 2019*”, gross domestic savings as a % of GDP was 10.4; however, gross capital formation as a % of GDP in the same year was 19.

The 2 essential equations that serve as the foundation for the current model are economic growth and saving. I employed the SEM since it prevents the simultaneity bias that frequently happens in other single-equation models because some of the independent variables statistically shows a greater likelihood of correlation and therefore may not actually be exogenous. In addition, from the above analysis, I generated the below equations

$$GDPPC = \beta_0 + \beta_1 ODAID + \beta_2 GDS + \beta_3 GOVEXP + \beta_4 TRADEOPEN + \epsilon$$

$$GDS = \alpha_0 + \alpha_1 ODAID + \alpha_2 GDPPC + \alpha_3 GCF + \alpha_4 TRADEOPEN + v$$

Where:

- GDPPC is GDP per capita in constant US\$ 2015 prices.
- ODAID is Net official development assistance received in constant US\$ 2020 prices.
- GDS is the Gross domestic saving in current US\$ prices.
- GOVEXP is General government final consumption expenditure in constant US\$ 2015 prices.
- GCF is the Gross capital formation in constant US\$ 2015 prices.
- TRADEOPEN is the Trade openness measured by the sum of exports plus imports as a share of GDP.
- ε and v are error terms.
- The parameters β_1 , β_2 , β_3 and β_4 represent the elasticities of GDPPC with respect to ODAID, GDS, GOVEXP and TRADEOPEN.
- The parameters α_1 , α_2 , α_3 and α_4 represent the elasticities of GDS with respect to ODAID, GDPPC, GCF and TRADEOPEN.

3.4 Model Specification

Estimating the growth and savings equations separately may bring about simultaneity bias, as some of the independent variables might not actually be exogenous (Gupta and Islam, 1983). Hence growth and savings equations are estimated simultaneously.

The model at hand is built around two basic equations that take economic growth and saving into account. Therefore, the SEM below entails a growth equation and a saving equation.

$$GDPPC = \beta_0 + \beta_1 ODAID + \beta_2 GDS + \beta_3 GOVEXP + \beta_4 TRADEOPEN + \varepsilon \dots\dots\dots (11)$$

$$GDS = \alpha_0 + \alpha_1 ODAID + \alpha_2 GDPPC + \alpha_3 GCF + \alpha_4 TRADEOPEN + v \dots\dots\dots (12)$$

The study's interest was to investigate the relation between ODA, domestic savings and economic development in Kenya. This is typically accomplished by ODA having an impact on domestic savings, which then has an impact on gross investments, which subsequently impacts economic expansion. Hence, the variables explained in the aforementioned equations are;

GDPPC which is the preferred substitution of economic growth because it considers population and the GDS.

The rationale behind including GOVEXP in the model was because the proper use of aid has been a debatable topic for a long time. The recipient nations' governments divert the aid money from their intended use and use it for other things. Therefore, GOVEXP is used as a proxy for fiscal discipline. The total of exports and imports as a % of its GDP serves as a proxy for the policy variable known as trade openness (TRADEOPEN). By utilizing resources and scale economies, openness is seen to significantly influence growth. In addition, GCF was a good proxy of domestic investment and it was included as an independent variable due to its impact on economical expansions.

The SEM is exactly identified and was estimated by Two Stage Least Squares (2SLS) method to fix the simultaneous problem. To address the endogeneity issue, the study employed the 2SLS, which generates consistent estimates by using the endogenous explanatory variable's estimated values. Running a regression to determine the predicted values of the explained variables yields the predicted values. Next, the predicted values are used as independent variables in respective equations. Once the independent variables have been replaced by the predicted values, the regression is once again run. This method solely uses knowledge of the specific equation's coefficient restrictions to estimate each single equation independently.

The significance of logarithmic transformations of variables was noted in the study. Being that numerous economic time series data demonstrate a significant trend, such transformations are crucial. This transformation enables the interpretation of the regression coefficients as elasticities. As a result, the model's variables are all represented in natural logarithm form to get the elasticities and reduce multicollinearity. Hence the formation of the below model.

$$\ln \text{GDPPC} = \beta_0 + \beta_1 \ln \text{ODAID} + \beta_2 \ln \text{GDS} + \beta_3 \ln \text{GOVEXP} + \beta_4 \ln \text{TRADEOPEN} + \varepsilon$$

..... (13)

$$\ln \text{GDS} = \alpha_0 + \alpha_1 \ln \text{ODAID} + \alpha_2 \ln \text{GDPPC} + \alpha_3 \ln \text{GCF} + \alpha_4 \ln \text{TRADEOPEN} + v$$

..... (14)

3.5 Sources of Data

The research utilized secondary data that spanned the years 1960 to 2019. The selection of the timespan was dependent on the data's availability. The time series data was obtained from World Development Indicators 2022 (World Bank) for all the variables.

3.6 Variable Description

This section provides the variables' abbreviation, name, unit, description and expected sign as shown in table 3.1, with the aid of the formed equations (eqn) outlined below.

$$GDPPC = \beta_0 + \beta_1 ODAID + \beta_2 GDS + \beta_3 GOVEXP + \beta_4 TRADEOPEN + \varepsilon \dots\dots\dots eqn 1$$

$$GDS = \alpha_0 + \alpha_1 ODAID + \alpha_2 GDPPC + \alpha_3 GCF + \alpha_4 TRADEOPEN + v \dots\dots\dots eqn 2$$

Table 1: Definition of the Variable and the Expected Signs

Abbreviation	Name	Unit	Description	Expected Sign (i represent eqn. 1) (ii represent eqn. 2)	
GDPPC	GDP per capita	Constant 2015 US\$	It is calculated by dividing GDP by the midyear population. GDP is calculated as the total gross value added by all producers who are residents of the country, plus any applicable product taxes, less any unaccounted-for subsidies that are not included in the value of the products.	i	Dependent Variable
				ii	Positive
ODAID	Net ODA received.	Constant 2020 US\$	It comprises disbursements of "soft" loans and grants from DAC member's official agencies, non-DAC nations and multilateral institutions to boost <u>economical</u> growth and the wellbeing in the recipient nations.	i	Positive
				ii	Positive
GDS	Gross domestic saving	Current US\$	It is determined by the GDP minus final consumption expenditure (total consumption). GDS comprises savings of the public sector, household sector and private corporate sector in a given country.	i	Positive
				ii	Dependent Variable
GOVEXP	General government final	Constant 2015 US\$.	It comprises all current government expenditures for the procurement of goods and services. Additionally, it	i	Negative

Abbreviation	Name	Unit	Description	Expected Sign (i represent eqn. 1) (ii represent eqn. 2)	
	consumption expenditure		comprises the majority of government spending on security and defense; however, the State military's expenses that are covered by GCF are excluded.		
GCF	Gross capital formation	Constant 2015 US\$	It comprises expenditures on additions to the fixed assets of the nation and net changes in the inventory levels.	ii	Positive
TRADEOPEN	Trade openness	sum of exports plus imports as a share of the GDP	Trade openness describes how a nation's economy is structured in relation to international trade. The actual volume of an economy's reported imports and exports serves as a gauge of how open it is. Trade openness is calculated as the sum of a nation's exports and imports as a percentage of its GDP.	i	Positive
				ii	Positive

3.7 Data Analysis

To assist in examining the relationship between the variables under study in the SEM, the data that was modeled in a time series format was submitted to a number of tests and analysis. The analysis of the data utilized the Statistical software namely, Stata, after which the findings were, be displayed using tables and figures to make it easy to understand and interpret.

3.8 Time Series Data Analysis

The data used in this study covered the period between 1960 and 2019. A fundamental presumption when analyzing data series is that, there must be stationary. Implying that assuming that the variable is Y_t , its mean $E(Y_t)$ and variance $V(Y_t)$ are constant over period t , also the value of covariance $Cov(Y_t, Y_{t-k})$ between 2 time periods i.e t and $t-k$ depends solely on the lag k and not on the actual time t at which the covariance is computed. Hence, the Augmented Dickey-Fuller (ADF) test was done to find out if there was a unit root in the variables in the study. In addition, the Phillips and Perron test which modify the test statistics to account for the potential serial correlation and heteroskedasticity in the residual was conducted.

3.8.1 Unit Root test

Generally, if a time series' behavior is constant over time, it is said to be stationary. This implies that values always tend to fluctuate by roughly the same amount and that their variability is constant over time. In terms of reacting to shocks, stationary and non-stationary time series differ significantly from one another. A stationary time series may experience brief shocks, but these effects will eventually fade and the series shall return to its long run equilibrium point. Consequently, predictions for a stationary series will eventually reach the series mean. Since the mean and variance of a non-stationary series rely on time, shocks to it endure throughout time. Regressions on time series data are prone to produce spurious results due to non-stationarity.

As per the aforementioned, it is vital to make sure that the series is stationary when doing a time series analysis. To do this, a unit root test is run to see whether stationarity exists. When using linear regression for analysis, stationarity is important since it guarantees the accuracy of the results and shows that the regression parameters have remained stable throughout time. To determine whether the data is stationary, the ADF test must be applied. If the null hypothesis is not disproved, the time series data has a unit root. Therefore, if the absolute t-value is larger than the absolute critical value (CV), suggesting that the time series is stationary, then the null hypothesis must be rejected.

Simple Dickey-Fuller (DF) approach is expanded upon by the ADF. The DF unit root test's equation form is

$$Y_t = \rho Y_{t-1} + \epsilon_t \dots\dots\dots(15)$$

Where $-1 \leq \rho \leq 1$ (when a series is stationary), t and ϵ stands for time and a random white noise error term, respectively.

Carrying out a regression analysis established on equation (15) can aid in estimating the value of ρ . The foundation of the DF tests is testing the hypothetical value of ρ . The above eq 15 can be expressed as below.

When Y_{t-1} is deducted from all sides of the equation, it results to equation (16)

$$Y_t - Y_{t-1} = \rho Y_{t-1} - Y_{t-1} + \epsilon_t \dots\dots\dots(16)$$

Eq (16) can be rewritten as

$$\Delta y_t = (\rho - 1) y_{t-1} + \epsilon_t \dots \dots \dots (17)$$

Equation (17) can be transformed to

$$\Delta y_t = \delta y_{t-1} + \epsilon_t \dots \dots \dots (18)$$

Where $\delta = \rho - 1$, inferring that $\delta = 0$ when $\rho = 1$.

Typically, it is presumed that the error terms are not correlated when performing the DF tests. The ADF test has been chosen because error terms in the data to be utilized in this research are likely to be associated. The ADF test shall be done by augmenting the preceding equations by the addition of lagged values of the explained variables.

The ADF tests the null hypothesis that $|\rho| = 1$ against an alternative $|\rho| < 1$. The ADF equations are given as:

ADF without intercept and trend: $\Delta y_t = \delta y_{t-1} + \alpha_i \sum_{s=1}^m \dots + \epsilon_t \dots \dots \dots (19)$

ADF with an intercept but no trend: $\Delta y_t = \beta_1 + \delta y_{t-1} + \alpha_i \sum_{s=1}^m \dots + \epsilon_t \dots \dots \dots (20)$

ADF with both the intercept and trend: $\Delta y_t = \beta_1 + \beta_2 t + \delta y_{t-1} + \alpha_i \sum_{s=1}^m \dots + \epsilon_t \dots \dots \dots (21)$

3.8.2 Cointegration Analysis

Cointegration is a method for determining potential long-term correlations between time series processes. It happens when 2 or more time series are independently integrated but, over the long run, their linear combination is at order zero. If cointegration holds, the relationship between the variables will be long-lasting and stable, and even the variance and mean will stay constant over time. A common unit root process is the fundamental characteristic of a cointegrating relationship between the variables in the system. The fact that this methodology offers a flexible functional

form for modeling the behavior of the variables under the long-term equilibrium condition makes it particularly appropriate in this situation.

The study employed the Johansen test to test cointegrating. The test resolves the problem of selecting an explained variable including problems caused by errors that are taken from one phase to the other. The test has the ability to identify multiple cointegrating vectors. The cointegrating relations between various non-stationary time series data are tested using this method. Furthermore, it permits multiple cointegrating relationships. Trace tests and Maximum Eigenvalue tests are the two basic forms of Johansen's test.

3.9 Diagnostic Test

In econometrics, diagnostic testing has become a crucial component of model specification. Therefore, this study employed several diagnostic tests to make sure the coefficients of the estimations are consistent and can be used to draw economic conclusions. The Durbin and Wu-Hausman test was done to detect endogenous regressors in the regression model. The Sargan-Hansen test was used for testing over-identifying restrictions in the statistical model. To assess the instruments' overall strength and validity, the Stock-Yogo weak ID test and Cragg-Donald Wald F statistic was used.

When the error term exhibits non-constant variation, heteroscedasticity exists. The issue with heteroscedasticity is that it can result in biased standard errors. The variance of the error term was examined using the Pagan-Hall general test. The Jarque-Berra statistic was applied to test if the skewness and kurtosis of the data were consistent with a normal distribution (Kim, 2016).

CHAPTER 4

FINDINGS AND DISCUSSIONS

4.1 Introduction

This section includes the findings comprising of results and interpretation of the analyzed data. This chapter includes descriptive statistics, unit root test, cointegration analysis, and regression analysis. The chapter also contains diagnostic testing.

4.2 Descriptive statistics

A descriptive analysis was conducted to provide a statistical overview of the gathered data. The variables for this research included GDP per capita, ODA, Gross domestic savings, Government expenditure, Gross capital formation and trade openness. Data for these variables were selected in a time series approach for 60 years from 1960 through 2019. This analysis entailed three categories of measures namely central tendency, dispersion, and distribution. Central tendency for the dataset was measured through the mean and median, while the dispersion of the dataset was measured through maximum and minimum values, and standard deviation (σ) as depicted below.

Table 2: Descriptive Statistics

	Ln GDPPC	Ln ODAID	Ln GDS	Ln GOVEXP	Ln GCF	Ln TRADEOPEN
Mean	7.04	20.62	20.84	21.64	22.02	4.02
Standard Error	0.03	0.08	0.16	0.12	0.10	0.02
Median	7.07	20.58	20.86	21.64	21.85	4.05
Standard Deviation	0.20	0.65	1.20	0.96	0.81	0.18
Minimum	6.51	19.22	18.71	19.68	20.53	3.46
Maximum	7.38	21.91	23.07	23.15	23.56	4.31
Observation	60.00	60.00	60.00	60.00	60.00	60.00

The country's log value of GDPPC ranging from 6.51 as the lowest value to 7.38 as the highest value, while the mean and standard deviation stood at 7.04 and 0.2 respectively. This output shows that vast majority of data sets are located quite near to the mean. Boundless (2015) in his study emphasized that more consistent the Mean, the nearer the Standard Deviation is to zero, which

also demonstrates that the sample's volatility is relatively low. From this basis, therefore, the GDPPC with a standard deviation of 0.2 is considered to be a consistent variable.

The country's log value of ODAID varied in value from 19.22 to 21.91, with 19.22 being the lowest value, while the mean and standard deviation stood at 20.62 and 0.65 respectively. The standard deviation being a value close to 0 shows that the variable is consistent, with a reliable mean. The ln value of the GDS registered 18.71 as the smallest value and 23.07 as the greatest value, and 20.84σ and 1.2σ respectively.

The average log values of GOVEXP, GCF and TRADEOPEN are 21.64, 22.02 and 4.02 respectively. The σ (SD) depicts that the data deviates from the mean by 0.96, 0.81 and 0.18 respectively. They are all close to 0, implying that the variables are consistent.

The normality test was used to verify the data set's suitability for the normal distribution was confirmed, and the probability of the data set's underlying variable to have a normal distribution was calculated, which would thereafter guide the inference made. To achieve this, the study employed the use of kurtosis and skewness parameters to measure the distribution of the data.

The decision criterion when using skewness and kurtosis is that a dataset is normally distributed/symmetric when the value of kurtosis is 3, which represents a normal distribution hence referred to as mesokurtic. A positive kurtosis, more higher values for that particular series above a sample average is known as leptokurtic. Additionally, a negative kurtosis, more lower values below the sample average are known as *Platykurtic*. Skewness quantifies the series' degree of asymmetry. A series is said to be normally skewed, if its distribution is symmetrical around the mean, with a zero value of skewness. Hill et al. (2018) argued that positive skewness results in a long-right-tail distribution with more greater values above the average of the sample. On the other hand, negative skewness results in a long-left-tail distribution where more lower value below the mean. For a reasonable normal distribution, if the absolute values of kurtosis and skewness are less than or equal to 3, no correction should be carried out to correct the non-normality (Shin, 2017). In addition, Brown (2006) argued that when using SEM, a dataset is said to be normally distributed/symmetric when the Skewness value lie between ± 3 , with an acceptable range of kurtosis between ± 10 ,

Table 3: Skewness and Kurtosis Statistics

	Ln GDPPC	Ln ODAID	Ln GDS	Ln GOVEXP	Ln GCF	Ln TRADEOPE N
Kurtosis	3.44	2.27	2.38	2.26	2.60	4.76
Skewness	-0.98	0.27	0.10	-0.47	0.34	-1.23
Observations	60.00	60.00	60.00	60.00	60.00	60.00

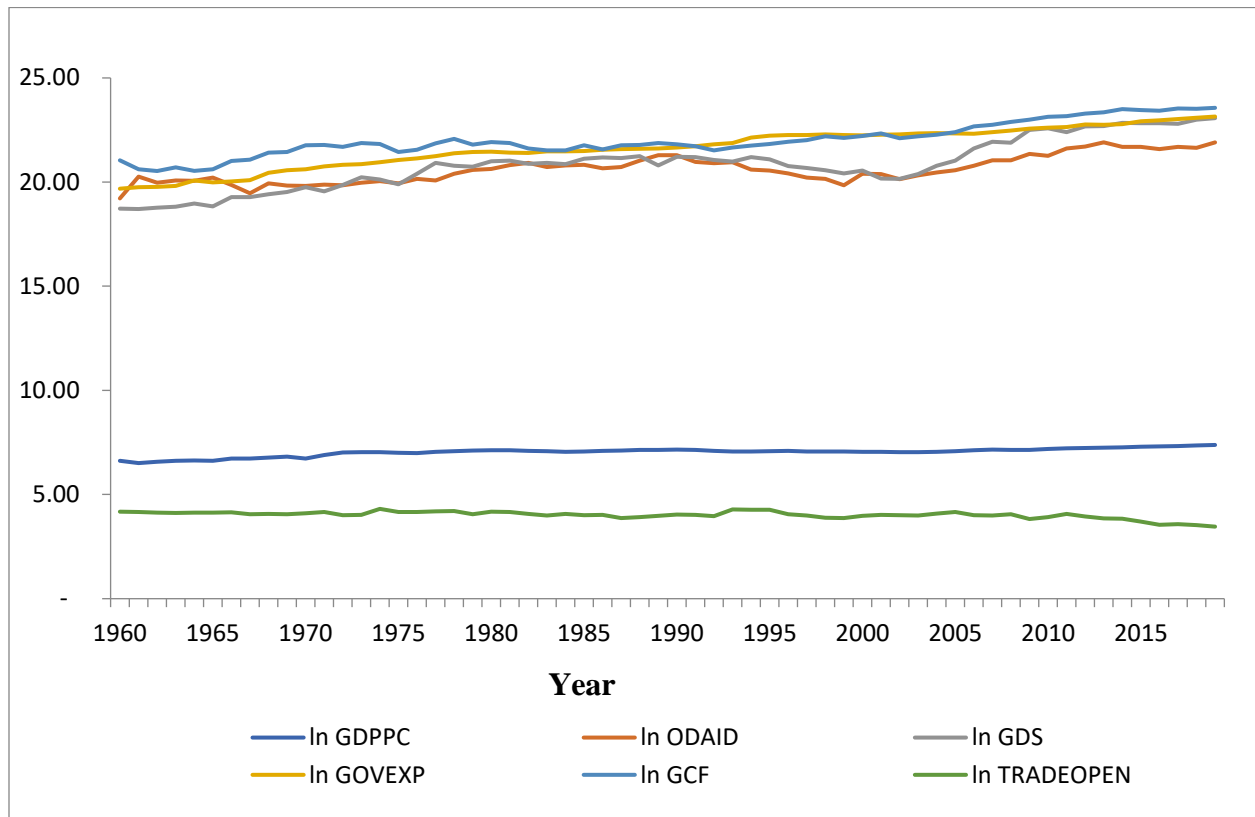
Skewness is the measure of the percentage of the series' asymmetry. When the value is 0, the skewness is normal. Therefore, ln GDPPC, ln GDS, ln GOVEXP and ln GCF all mirror a normal distribution since the value of skewness is -0.98, 0.27, 0.10, -0.47 and 0.34 respectively. Ln GDPPC is mesokurtic, ln ODAID, GDS and GOVEXP are all platykurtic while ln TRADEOPEN is leptokurtic. Nonetheless, the analysed dataset was considered to have a normal distribution based on the highlighted decision criteria.

4.3 Stationarity (*Unit Root Test*)

A Stationary Series is easier to forecast since it oscillates about a fixed long term mean, shifts to a finite-time variance, and the impacts of shock fade gradually. On the other hand, a non-stationary series tends towards infinity in terms of variance, which makes the series permanently vulnerable to random shocks. Forecasting is exceedingly challenging in this situation.

Stationarity test checks whether core statistical parameters of a dataset such as variance and measures of central tendency are constant across a period (Grech & Calleja, 2018). This guides a statistician to eliminate seasonal variations in a set of data. The unit root test was necessitated by the nature of the data collected to ensure that the regression results were not spurious. Before doing the tests, it is essential to perform a graphical test for stationarity to better comprehend the data. Figure 5 is the graphical test for stationarity.

Figure 5: Graphical Test for Stationary



The series' relationship can be identified as stationary and having a distinct, observable trend in the aforementioned graphical representation. Figure 5 shows that economic growth and trade openness have been more stationary over the years, the increment of the former can be seen as steady. Both gross capital formation and government expenditure are also seen increasing steadily.

The line graphs of ODA and domestic savings seems to agree, in that when ODA is high so is the domestic savings, as demonstrated by figure 5, in 1997 both variables decreased, the drop in ODA was caused by multilateral and bilateral donors suspending ODA to Kenya in 1997 (Mwega, 2009). However, both variables increased in 2002, The 2002 general elections and commitments to changes hastened the recovery (Veledinah, 2014). The observations imply that the variance and measures of central tendency are constant across a period. Hence the series was considered stationary for all research variables based on visual assessment.

Unit Root test was done using the *Augmented Dickey-Fuller (ADF)* Test on the variables studied. This test was conducted because estimating the model might cause issues with statistical inference

because time series data are typically non-stationary. The results of the tests are indicated in *Table 4*.

Table 4: ADF Test Results for Stationarity of the Time Series Data

Variables	No. of lags	ADF Test Value	CV (1%)	CV (5%)	CV (10%)	Integration Order
GDPPC	1	-4.735	-2.617	-1.950	-1.610	I (1)
ODAID	1	-5.407	-2.617	-1.950	-1.610	I (1)
GDS	1	-4.914	-2.617	-1.950	-1.610	I (1)
GOVEXP	1	-3.004	-2.617	-1.950	-1.610	I (1)
GCF	1	-5.259	-2.617	-1.950	-1.610	I (1)
TRADEOPEN	1	-6.944	-2.617	-1.950	-1.610	I (1)

The decision criteria used to test the hypothesis was that, when the computed absolute value of the ADF Test Statistic is $>$ than the CV, the H_0 is rejected and the vice versa applies (Dickey & Fuller, 1979). To that effect, the ADF Test value was $>$ the CV for all the variables, at first difference. As such, I rejected the H_0 that a unit root was present for the alternative. In conclusion, the series was stationary at 1st difference for all variables.

Table 5: Phillips–Perron Unit-Root Test Results for Stationarity of the Time Series Data

Variables	Z(t)	MacKinnon Approximate P-Value for Z(t)	1% CV	5% CV	10% CV	Integration Order
GDPPC	-7.785	0.0000	-4.132	-3.492	-3.175	I (1)
ODAID	-10.240	0.0000	-4.132	-3.492	-3.175	I (1)
GDS	-7.577	0.0000	-4.132	-3.492	-3.175	I (1)
GOVEXP	-6.747	0.0000	-4.132	-3.492	-3.175	I (1)
GCF	-8.245	0.0000	-4.132	-3.492	-3.175	I (1)
TRADEOPEN	-9.152	0.0000	-4.132	-3.492	-3.175	I (1)

The Phillips-Perroni test's H_0 is that a unit root exists, as opposed to the H_1 that there isn't one. Table 5 rejects the null hypothesis since the *p-values* of all variables are below 0.050; hence they are stationary.

4.4 Cointegration Analysis

Co-integration occurs when two or more variables have a long-term equilibrium or association, i.e. move in the same direction (Gujarati, 2004). It's vital to perform the *Cointegration Test* to determine whether a long-run association exists between or among variables. When performing a cointegration test it is assumed that a long-run association exists regardless of whether the series are moving apart or have a downward or upward trend. This study tested for cointegration rank using Johansen's (1995) normalizing method. The results can be seen in Table 6. The H_0 is that there is no cointegration and the opposite is the alternate. The decision criteria is to reject the H_0 at 0.05 significance level. Therefore, I reject the H_0 when the trace values are > than 5% CV, otherwise accept the H_0 .

Table 6: Cointegration Test Results

Maximum Rank	Parms	LL	Eigenvalue	Trace Statistic	5% CV
0	6	264.22971		88.1026*	94.15
1	17	285.00193	0.50547	46.5581	68.52
2	26	297.10539	0.33654	22.3512	47.21
3	33	302.7654	0.17458	11.0312	29.68
4	38	305.78797	0.09739	4.9861	15.41
5	41	308.03731	0.07341	0.4874	3.76
6	42	308.281	0.00823		

Source: Researcher, STATA Output (2022)

The results shown in Table 6 demonstrate that, at the 5% significance level, the H_0 is rejected. The trace values are the foundation for this conclusion. At the 5% critical value, trace value statistics indicating the existence of a long-term equation. The variables were cointegrated at lag order 1, which supports the crucial finding, that there is a common trend among the variables, indicating the existence of a long-term interrelationship between the variables.

4.5 Diagnostic test

4.5.1 Under-identification Test

An equation is under-identified if its structural (behavioral) parameters cannot be expressed in terms of the reduced form parameters. If instrumental variables are less compared to the exogenous variables then this is the condition of under identification. The decision criterion is that if the problem of under-identification exists then the p value will not be significant; conversely, if the p

value is significant, then there is no challenge of under-identification. Hence the H_0 is that there is a problem of under-identification.

Table 7: Test for under-identification

Equations	Anderson canon. corr. LM Statistic	P-Value
Equation1	16.471	0.0
Equation2	20.056	0.0

According to table 7 the p values is significant in both equations, hence I reject the H_0 , implying that the problem of under-identification does not exist.

4.5.2 Weak identification Test

To determine whether the instruments being used are accurately defining the endogenous variable, the weak identification test is applied. It helps in determining if the *instruments* can fully replace/define the *endogenous variables*. It checks for the explanatory power of the instrumental variables for the endogenous variable. The study employed the “Stock-Yogo Weak ID test and Cragg-Donald Wald F statistic”. The decision criterion is that if the former’s critical values are greater than the latter’s value then the instruments used are weak instruments.

Table 8: Test for Weak identification

Values	Equation 1	Equation 2
<i>Cragg-Donald Wald F statistic</i>	20.812	27.616
<i>Stock-Yogo weak ID test critical values</i>		
<i>10% maximal IV size</i>	16.380	16.380
<i>15% maximal IV size</i>	8.960	8.960
<i>20% maximal IV size</i>	6.660	6.660
<i>25% maximal IV size</i>	5.530	5.530

As demonstrated by Table 8 since the *Cragg-Donald Wald F* statistic is $>$ than the *Stock-Yogo weak ID tests'* CV, we reject the H_0 , hence the instruments used are not weak. Therefore, the instruments have good explanatory power for the endogenous variable.

4.5.3 Over-identification test

An equation is over-identified if there is more than one solution for expressing its structural (behavioral) parameters in terms of the reduced form parameters. The Sargan statistic test was used to check for over-identification. It tests the correlation between the instruments and the error-terms in the systems. The *Sargan-Hansen test* is used to test for over-identifying restrictions. The H_0 is that the instruments are valid, implying that they have no correlation with the error term, and that the omitted instruments are appropriately omitted from the model.

Table 9: Test for over-identification

Equations	<i>Sargan statistic (over-identification test of all instruments)</i>	Status
Equation 1	0.000	Equation exactly identified
Equation 2	0.000	Equation exactly identified

As demonstrated by Table 9 the equations are exactly identified, implying that there is no problem of over-identification.

4.5.4 Endogeneity test

The presence of endogeneity may cause the OLS estimators to be unbiased; hence this necessitates for the test for endogeneity to be conducted. To test for endogeneity, the study employed the Durbin and Wu-Hausman tests. The H_0 was that the variables are *exogenous*. The decision criterion was based on the *p value*, where if the *p value* is $>$ than 0.05 the H_0 cannot be rejected and the vice-versa applied.

Table 10: Test for Endogeneity

Equations	Durbin (score) chi2(1)	P-value	Wu-Hausman F(1,54)	P-value
Equation 1 (GDS)	3.33666	0.0678	3.17983	0.0802
Equation 2 (GDPPC)	0.002333	0.9615	0.0021	0.9636

As demonstrated in Table 10 the findings indicate that the variables i.e. GDPPC and GDS are exogenous. The decision is informed by the p values which are greater than 0.05, hence the null hypothesis cannot be rejected, implying that there is no problem of endogeneity.

4.5.5 Heteroscedasticity Test

This test examines whether the error terms in a model have constant variances (Ker & Tolhurst, 2019). This constancy necessitates a model to have sufficient dataset, without which it is considered unreliable for arriving at meaningful conclusions (Ker & Tolhurst, 2019). The null hypothesis for this test was that the disturbance was homoscedastic. The study employed the Pagan-Hall general test statistic. The rule of thumb being that we reject the null hypothesis when the p-value is significant meaning it is lower than 0.05, otherwise we accept the null hypothesis.

Table 11: Test for Heteroscedasticity

Equations	Pagan-Hall general test statistic	P-value
Equation 1	5.990	0.1999
Equation 2	1.198	0.8784

Source: Researcher, STATA Output (2022)

As demonstrated by Table 11 the the P-value was not significant, hence the null hypothesis that the error terms had a constant variance was not rejected, implying that the disturbance was homoscedastic.

4.5.6 Skewness/Kurtosis tests for Normality

The assumption of normality is critical for regression analysis. The inference processes, particularly for small samples, are dependent on the residuals' normality assumptions; otherwise, all the confidence intervals, Z/t-tests, and F-tests would be invalid. The study employed the Jarque-

Berra statistic to test if the skewness and kurtosis of the data are consistent with a normal distribution (Kim, 2016). The null hypothesis of the test is that the residuals of the model are normally distributed. The decision criterion of the tests was based on the p value, where if the value was greater than 0.05 the null hypothesis would not be rejected.

Table 12: Skewness/Kurtosis tests for Normality

Equations	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
Equation 1	60	0.7788	0.5291	0.48	0.7849
Equation 2	60	0.1857	0.1048	4.46	0.1078

Source: Researcher, STATA Output (2022)

The value of the Prob>chi2 takes into account both the skewness and kurtosis, as displayed by Table 12, the null hypothesis cannot be rejected, therefore, the residuals are normally distributed.

4.6 Regression Analysis

The need for regression analysis was to examine the cause-effect association between the dependent and independent variables of this research. Estimating the growth and savings equations separately may bring about simultaneity bias, as some of the independent variables may truly not be exogenous (Gupta and Islam, 1983). Hence growth and savings equations were estimated simultaneously. The study was estimated by Two Stage Least Squares (2SLS) method to fix the simultaneous problem. The results can be seen in Table 13, 14 and Table 15.

As previously mentioned, this study was guided by a SEM shown in Equation 1 and 2 below.

$$\ln \text{GDPPC} = \beta_0 + \beta_1 \ln \text{ODAID} + \beta_2 \ln \text{GDS} + \beta_3 \ln \text{GOVEXP} + \beta_4 \ln \text{TRADEOPEN} + \varepsilon \dots\dots\dots \text{equation 1}$$

$$\ln \text{GDS} = \alpha_0 + \alpha_1 \ln \text{ODAID} + \alpha_2 \ln \text{GDPPC} + \alpha_3 \ln \text{GCF} + \alpha_4 \ln \text{TRADEOPEN} + v \dots\dots\dots \text{equation 2}$$

The study had two main hypotheses to guide the interpretation of the outcomes of the regression analysis. The main null hypotheses were as follows:

H₁: There is no significant effect of ODA on economic growth; and

H₂: There is no significant effect of ODA on Gross Domestic Savings

The decision criterion for hypothesis testing is such that, where the probability that an assumption can occur is low, the underlying assumption is incorrect. Otherwise, the assumption is assumed to be correct (Kafle, 2019; Pandey, 2020). The basis for rejecting or not rejecting a null hypothesis was on the p-value associated with the key variable.

Table 13: Regression Analysis (i)

Equation	Number of Observations	F(4, 55)	Prob > F	Centered R-Squared	Uncentered R-Squared	Root MSE
Equation 1	60	88.36	0.0000	0.8684	0.9999	0.07206
Equation 2	60	327.60	0.0000	0.9604	0.9999	0.2372

Source: Researcher, STATA Output (2022)

The study employed a total of 60 observations for each variable, The F values depicts how jointly significant the independent variables are in predicting the dependent variable. The higher the F statistic, the better the model, hence table 13 demonstrates that the independent variables are jointly significant to explain the dependent variables. The P value showed that the F value is significant; since the values of the P values were lower than 0.05. The R-squared shows the total variations in the dependent variable that are explained by the independent variables. The higher the R-squared the better the model, therefore, the independent variables in the 1st equation explains 86.84 per cent of the variations in the dependent variable, and the variables in the 2nd equation explains 96.04 per cent of the variations in the dependent variable. The standard deviations of the residuals are 0.07206 and 0.2372 in the first and second equations respectively.

The study used the coefficients to guide the conclusion concerning the effect of ODA on domestic savings and economic growth because it is the decision criterion for regression-based models. Regression coefficients demonstrate the magnitude of the effect that each predictor variable has on the outcome variable (Kafle, 2019). The subsequent interpretation of this magnitude explains how a unit change in the predictor variable causes a change in the outcome variable and the direction of that change. The computed coefficients are demonstrated in Table 14.

Table 14: Regression Analysis (ii- equation 1)

Ln GDPPC	Coef.	Std. Err.	z	P> z 	[95% Conf. Interval]	
Ln GDS	0.0439908	0.0533744	0.82	0.410	-0.0606211	0.1486026
Ln ODAID	0.0320649	0.0558442	0.57	0.566	-0.0773877	0.1415176
Ln GOVEXP	0.1267789	0.0354484	3.58	0.000	0.0573012	0.1962565
Ln TRADEOPEN	0.033791	0.0709345	0.48	0.634	-0.105238	0.17282
_cons	2.578735	0.8208544	3.14	0.002	0.9698896	4.18758

As demonstrated from table 14, the coefficient on Ln ODA is positive and statistically insignificant at the 5% significance level. This implies that a 1% increase in ODA increases GDPPC by 0.032%. Hence the null hypothesis that there is no significant effect of ODA on economic growth cannot be rejected. The empirical findings reveal that, while ODA is positively linked to GDP, the relationship is statistically insignificant. These results support the finding made by Burnside and Dollar in their studies from 2000 that the link between ODA and economic development was unclear. Burke and Ahmadi-Esfahani carried out research on 3 South East Asian nations between 1970 and 2000, through SEM in which growth and savings were predicted. They examined how international aid influenced economic expansion. They also discovered that the former had an insignificant effect on the latter. Erkinharju (2021) conducted a research on the impact of ODA on the expansion of the economy, with a dataset comprising 169 countries from 1960-2019, the author concluded that the former variable had no effect on the latter.

The coefficient on Ln Government expenditure was positive and statistically significant at the 5% significant level, showing a positive relationship with economic growth. This implies that, a percentage increase in GOVEXP resulted to an increase in economic growth by 0.127 percent. On the contrary, both GDS and Trade openness had a positive but insignificant relationship with economic growth. The intercept showed that there are other factors that could explain up to 2.58 units increase in economic growth based on the regressed model.

Table 15: Regression Analysis (ii- equation 2)

Ln GDS	Coef.	Std. Err.	z	P> z 	[95% Conf. Interval]	
Ln GDPPC	1.95195	0.55312	3.53	0.000	0.8678551	3.036046
Ln ODAID	0.7320329	0.0955886	7.66	0.000	0.5446827	0.9193831
Ln GCF	0.5144407	0.1094966	4.70	0.000	0.2998313	0.7290501
Ln TRADEOPEN	0.1443353	0.2490857	0.58	0.562	-0.3438637	0.6325343
_cons	-19.89099	2.199422	-9.04	0.562	-24.20178	-15.5802

Table 15 shows that the coefficient on \ln GDPPC is positive and statistically significant at 5% level of significance. This implies that a 1% increase in economic growth increases domestic savings by 1.952%. Additionally, as demonstrated in the table, the coefficient on \ln ODAID is positive and statistically significant at 5% level of significance. This implies that a 1% increase in ODA increases domestic savings by 0.732%. Hence the null hypothesis that there is no significant effect of ODA on GDS was rejected. The analysis showed that ODA impacts gross domestic savings positively; it further demonstrated that the positive relationship was statistically significant. These results support the finding made by Elakkad & Hussein (2021), who explored the effect of ODA on domestic savings and economic growth in Egypt, from 1965- 2020. The researchers discovered that ODA has a beneficial effect on national savings. Additionally, Fayissa and El-Kaissy (1999) concluded that international aid supplements domestic savings rather than substituting it.

The coefficient on \ln GCF is positive and statistically significant at 5% level of significance as witnessed on the Table 15. This implies that a 1% increase in gross capital formation increases domestic savings by 0.514%. On the contrary, Trade openness had a positive but insignificant relationship with gross domestic savings. The intercept showed that there are other factors that could explain up to 19.9 units decrease in GDS based on the regressed model, though not statistically significant.

CHAPTER 5

CONCLUSION, DISCUSSIONS AND POLICY RECOMMENDATION

5.1 Introduction

This section consists of the research summary, discussions, conclusion, and the recommendations made following the results and discussions herein. The chapter also has suggestions for future studies.

5.2 Summary

The general aim of the research was to examine the impacts of Official Development Assistance on domestic savings and economic expansion in Kenya. The first aim of the research was to determine if a significant positive relationship existed between ODA and economic growth in Kenya, as per the 1st hypothesis. The second hypothesis was to determine if a significant positive relationship existed between ODA and Gross Domestic Savings in Kenya. A quantitative research approach built on a non-experimental research design was used to actualize this study.

The research used the following theoretical frameworks to offer background; the Solow-Swan, the "big push" theory Growth Model, Harrod-Domar model and the two-gap model. An empirical review was carried out to examine the results of the study of a variety of researchers. Hence, the review of the empirical data was organized in 3 lines of thoughts; first, positive significant relationship; second, negative significant relationship; and third, bi-directional and insignificant relationship.

The study established a SEM to investigate the relation between ODA, economic growth and domestic savings. In the first equation, GDPPC was the dependent variable; ODA, GDS, Trade openness and Government expenditure were the independent variables. In the second equation, GDS was the dependent variable, while GDPPC, ODA, Trade openness and Gross capital formation were the independent variables. The research used the 2SLS to achieve the first 2 aims of the research.

Overall, the study found that there was a positive relation between ODA and GDPPC. However, the relation was not statistically significant. On the other hand, the research discovered that ODA had a significantly positive relationship with GDS. Implying that ODA positively impacted both GDS and economic growth, although, the effect was not significant on economic growth. According to the study GDS impacted economic growth but the relation was not significant statistically. The same sentiment applied to Trade openness. On the contrary, government expenditure was seen to have a positive significant relation with GDPPC. Additionally, according to the findings, when the economy grows, savings increase, the relation between the 2 variables was seen to be positive and statistically significant. The same sentiments applied to gross capital formation. On the contrary, Trade Openness was seen to have a positive insignificant relation with gross domestic savings.

5.4 Discussions

The main goal of ODA is to help developing nations develop socially and economically. Implying that the donors contribute to ODA with an aim of boosting economic growth in the recipient nations. ODA is expected to increase GDS which increase investments, as a result, it enhances economic expansion. This is supported theoretically by the two-gap model which states that the economy can grow at the desired rate by bridging this savings gap with foreign aid. The same sentiments are supported by several researchers who believe that the three variables have a positive significant relationship. For instance, Durbarry et al. (1998) and Juselius et al. (2014), indicate that ODA affects economic development positively. Additionally, Veledinah (2014) state that due to the inadequate financial resources in Africa, ODA is assumed to provide additional foreign exchange, supplement domestic savings, and aid in the development of domestic capability, to hasten growth and lower poverty.

The study's findings partially match the aforementioned theoretical prediction. According to the two-gap model's underlying assumptions, the research found a positive and significant relation between GDS and ODA. Implying that the more Kenya receives ODA the higher its domestic savings will be which should equate to investments. This is a good sign that ODA is partly achieving its goal and this finding supports the work of some researchers who also found the same link like Elakkad & Hussein (2021).

On the contrary, the results show a positive but insignificant relation between ODA and economic growth, this simply implies that ODA affects economic growth, however its impact is not momentous. The results contradict the aim of contributing ODA, hence raising questions as to why, ODA is not meeting its main target yet funds are still being contributed to the recipient countries. The findings support the work of some scholars like Wako (2011), who found that ODA has a negligible effect on economic expansion. As a result, it was unclear if ODA contributes much to economic growth. The failure to meet its goal might be due to various reasons including the ease with which aid funds can be used for non-productive, non-investment-inducing activities. This implies that how these monies are distributed among the many economic sectors determines how effective they are in achieving economic expansion (Djankov et al., 2006).

5.3 Conclusion

ODA can significantly contribute to the economic growth of Kenya. ODA's positive contribution to the domestic savings is very vital, as increased savings lead increased investment which in turn increases economic growth of the nation. With regards to quantity the resource present in ODA are capable of precipitating a nation's economic growth. ODA can contribute directly to economic growth by facilitating development in the vital economic sectors namely, the manufacturing, health and education sector, also in the agriculture industry.

However, there are a number of things that operate against ODA and limit its ability to promote growth. Like in other countries, ODA in Kenya is susceptible to political manipulation by recipients who may channel it for dubious political and financial reasons into industries with no potential for economic growth. ODA is likewise susceptible to global financial crises, and its inflow decreases as the world's financial system becomes more unstable. Additionally, the veracity of the individuals managing it, the capacity of the necessary organizations, like the law enforcement agencies, judicial, and executives, as well as the current domestic political, economic, and climatic conditions, all have an impact on how effective ODA is. Therefore, it can be argued that while ODA significantly impacts domestic savings and has the potential to effectively promote economic growth, at the national levels and household. Its efficacy depends on a variety of aspects, including the degree of corruption, the stability of the world-wide economy, the distribution for intended course, and the recipient government's financial discipline.

5.4 Policy Recommendation

The research commends that the donor, the Government and private stakeholders should ensure that ODA is only used for the development initiatives for which they were intended, according to the government and the donor community. The public should monitor and question the government and national authorities on matters pertaining to the development and completion of ODA-funded projects through their representatives in the National Assembly and the media. Additionally, Donors should assess the quality of their donations so as to donate with a purpose and they should ensure that the sectors they focus on must be sectors which can be monitored and propel economic growth of the Kenya.

5.5 Avenues for Future Research

In the future, scholars might seek to broaden this research by examining a number of other areas. There is need to examine the causes of ODA's longevity notwithstanding its failure to hasten economic progress. Future researchers should do a study on ODA and government expenditure and further delve deep to look at ODA and corruption in Kenya. The study also provides a starting point for future research on the link between trade openness and economic expansion.

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