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IMPACT OF FOREIGN ASSISTANCE ON SAVING AND ECONOMIC GROWTH IN SUB SAHARAN AFRICAN COUNTRIES (PANEL DATA ANALYSIS)

By

SABITA TOFIK

JUNE 2016

ADDIS ABABA ETHIOPIA

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SABITA TOFIK

A PROJECT SUBMITTED TO THE DEPARTMENT OF ECONOMICS PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN APPLIED ECONOMIC MODELLING AND FORECASTING

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ADDIS ABABA ETHIOPIA

Addis Ababa University

School Of Graduate Studies

This is to certify that the project prepared by Sabita Tofik, entitled: Impact of foreign assistance on saving and economic growth in Sub-Saharan Africa and submitted in Partial Fulfillment of the Requirements for the Degree of Master of Arts in Applied Economic Modeling and Forecasting (Fiscal Policy Analysis and Management) complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Signed by :

Advisor _____ _____ Signature _____ Date_____

_____

Chair of Department or Graduate Program Coordinator

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ACRONYMS

DAC -Development Assistance Committee

FDI -Foreign Direct Investment

FE -Fixed Effect

GDP – Gross Domestic Product

IMF - International Monetary Fund

LDCs –Least Developed Countries

ODA - Official Development Assistance

OECD-Organization for Economic Cooperation and Development

RE - Random Effect

SSA- Sub-Saharan Africa

USA - United States of America

WB - World Bank

GLS –Generalized Least Square

ABSRACT

This study analyzes the impact of foreign assistance on saving and economic growth in Sub- Saharan African countries for the period 1991 to 2014. The empirical analysis has been performed by using Panel Data Estimation method. The main result shows that the effect of foreign assistance on economic growth was positive and significant in the short run. While in the long run, the effect was found to be positive and significant albeit diminishing return to foreign assistance. From the same estimation it was also found that, import has strong effect on economic growth of the nations under study. The other variable considered in this estimation was the macroeconomic stability situation of the sub Saharan African countries and this variable has strong and direct effect on economic growth through enhancing effectiveness of aid. The other focus of the study was effect of foreign aid on the domestic savings. According to the regression result there is significant negative relationship between the level of saving and foreign assistance at 10% level of significance.

CHAPTER ONE

1. INTRODUCTION

1.1. BACKGROUND

Foreign aid refers to the transfer of public resources in the form of grants and loans at concession financial terms (with at least a 25 percent grant element). According to Todaro (2012) the concept of foreign aid that is now widely used and accepted, is one that includes all official grants and concessional loans, in currency or in kind, that are generally aimed at transferring resources from developed to less developed nations for development, poverty reduction, or income distribution. (Michael p. Todaro and Stephen C.Smith, 2012) Foreign assistance defined by Development Assistance Committee (DAC) of the Organization for Economic Cooperation and Development (OECD) in terms of its size and influence as official aid. The definition of official development assistance (ODA) is the sum of grants and loans to aid recipients undertaken by the official sector of the donor country to bring about economic growth and hence development.

It remains an important source of finance in most countries in the developing world in order to fill the financial gap due low savings, limited export earnings and narrow tax bases. More over according to Chenery, (1965) Two-Gap Model

suggests that developing countries have to rely on the foreign capital inflows to fill the import-export gap and the saving-investment gap.

Rich countries started giving assistance to poor countries in the 19th century during the period of colonization. By the 1920s and 1930s countries like Germany, France and Britain were providing regular aid to their colonies in Africa, Latin America and Asia. These Colonial powers used their money to build infrastructures like ports, roads and railways. (Edwards, 2014) However, the motive behind such economic support was not really for the sake of economic growth and hence development of their colonies.

Basically, the idea of foreign assistance for development may be traced back to the Marshall Plan of the 1940's. Historically, European countries first received external assistance after World War II. During this period European's were ironically faced by the large balance of payment deficit and economic depression as a result of World War II. Thus, foreign assistance for economic revival was taken as an important thing. Actually, Europeans were enabled to get back on their feet. This Success undoubtedly proved the importance of substantial transfer of capital to developing countries. Accordingly, developed economies started to supply foreign capital to less developed countries since 1950's. The possibilities of rapid growth with a high degree of dependence on foreign assistance have been shown in dramatic fashion in the 1950s by the experience of Greece, Israel, Taiwan and the Philippines. (Edwards, 2014)

A more lasting form of foreign assistance started in the 1950s and 1960s, in Africa and other parts of less developed countries. This period was colonizer countries began to accept the independence of their colonies. The institutional framework for this resource transfer has changed profoundly at the end of 1950s. Programs of foreign assistance have replaced colonial relations, and donors and recipients were cooperated and socio-economic development was their primary objective. Particularly since the past decade, the international aid community has shown greater concern with improving aid effectiveness. During 1960s and 1970s most development economists were skeptical about markets, and believed that in poor countries there should be some form of planning had to guide resource allocation. (Elisabeth Sadoulet and Alain deJanvry, 1995) Despite the fact that protectionist policies provided the most effective way of fostering industrialization and encouraging growth for less developed countries in contrast donor countries need the recipients to be open for the commodities they produce in exchange for their donation. (Chang, 1994)

Tanzania, Mozambique and Ethiopia followed a more intense form of planning where markets were repressed significantly and the state played a growing role in the productive, investment, and distribution spheres. In these countries most large firms, banks and insurance companies were nationalized during the late 1960s and early 1970s though they are at the age of infancy. On the other hand Kenya and Zambia planning was light and, at least until the late 1970s, market signals were allowed to operate in most sectors. For instance in

Ethiopia like other African countries, foreign assistance was started around 1950's. (Alemayehu.G and Befikadu.D, 1998) During the imperial era, about 25 percent of the required investment was covered by external public capital.

Exhaustion of import substitution industrialization and the debt crisis in the 1980s induced a neoliberal critique of these strategies, calling for a descaling of the role of the state and attributing greater influence to market forces (Krueger, 1974). In the 1990s, as many countries slowly emerge from the debt crisis through successful stabilization and adjustment policies, a "new development economics" is also emerging. Here the key role of market liberalization is well recognized, a scaled down but essential strategic role is assigned to the state, and much greater importance is attributed to the developmental role of civil organizations, from the household to the community and to different forms of grassroots organizations and contractual arrangements. Though, Aid has been a key source of financing in SSA since the 1960s even in subsequent years the magnitude of external finance that developing countries received increased continuously. Over the last five decades, SSA stands as the most aid receiving region (Sindzingre, 2012). Throughout the entire period, sub-Saharan Africa has consistently the most aid receiver, for instance according to OECD data in the year 2012 among the top ten aid receiver countries six of them were found in sub Saharan Africa and that aid has increased from $6 billion in 1960 to $46 billion in 2012. (Brian I., 2014) In addition aid has been relatively better

targeted to very low-income countries as trade and remittance flows have been expanding rapidly. (Michael p. Todaro and Stephen C.Smith, 2012)

Since 1950 and 1960 European countries and USA were among the donor countries. In the last two decades, China has moved to increase its assistance to African countries. Since the mid-1990s, China has increasingly used foreign aid to achieve broader strategic objectives, including strengthening links with resource-rich African economies. Hence the biggest beneficiaries in Sub-Sahara African countries like Angola, Nigeria, Sudan, and Zimbabwe; which account for over 80 percent of the total Chinese aid to the region. As a share of the overall development support to Sub-Sahara African countries, the amount of foreign aid given by China to many individual countries is small, although this has substantially increased in recent years. Despite the significant increase in foreign inflows the economic growth achieved by the country has not been satisfactory. Most of Sub Saharan African countries have been suffering from low level of development despite the rapid increase in foreign assistance. Therefore, the actual role of foreign capital inflow has been an area of debate. Therefore this paper will try to explore the impact of foreign assistance on saving and economic growth in sub-Saharan African countries and add its contribution to the existing body of knowledge.

1.2 STATEMENT OF THE PROBLEM

It is a fact that developing economies in general, and Sub-Saharan African countries in particular, experienced slow economic growth. This slow

economic growth is mainly due to insufficient capital stock. In fact capital is supposed to be the major scarce factor in developing countries in general therefore, capital formation in those economies is important to increase production and productivity. Despite that, capital formation is determined by the saving rate but developing economies have characterized by low level of income and hence low level of saving rate. Therefore, this low level of saving rate and the required rise in capital stock (or investment) create a resource gap. To fill this gap, least developed countries have looked for resource inflows like foreign assistance(grant, loan) and foreign direct investment.

Like any other less developed countries Sub-Saharan African countries including Ethiopia also look for foreign assistance in addition to other sources of government revenue in order to finance their budget deficit. The main role of foreign assistance is expected to be stimulating economic growth and supplement domestic sources of finance such as savings. Given this expectation countries seek foreign assistance for the development of their economy (Taiwo, 2011) but the effectiveness of such foreign assistance has been an area of concern for many researchers. Particularly the issue of effectiveness of foreign assistance in LDCs has been the interest of many researchers. These interests emanate from divergent theoretical and empirical positions on the impacts of external finance on the economic development of LDCS. Many research works done to examine the effectiveness of foreign assistance using different methods but they did not give precise conclusion.

Some of researches conclude that aid has negative effect for example authors such as Easterly (2003) and Moyo (2010), official aid creates dependency, fosters corruption, and doesn't allow countries to take advantage of the opportunities provided by the global economy and other Scholars like Sachs (2005) and Stiglitz (2002), conclude that a large amount increases in foreign assistance could be greatly effective in helping reduce poverty. Therefore it is important to examine the impact of foreign assistance on saving and economic growth in sub-Saharan African Countries in the short run and in the long run my work will contribute something in the body of literature. Because seeing the impact of aid on saving in indirectly seeing its long run effect on economic growth through capital formation and investment as far as my exploration is concerned there is nothing much done in this area, in addition seeing the impact of foreign assistance on saving has its implication on aid effectiveness. Most of the research works done before were on the area of seeing the effect of foreign assistance and economic growth without seeing the relationship between aid and saving at the regional level of sub-Saharan Africa. The key question in this case is that whether aid has any effect on Sub-Saharan African countries' the level of saving and Economic growth. The issue of effect of foreign assistance on economic growth has been approached from various perspectives; nevertheless, a single and precise answer had not been given. This study will attempt to answer the question by incorporating impact of foreign assistance on saving in addition to its impact on economic growth based on the available data and appropriate method.

1.4 OBJECTIVE OF THE STUDY

The main objective of the study is analyzing the impact of foreign assistance on saving and economic growth on some Sub-Saharan African countries. But, the impact of foreign inflows on growth depends on a number of factors like the recipient country's government allocation of capital inflows between consumption and investment (or saving) Thus, the paper specifically tries to analyze:

i) The impact of external assistance on saving rate.

ii) The effects of foreign inflows on economic growth.

Finally, the study will tries to provide conclusion and policy implications.

1.5 HYPOTHESIS:

The formulation of working hypothesis is done based on economic growth theories and further supported by findings of previous literature. Having in mind that there exists perfectly opposing and variegating results each having substantial share from the existing body of literature. Said this, the following conjectures are going to be tested in due course of achieving the objectives of this study:

1. Capital inflows don't affect economic growth of countries in the sub Saharan region.
2. Macroeconomic stability has nothing to do with economic growth in the region under study

3. The economic growth of the countries in the sub Saharan Africa region is not significantly affected by assistance from abroad (measured in terms of official development assistance) and finally,
4. The level of saving in the countries of the sub Saharan Africa region is not significantly affected by assistance from abroad (measured in terms of official development assistance.

1.6 DATA TYPE, SOURCE AND METHODOLOGY

For the purpose of analyzing impact of foreign assistance on saving and Economic growth time serious data, from 1991-2014, would be used. For the attainment of this work secondary data is collected from different government ministers and authorities' data base as well as international financial organizations. These include Ministry of Finance and Economic Cooperation, National Planning Commission, publications of National bank of Ethiopia (NBE), Ethiopian Investment Authority, Central Statistical Authority (CSA), Ethiopian Economic Association for the Ethiopia case and International Monetary Fund(IMF) and World Bank(WB) and other International data bases for the rest of Sub-Saharan African countries. This paper would try to assess impact of foreign assistance on saving and economic growth of Sub-Saharan African countries. The study will use augmented Fischer-Easterly type model and estimate this using both cross-section and panel data estimation technique to investigate the impact of foreign aid on economic growth. It follows the exogenous growth model (Neoclassical/Solow

growth model) which was revised by Barro (1991). Its multivariate nature takes into account other factors that influence economic growth other than foreign aid such as a country's gross domestic savings and investment share to GDP, inflation, government spending, terms of trade, and others. For sake of comparison I use the sample of 23 Sub-Saharan African countries.

1.7 ORGANIZATION OF THE PAPER

The remaining part of this paper has three sections. In chapter two, theoretical and empirical literatures will be explored. This is followed by model specification and variable definition. Chapter four will be econometric analysis and interpretation. Finally, conclusions and policy implications will present in chapter five.

CHAPTER 2

REVIEW OF RELATED LITERATURE

2.1. THEORETICAL REVIEW

This section provides a brief review of the existing literatures, which will be useful for modeling the impacts of foreign assistance on saving and economic growth in the following chapters. It starts with theories concerning growth and the role of foreign assistance and then followed by empirical review.

2.1.1 GROWTH THEORIES AND FOREIGN AID

2.1.1.1THE TWO GAPS MODEL BASED ON THE HAROD-DOMAR GROWTH MODEL.

The Harrod-Domar model, points out that output depends on the investment rate and its productivity. In an open economy, investment is financed by savings which is combination of domestic and foreign savings. This model explains economic growth in terms of a savings ratio and Capital-output coefficient. Based on the Harrod Domar model the two gaps model was established to explain the saving gap investment and the role of foreign assistance.

The two gaps model was first articulated by the two economists Hollis. B Chenery and Alan M. Strout in 1962.Their work was submitted as a report to the government of Israel entitled "Development Alternative in an Open

Economy the Case of Israel". The model came as an open debate for the economists to examine and observe the role foreign assistance on different economic sectors of the aid receiving countries to examine the demand for foreign assistance and its importance in shaping the economic characters of countries receiving aid. (Chenery and Strout, 1962 cited in Chenery and Strout, 1965)

Before 1962 the impact of foreign assistance on both macro and micro economic variables was the subject of controversy. Since 1962 the end of the controversy became the beginning of another issue of modification implementation and validity of the model for different countries to formulate different economic policies. The Harrod Domar growth model was regarded as the base for the two gap model, which determines the capital requirement (k_r) for a country to reach the targeted rate of growth. Harrod Demar model basic equation is Gk = s where G is the growth during a unit of time i.e. Y/Y , K is the capital formation in the period divided by the increase in the output in the same period i.e. I/Y, and s is the average propensity to save S/Y. The basic equation of the model is obtained by equalizing ex-post saving and ex-post investment, which can be seen as under:

Y/Y * I/ Y = S/Y or I/Y = S/Y or S = I (saving investment identity)

However, the two gap model assumes the two functions under condition i.e. ex-post saving and ex-post investment are not equal(saving investment identity

does not hold) and particularly assume ex-post saving is less than the ex-post investment, and attempts to find a way out to fill the gap by equalizing the two. (Gersovitz, 1982)

This analysis arises from the fact that growth requires investment. Investment in turn requires saving which may be domestic, foreign or both. The foreign exchange gap arises when the domestic savings is not sufficient to investment and hence to guarantee growth, consequently the saving may not be exchangeable into foreign exchange earnings with which to acquire imports. Chenery and Strout (1962) emphasized the difference between domestic saving and investment requirement on one hand, and the difference between the needed imports for the targeted investment and exports revenue on the other hand. They stress that in some cases a higher capital inflow can avoid changes in the composition of output and promote growth at higher level of productivity. Since then the two gap model has become basic model of analyzing the need and the effect of foreign assistance on the economy of developing countries who receive aid. The model first applied in Israel, and then it applied in Pakistan, Greece, Mexico, India and Nepal. (Chenery and Strout, 1962 cited in Chenery and Strout, 1965)

The impacts of foreign capital inflows predominantly aid in the case of Africa have attracted considerable attention since the mid 1950's and 1960s. Rosenstein-Rodan (1961) for instance, argued that aid is necessary for developing nations to supplement scarce domestic resources enabling them to

self-sustaining growth based. Eventually, domestic saving will be sufficient to finance the desired growth rate without external finance. (Rosenstein-Rodan, 1961)

According to Chenery and Strout's (1965) two gap model gave further economic argument for aid. They suggested that there were three stages of transition leading developing economies to self-sustaining status. In each of these stages foreign aid flows have an important role in achieving the constraints of the economic transition. (Chenery, 1965) During the first phase, aid was necessary to bridge the gap between incremental investment and incremental domestic savings. In the second phase, although overall investment and savings had increased, the saving rate was still below the investment rate, hence aid is still required. During the third phase of transition, in the absence of adequate foreign exchange earnings, the economy required aid to finance imports that the domestic economy does not have the capacity to invest. This idea was rely on the assumption that developing economies are constrained by capital resources to reach their target growth rate. Accordingly, foreign capital inflow is important for these economies given that it is all invested. However, the rapid increase in aid during the 1970's was accompanied by worsening growth performance. Despite the increase in amount of aid inflows, several countries in Africa have a deteriorating growth during the 1980's. (Edward, 2014)

White (1992) also criticizes the two-gap model based on three points. First, it is a very sticky model with no substitution in production either between factors to relive capital shortage or to reallocate factors between sectors. Second, the underlying Harrold-Domar model is too simplistic representation of the growth process: many other factors besides capital accumulation affect growth. Third, the model doesn't incorporate any mechanisms by which if aid may not have linear relationship increase in investment, government development expenditure or foreign exchange. (White, 1992)

The debate about the relationship between aid and savings can be divided historically into a number of distinct phases. During the 1960's, economists believed that capital inflows accelerate growth through supplementing the level of domestic saving or increasing the rate of domestic capital formation and hence investment. [Chenery and Strout, 1966; Rostentein-Rodan, 1961]. However, most of those aid effectiveness analyses were done based on a single country cases. There was not much done the case of cross country analysis at that time.

During the 1970's the 'radicals', who believed that foreign assistance, rather than being the stimulant of growth, it brings about negative impact on the economy, challenged the conventional aid theories. They are criticizing the Chenery and Strout's (1965) and Griffin K. and J. Enos's(1970) two-gap model and posited that foreign aid can be a substitute for saving and a large

fraction of it is used for increasing consumption instead of investment and thus it will have a crowding out effect on domestic saving.

2.1.2. THE SOLOW-SWAN GROWTH MODEL

Most economic literatures used the standard Neoclassical model (Solow Model) for studying the interaction between foreign aid, economic growth and more recently policies. However, recent developments in the understanding of growth theory have lead economists into endogenous growth theory.

Standard neo-classical "Solow" model address the central questions about the rationale behind some countries are becoming richer and richer and others becoming poorer and poorer. Earlier neo-classical models treat technology as exogenous and assume resources are fully utilized and it allows factor input substitution. These models also assume that labor productivity and capital stock are exogenous. Capital stock is assumed to increase in response to the continual increase in labor productivity. This expansion allows for growth in output and consumption levels i.e. the steady state level. As it is also assumed that there are diminishing returns to capital and labor, poor countries with their low initial capital stock should have a higher return to capital investment and a fast growth rate in transition to the steady state. Poor countries have lower levels of initial endowment on which temporary fast growth rates are sometimes observed. (Chandar, 2007)

The Solow-Swan exogenous growth model works under some assumptions. The main assumption is that the capital stock K is subject to diminishing returns. When controlling for the labor force in the economy, the last unit of capital used to generate output will have less of an effect on output than the previous unit of capital. If we assume for simplicity that the labor-force growth rate and rate of technological progress is zero, then the infusion of new capital balances out the depreciation of old capital and the economy experiences no growth. Since, in the Solow-Swan model, concerned with per capita or per worker variables (output per worker, capital per worker), the growth rate of population will have to be exceed by the growth rates of output and capital for a noticeable positive change in the per capita variables. (Barro, R.J., and X. Salai-Martin, 2004).

The neoclassical model has short-run and long-run implications which help us to identify explanations for growth in different regions of the world. In the short-run, the economy converges to a steady state output level and growth is only affected by the level of this change in output level as the economy reaches its steady state. Also in the short-run, a nation's growth rate is determined by its capital accumulation as it converges to its steady state. At the steady state level, output per worker and capital per worker do not change over time. When considering prospects for capital accumulation, we can clearly see how countries will have distinct growth advantages or disadvantages. Some nations have lesser initial endowments, resources and a lesser capital stock. When

combined with a limited technological innovation, this makes capital accumulation and hence economic growth become challenging. (Chandar, 2007).

The long-run growth rates for nations' in this model are solely rely on exogenously given factors, like technological advancement which is actually not included in the model will contribute to a nation's ability to grow. In the long-run, the model predicts that an economy will converge to its steady state growth rate, which will be determined by technological progress and labor force growth this imply that external finance(grant, loan and FDI) stimulates growth by providing the needed technology, financial and technical support to insure higher investment levels.

Earlier neoclassical models anticipate that countries with higher savings rates will encounter faster growth rates, but more recently, the Solow model of exogenous growth predicts that technological progress has a more significant impact on economic growth than does the savings rate. More recently, there has been an attempt to understand the role played by non-traditional inputs in explaining cross-sectional and time variance in growth rates. Factor inputs like labor, technology, and capital play a large role in determining differences in growth across countries and across time. Institutions and political movements can also have influence on nation's ability to grow. (Barro, R.J., and X. Salai-Martin, 2004).

The theoretical framework used to explain distinctly the relationship between foreign aid and economic development in Sub Saharan Africa is centered on the new endogenous growth theory arising from Lucas and Romer modification of the old neoclassical growth theory. The main contributors to the new endogenous growth theory are Arrow (1962), Romer (1986) and Lucas (1988). The endogenous growth theory recognizes the vital importance of the Endogeneity of capital (that is, human capital and research and development activities) in the growth process. (*Ibid*)

Thus human capital is introduced into the growth theory. Human capital is not subject to diminishing returns rather it is increasing return (Romer, 1986) allowing growth to occur continuously at a rate of human capital accumulation. This addition into the growth theory changes very little, with foreign capital and policy distortions having the same impact in the short run. However, this endogenous model does drop the assumption of diminishing returns which allows for unbounded long term growth. This is because increase in returns to capital rather than diminishing return this means that the returns on investment projects will be greater than the depreciation cost which allows for a profit on each subsequent investment. This endogenous model, stimulated by Romer (1986), suggests equilibrium can be reached where continuous long term growth exists. This means that foreign aid will increase growth well into the long run. (Romer, 1986)

According to Romer (1986) growth is closely related to the level of human capital. Firms directly benefit from knowledge accumulation due to new innovations and designs that allow for greater productivity. Increase foreign capital leads to greater accumulation of human capital via increase education and widespread Research and Development. Additional human capital causes a higher rate of technological progress, via new innovations. Higher technological progress increases output per capita allowing for unbounded long run growth.

2.2. EMPERICAL REVIEW

The relationship between foreign aid and economic growth has drawn great attention for years, but the empirical results are different. There is now a large literature on the relationship between aid and growth though there is not much research done focus on foreign aid saving and economic growth at a regional level. For a recent comprehensive survey of the theoretical and empirical literature on foreign aid and growth see (Hudson, 2004) and (McGillivray, M., Feeny, S., Hermes, N. and R. Lensink , 2006) The debate on aid effectiveness can be grouped in to three, the first group of literatures are highly optimistic on aid effectiveness, but the reverse is true for the second group. They are highly criticized aid effectiveness even some blame aid as the cause for African under development. These two groups can be considered as two extreme cases but there are a lot of research results on aid effectiveness conditional on different situation like, political and macro-economic stability this group of literatures stands between the two extremes.

2.2.1. THE FIRST GROUP OF LITERATURES "AID PROPONENTS"

Although a number of studies reported the negative relationship between foreign aid and savings, White (1992) criticize Griffin's (1970) model in particular and 'radicals' position in general based on three points. First, the absence of an economic model and thus including a very simple economic relationship can alter the conclusion. Second, Griffin's model doesn't provide the possibility that aid may increase income by more than the value of the inflow. Where it does so there would be a positive feedback effect on savings. Third, Griffin treated aid as untied income, but tying can force the country to save a higher proportion of the additional income than its marginal propensity to consume. (White, 1992) Addison, T., Mavrotas, G. and M. McGillivray (2005) examine trends in official aid to Africa over the period 1960 to 2002. The authors largely emphasize the remarkable decrease in aid over the last decade which will have an impact on Africans living in poverty and the African economy as a whole. As a result of the shortfall in aid, the MDGs will be much harder if not impossible to be achieved. This paper concludes that aid in fact does promote growth and reduces poverty. Furthermore, it has also positive impacts on public sector aggregates, contributing to higher public spending and to lower domestic borrowing. Nevertheless, it is apparent that the MGDs cannot be achieved with development aid alone, but other innovative sources of development finance need to be explored as well.

Karras (2006) investigates the correlation between foreign aid and growth in per capita GDP using time series annual data from the 1960 to 1997 for a sample of 71 aid-receiving developing countries. This paper concludes that the effect of foreign aid on economic growth is positive, permanent, and statistically significant. More specifically, this work concludes that a permanent increase in foreign aid results in a permanent increase in the growth rate of real GDP per capita. These results are obtained without considering the effects of policies and other socio-economic condition.

Gomanee, K., Girma, S. and O. Morrisey, (2005) address directly the mechanisms through which aid impacts growth. Using a sample of 25 Sub-Saharan African countries over the period 1970 to 1997, the authors determined that foreign aid has a significant positive effect on economic growth. Furthermore, they identified investment as the most significant transmission mechanism. This paper also concludes that on average, each one percentage point increase in the aid/GNP ratio contributes 0.25% percentage point increase to the growth rate. As a result, Africa's poor growth might be due to other factors than aid ineffectiveness.

Hansen and Tarp (2000) provide a survey of empirical analyses from the last 30 years that make use of cross-country regressions in assessing the effectiveness of foreign aid. Their regression result showed that: (i) aid increases aggregate saving, although not by as much as the aid flow, (ii) aid increases investment, and (iii) aid has a positive effect on the growth rate whenever growth is driven

by capital accumulation. (Hansen, H. and F. Tarp, 2000) All the above literatures are in favor of positive impact of foreign assistance though each of the literatures has their own motive to promote aid.

2.2.2 SECOND GROUP OF LITERATURES "OPPONENTS OF AID"

Boone, (1994) signaled the negative relation between aid and economic growth, substantiated by panel data regressions based on a sample of more than 90 countries covering twenty year. The result shows that aid has no impact on investment or growth in standard neo-classical growth models. (Boone, 1994)

Among the researchers Dambissa Moyo can be considered as rampant economist in criticizing foreign aid, according to Moyo with the exception of humanitarian aid, aid is already out and replaced with a suite of alternative financing methods. Aid, according to Moyo, has failed. More than US$1 trillion of aid has been sent to Africa since the end of World War II and it has been made the poor poorer and growth slower. Millions in Africa are poorer today because of aid and Africa is far worse off today than it was 40 years ago. According to Moyo, 'aid is no longer part of the solution, it is part of the problem – in fact, and aid is the problem'. (Moyo, 2010) Though this idea seems extremely pessimistic about aid effectiveness and subject to critique by a number of researchers.

Ouattara (2006) analyzes the effects of aid flows on key fiscal aggregates in Senegal. This paper utilizes data over the period of 1970 – 2000 and primarily

focuses on the interaction between aid and debt. The author determined three main outcomes of his study. The First one is that a large portion of aid flows, approximately 41%, are used to finance Senegal's debt and 20% of the government's resources are devoted to debt servicing. Second, that the impact of aid flows on domestic expenditures is statistically insignificant, and third that debt servicing has a significant negative effect on domestic expenditure. As a result, his paper suggests that debt reduction could become a more successful policy tool than obtaining additional loans. (Ouattara, 2006)

2.2.3. THIRD GROUP OF LITERATURES "AID EFFECTIVENESS CONDITIONAL ON OTHER FACTORS"

Papanek (1972) tried to see the impact of aid on domestic saving and he concluded that the reflection of a negative correlation does not show causation. According to him high per capita aid inflows and low average saving propensities are both might be caused by some other third factor such as political instability. (Papanek, 1972)

Accordingly, Bowels (1987) attempted to investigate the causal relationship between domestic saving and foreign aid using the 'Granger Causality' test. His analysis suggests that the causal relationship can be inferred but the direction of causality is mixed. In countries where it holds it is found that it depends on the structure of aid (from multilateral or bilateral sources). This line of inquiry continues to these days and there are still controversial ideas in the area of "aid growth' and "Aid Saving'. (Bowles, 1987)

Alemayehu and Befekadu (1998) estimated a saving function in which aid and income are the only determinants of saving. Their result shows that aid inflows do not have statistically significant impact on the level of saving. Moreover, unlike the cross-country result reported in the literature, it has a positive sign in the short run but a negative sign in the long run. (Alemayehu.G and Befikadu.D, 1998)

A study conducted by McGillivray (2005) demonstrates how aid to African countries not only increases growth but also reduces poverty. Furthermore, the author points out the important fact that continuously growing poverty, mainly in sub-Saharan African countries, compromises the MDGs (Millennium Development Goals) main target of dropping the percentage of people living in extreme poverty to half level by 2015. His research econometrically analyzes empirical, time series data for 1968-1999. The paper concludes that the policy regimes of each country, such as inflation and trade openness, influence the amounts of aid received.

In a country analysis of Cote d'Ivoire from 1975 to1999, Ouattara (2003) categorizes foreign aid into project aid, program aid, technical assistance and food aid. Using a disaggregation approach with auto regressive techniques, he finds that (i) project aid displaces public savings; impact of program aid is almost neutral while technical assistance and food aid increase public savings and (ii) project aid to a lesser extent, program aid, worsen the foreign dependence of Cote d'Ivoire while. Therefore Ouattara (2003) concluded that

different types of aid have different impacts on growth. On the contrary, according to Mavrotas, (2003) project aid and food aid are found to reduce public investment whereas program aid and technical assistance positively affect public investment in Uganda.

Among the numerous studies of this group, a leading paper that also came to exert a significant influence on aid policy is the study out of the World Bank by (Burnside, Craig and David Dollar, 2004). The authors argued that although aid has no impact on growth on average, it can work as long as recipients pursue 'good' policies. In their own words: "… aid has a positive impact on growth in developing countries with good fiscal, monetary and trade policies … [but] … in the presence of poor policies, aid has no positive effect on growth".

On the other hand a group of researchers Ramesh.d *et al* assesses the impact of foreign aid on economic growth for a large sample of developing countries. Using augmented Fischer-Easterly type model. Their result supports the view that foreign aid does have some positive impact on economic growth when there is stable macroeconomic policy and environment. (Ramesh Durbarry, Norman Gemmell and David Greenaway, 1998)

In his research, Ram (2004) looks at the issue of poverty and economic growth from the view of recipient country's policies as being the key role in the effectiveness of foreign aid. Nevertheless, in his paper the author disagrees with the widely-acknowledged view that redirecting aid toward countries with better

policies leads to higher economic growth and poverty reduction rates. As a result, based on his research the author concludes that evidence is lacking to support the leading belief that directing foreign assistance to countries with good 'policy' will increase the impact on growth or poverty reduction in developing countries.

Quartey's (2005) research focuses on innovative ways of making financial aid effectiveness in Ghana. The author concluded that mainly MDBS (multi-donor budgetary support) could be successful, but only if the government of Ghana and its partners plan better and coordinate their efforts. Moreover, the government needs to work on reducing its debt burden, so it would not use its aid inflows to service its debt. The author suggests that the MDBS (multi-donor budgetary support) cannot be fully successful until it is entirely harmonized with other forms of project aid and until the inflows become more predictable.

Ekanayake analyzes the effects of foreign aid on the economic growth of developing countries. The study uses annual data on a group of 85 developing countries covering Asia, Africa, and Latin America and the Caribbean. The effect of foreign aid is analyzed using panel data estimation and conclude that aid has a mixed effect on the growth of developing countries Here the Author did not give any economic suggestion or analysis for those countries aid resulted in negative impact. (Ekanayake, E. M. and Daytona Beach, 2008)

Wondwesen (2011) also analyzes the effect of Foreign Capital Inflow (FCI) on the economic growth, saving and investment in Ethiopia from the period

1974/75 to 2008/09. His empirical analysis was performed by using Johansen Maximum likelihood method. The main result shows that foreign aid has a significant and positive effect on economic growth in the long run as well as in the short run. It has also positive and statistically significant effect on investment in the long run. In contrast, aid has insignificant and negative effect on saving in the long run while it has significantly negative influence in the short run.

The literatures discussed so far are come up with different conclusion based on their respective analysis and methodology. The difference might be due to the difference in methodology, macro-economic situation of the countries under study or the intention attain to attain the objective of each researcher. Most of the empirical cross-country works on aid effectiveness based on correlations between aid, on the one hand, and GDP growth, on the other. Based on the available data, this paper will try to discuss first the aid savings and subsequently the aid-growth relationship using best suggested method that better shows the impact of foreign assistance**.**

CHAPTER THREE

3. DATA TYPE, SOURCE AND METHODOLGY

3.1 INTRODUCTION

This chapter presents the data type, source and methodological framework that will be used to estimate the effect of foreign assistance on economic growth. It also sets out the empirical models used and results from relevant tests that were conducted to ascertain the validity of the data and robustness of the estimation model.

3.1 DATA TYPE AND SOURCE

To determine the impact of foreign assistance on saving and economic growth in sub-Saharan African countries after controlling for structural differences which focus on the 1990's, are applicable to a more recent time period, 1991-2014. Therefore limiting my sample to this period, the study uses the sample of 23 sub-Saharan African countries to examine the effects of foreign assistance on saving and economic growth. The countries taken as a sample in this empirical investigation are selected with the view to obtaining greater variability in dependent and independent variables so as to increase the power of the empirical tests. Most of the data's are obtained from World Bank's website in addition some missing data's for Ethiopian case were obtained from different government offices of Ethiopia. The time series data of 1991-2014 are averaged

by four years and there will be six observations for each country and 180 observations in total. An additional advantage of using averages (rather than annual data) in this case is that it avoids problems of specifying lag structures for the effects of aid on growth. These lags can be quite long, and vary across countries.

3.2 MODEL SPECIFICATION

This section will cover the data source type and methodology to employ panel data techniques. While we regard the latter as more reliable, using cross-section methods allows first to investigate the effects of data averaging over the 1980-2014 period; and second to compare results with previous investigations. The cross-section model that going to estimate has the following form:

$$\mathbf{Y_i = \alpha_i + \beta' X_i + \mu' Z_i + u_i} \quad \text{.....(1)}$$

where Y_i is the average growth rate of GDP over the period 1991-2014 for country i, X_i is a vector of foreign assistance(Net official development assistance and official aid received), Z_i is a vector of other 'control variables' including trade, macroeconomic and 'Barro' variables and u_i is an error term.

An advantage of panel data techniques is that it contains "the information necessary to deal with both the inter-temporal dynamics and the individuality of the entities being investigated" (Dielman, 1989) In particular, it allows the equation intercepts to vary as a way of representing country and/or time

effects where these effects “are typically thought to arise from the omission of important variables whose explicit inclusion in the model was not possible”

Hausman test will be conducted to select between the fixed (FE) or the random (Dielman, 1989)effect (RE)model. The test is based on the null hypothesis that RE is the preferred model against the alternative hypothesis that the FE is the preferred model.

3.2.1. The Fixed Effects (FE) Model

Panel data can be analyzed using two models, namely the fixed effects and the random effects models. In the proposed study, the FE was used to determine the relationship between foreign assistance and economic growth within each country. The justification for using this model is that each country has a unique macroeconomic environment with variables that may or may not affect GDP growth. The FE model is defined as

$$Y_{it} = \alpha_{0+} \alpha_{i+} \alpha_{t+} \beta X_{it+} ¥ Z_{it} + e_{it} \quad (2)$$

where α_o is an overall constant, α_i represents the country effects and α_t represents the time period effects. These represent non-measurable effects: for instance, α_i represents the net effect of omitted time-invariant variables such as political instability, military governments, climatic conditions, etc., and α_t represents the net effect of country invariant time effects such as world commodity prices or interest rates. Hence e_{it} represents the net effect of

omitted variables which vary over both country and time. Equation 2 is a two-way fixed effects model.

3.2.2. THE RANDOM EFFECTS MODEL (RE)

RE model assumes that differences across entities (countries in this case) are random and uncorrelated with the independent variables. It is also based on the assumption that the error terms of individual entities are not correlated with the independent variables. The general representation of the RE panel model is:

$Y_{it} = \mu + \beta' X_{it} + w_{it}$.....(3) Where $w_{it} = Z_{it} + e_{it}$ and t denotes time.

Y_{it}= GDP

X_{it}=Foreign Assistance

wit- Error term

3.2.3 THE SAVING EQUATION

The other equation is the standard-type saving function augmented by the export variable, per capita income and gross domestic product. Export performance is also expected to influence the saving rate for several reasons (Rana P. and Dowling J, 1988). First, exports (especially of primary products) often produce highly concentrated income and standard savings theory shows that the propensity to save from such income is high. Second, countries whose export performance is good tend to face fewer foreign exchange constraints on

investment and therefore tend to provide more of an incentive to save. Third, to the extent that trade taxes are a major source of revenue, exports tend to increase government savings. The inclusion of the gross domestic product and per capita income in the saving equation is fairly standard. The gross domestic product variable is justified on the ground that rapid growth leads to changes in relative income and life-time consumption patterns and increase in transitory income in relation to permanent income; the former influences the saving rate more than the later. The per capita income variable reflects the state of development of a country and is expected to have a favorable (positive) influence on saving. As discussed in the literature, foreign inflows could affect domestic saving positively or negatively depending on the substitutability and complementarity between them. Demographic factors also have an important influence on aggregate saving rate. (Blanchard and Fischer , 1989)

According to the life cycle model, individuals will have negative savings when they are young and have low or zero income, positive savings during their productive years and once again, negative savings when they are old and retired. Thus aggregate savings will be affected by the age distribution of the population - if the share of inactive or dependent population is high, the savings ratio will be low. We use the age dependency ratio ,the ratio of dependent population (those under 15 years of age and 65 years or older) to the working age population (aged 15 to 64 years), as a reasonable

proxy to capture this effect (even though it is true that not everyone aged 15-64 years would be working and saving and not everyone under 15 or over 64 would be necessarily dependent or dis saving). Holding other factors constant, a country's aggregate saving rate is low if it has more dependent population. Therefore, it is expected that dependency ratio negatively influences the saving rate.

GNS=*f* (AID, X, GDPPC, DEPEND)

Accordingly, the model to be estimated is specified as follows:

$GNS=\alpha_{o+}\ \alpha_1 AID +\alpha_2 GR_+\ \alpha_3 GDPN +\alpha_4 X_+\alpha_5 DEPEND_+ V$.....(3)

3.2. VARIABLES DESCRIPTION

The variables which will employ in this study to develop the two equation are presented below.

- GR: growth rate of real gross domestic product
- X:export as percentage of GDP
- GDPN:GDP per capita and
- DEPEND: the age dependency ratio
- FAIDOECD: Official Development Assistance (DAC) as defined by the OECD (1993) as a percentage of the gross domestic product (GDP).
- SAV: Domestic savings as a percentage of GDP.
- OPEN: Two measures to reflect trade openness and macro- economic stability. Openness to trade is often hypothesized to raise growth through

several channels, such as access to advanced technology from abroad, possibilities of catch-up, greater access to a variety of inputs for production, and access to broader markets that raise the efficiency of domestic production through increased specialization. Various measures of openness have been proposed and tested, with no single 'best' measure emerging. Edwards (1998), for instance, uses a series of openness indices for trade policy and to proxy trade distortions. Frequently used measures include the ratio of total trade to GDP and changes in the terms of trade. We experiment with a variety of measures (discussed below) but generally report those for the terms of trade (TOT) and 'weighted openness' (WOPEN), where a standard openness index, $\frac{X+M}{GDP}$, is weighted by the current account balance, $\frac{|X-M|}{GDP}$ (i.e WOPEN = $\frac{(X+M)}{|X-M|}$)

This measure is superior to the unweight ratio because it recognizes the importance of both a country's trade intensity and its trade equilibrium

INF: This is the standard deviation of the inflation rate over the period 1991-2015. It gives an indication of the extent of volatility in inflation over the period and is expected to proxy general macroeconomic instability. As discussed above we expect that this variable will be negatively related to growth.

- MONEY: Financial repression has been incorporated as a dichotomous variable by many, for example World Bank (1989), who defined financial repression as an average real interest rate below –5% over a period of time. Easterly (1993) examined –5% and –2% interest rate thresholds as

well as the actual average real interest rate. Others have used the money supply (M2) as a percentage of GDP (Fry, 1981; Dowling and Hiemenz, 1983) denoted as MONEY in this case. Small values are regarded as being associated with financial repression while large values indicate greater financial liberalism.

Finally, with the exception of Hadjimichael, M.T et al., (1995) previous regression analyses have tested a linear aid-growth relationship. However, the possibility that LDCs may over-borrow capital from abroad has been recognized at least since Chenery and Strout's (1966) analysis of "absorptive capacity constraints" and has been emphasized in the more recent literature on optimal borrowing and the 'Dutch disease' (e.g. van Wijnbergen, 1984 and Younger, 19 (Younger, 1992)). The possibility of non-linearity (Hadjimichael, M.T et al., 1995) in the aid growth relationship should therefore be recognized and the paper tried to capture this by including a quadratic term in the aid/GDP ratio, FAIDOECDSQ, in our regressions. Therefore the model to be estimated is therefore:

$$\text{Growth} = \alpha_0 + \beta 1i\,\text{FAIDOECD} + \beta_{2i}\,\text{FAIDOECDSQ} + \beta_{3i}\,\text{SAV} + \beta_{4i}\text{OTHERIFS} + \beta_{6i}\text{TRADE} + \beta_{6i}\text{MONEY} + \beta_{8i}\text{INF} + e_I \quad (4)$$

Where TRADE is proxied by WOPEN.

It should be emphasized that the motivation for this model is to control for the policies and factors discussed above, which might be correlated with growth

and omission of which might bias the estimates of the effects of inflows on growth. In discussing results below we do not focus on the interpretation of these control variables though clearly it will be important to identify whether our model is appropriately specified.

CHAPTER FOUR

4. EMPERICAL ANALYSIS

In this empirical analysis, the study will estimate two models centered on analysis of aid, saving and economic growth. The first model tests whether or not ODA has a positive effect in economic growth and whether it is subject to diminishing returns. Burnside and Dollar (2004) introduce an aid-squared term to measure potential diminishing returns to ODA. The core elements of this empirical model are derived from Easterly Fisher type model and the left-hand side variable represent the Logarism of annual GDP per capita based on the data available for the year 1991-2014. The panel estimation results based on fixed and random effect model give us different results.

4.1. FIXED EFFECT MODEL

Based on the fixed effect model the result shown in (Table1) below depicts that there is significant positive relationship between aid and economic growth. The relationship was statistically significant at 90% confidence interval. The positive coefficient of lnODA which is 0.075 suggesting that an increase of total aid during the periods under observation has a percentage point of GDP is associated with an average per capita GDP growth rate that is higher by approximate. However, this relationship doesn't hold in the long run because AID^2 has also insignificant at 10% level of significance. According to literatures aid has diminishing returns in the long run. Burnside and Dollar (2004)

introduce an aid-squared term to measure potential diminishing returns to ODA.

The study also tested the conjecture that aid is more effective when specific macroeconomic situation are in place (Burnside and Dollar, 2000; Collier and Dollar 2001, 2002 cited in (Burnside, Craig and David Dollar, 2004) To capture the macro-economic condition the study uses the original and updated Sachs Warner policy variables and a policy index representing the weighted average of inflation, budget surplus and trade openness (Burnside and Dollar, 2000). In the baseline specifications, the evidence in favor of aid raising growth only in good macroeconomic environments remains inconclusive. In this study the coefficient of inflation which is regarded as proxy of macro-economic stability imply that aid is effective in stable macro-economic condition and it is highly statistically significant at 1% of significance level. The result implies 1 percent point increase in inflation will result in 0.1394 percentage point decrease in growth in GDP per capita. The coefficient of import imply that there is strong impact of import on economic growth of sub-Saharan African countries this can be due to the imports of SSA countries is mainly capital good used as input for manufacturing. Import also highly correlated with foreign assistance because donors impose their precondition on aid receiver countries to consume their product this result in higher dependency of SSA countries economy on import. The result shows that one percentage point increase in import will result 0.437percentage point increase in growth rate of GDP per capita. The

coefficient of import is strongly significant at 99% confidence interval. (See table 1)

Table 1. Panel data estimation result (Dependent variable lnGDPPC) Model One

Variable	Coefficient	T-Value	P-Value
Lnoda	.0753414	1.75	0.083
lnm2	-.2651466	-3.44	0.001
Lnlaf	-.9566443	-1.74	0.086
Lnimp	.4370948	5.58	0.000
Odasqr	1.87	0.35	0.727
Lninf	-0.139491	-7.09	0.000
Cons	6.264009	2.67	0.009

$$lnGDPPC = \underset{(.0429808)}{6.264009} + \underset{(.0488289\ )}{0753414\ lnoda} + \underset{(.077041)}{lnm2 + (-.9566443)} + \underset{(.5511949)}{(-.9566443)lnlaf} + \underset{(\ .078314)}{.4370948\ lnimp} + \underset{(5.35)}{1.87\ Odasqr} + \in$$

4.2. The Random Effect Model

The random effects model results are presented in Table 2. The results show that official development assistance had a negative

relationship with the growth of GDP per capita. On the other hand the long run relationship between lnGDPPC. foreign assistance(Odasqr) is positive and significant at 5% level.

Table 2.Panel data estimation result (Dependent variable lnGDPPC) Model 2

lnGDPPC	Coefficient	Standard Error	Z-Value	P-Value
Oda	-.0246696	.0126472	-1.95	0.051
Lnimp	.1217349	.1217349	2.34	2.34
Odasqr	.0699742	.0335545	2.09	0.037
Lninf	-.1117736	0.0210062	-5.32	0.000
Lngs	-.012221	.0397099	-0.31	0.758
Cons	2.457184	.2193475	11.20	0.000

$$lnGDPPC = \underset{(.2193475)}{2.457184} + \underset{(.0126472)}{-.0246696oda} + \underset{(0.021)}{(-.1117)\ln inf} + \underset{(.0397)}{(-.012221)lngs}$$

$$+ \underset{(.1217349)}{.1217349\ lnimp} + \underset{(.0335545)}{.069Odasqr} + \in$$

4.3. SAVING AND FOREIGN ASSISTANCE

Based on the random effect GLS Panel regression the impact of foreign assistance on the level of gross saving shown in the table 3 depict that there is significant negative relationship between the level of saving and foreign assistance at 10% level of significance. The result can be interpreted as a 1% point increase in the level of foreign assistance result in 0.014% decrease in the level of saving this result is consistent with the basic economic theory of marginal utility of money among the poor and the rich.

For the poor the marginal propensity to consume is greater than their marginal propensity save. Since most of SSA countries are under developed their marginal propensity to save very low. Therefore every additional level of foreign assistance results in decrease in level of saving in SSA countries. There is positive but insignificant relationship between the level of saving and economic growth in SSA countries. This is mainly because most of SSA countries characterized by low level of income and budget deficit. In addition the population size also its own impact on SSA countries the level of saving.

Table 3. Panel data estimation result (Dependent variable lngds) Model 2

Lngds	Coef	Std.Err	Z Value	P value
Oda	-0.0146804	.0081248	1.18	0.07
Lnafo	-0.0146804	0.0088263	-1.17	0.24
Inf	1.120007	.0001057	0.00	0.999
LnGDPPC	0.0790249	0.2415153	0.33	0.744
Lnexp	.2270388	.1164599	1.95	.051
Cons	2.51	1.022782	2.46	.014

$$lnGDS = \underset{(.2193475)}{2.457184} + \underset{(.0081248)}{(-0.0146804)oda} + \underset{(0.2415153)}{.2270388lnGDPPC} + \underset{(.1164599)}{(.2270388)\ln exp}$$

$$+ \underset{(.0001057)}{1.120007inf} + \underset{(0.0088263)}{(-0.0146804)lnlfo} + \in$$

CHAPTER FIVE

5. CONCLUSIONS AND RECOMMMENDATIONS

5.1 CONCLUSIONS

The main aim of this study was to investigate the effect of foreign assistance on the economic growth and level of domestic savings in selected sub Saharan African countries. Using fixed effect estimation technique from the transformed panel data on four years average on 23 countries of the SSA regions the following results were found:

- Concerning the first query, the effect of foreign assistance on economic growth was positive and significant in the short run. While in the long run, the effect was found to be positive and significant albeit diminishing. From the same estimation it was also found that, import has strong effect on economic growth of the nations under study. The other variable considered in this estimation was the macroeconomic stability situation of the sub Saharan African countries and this variable has strong and direct effect on economic growth through enhancing effectiveness of aid.
- Centering to the second probe, the effect of foreign aid on the domestic savings. The level of saving in SSA countries is negatively related with the level foreign aid.

5.2 RECOMENDATIONS

Based on empirical finding in this study the following recommendation are forwarded

- In order to enhance the performance of foreign assistance to achieve the intended economic growth there should be stable macro-economic situation.
- Aid alone may not bring economic growth rather there are other factors which are influential for the impact of foreign aid on economic growth. Thus the government should harmonize situations to re allocate and properly use the aid to bring about economic growth
- To determine the impact of foreign assistance there is a need to consider other factors like institution, socio-economic background of countries and political and macro-economic stability.
- Stable macro-economic condition is important to enhance aid effectiveness
- Therefore there is a need for further research on the area which takes into consideration the uncovered part.

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APPENDIX

APPENDIX 1. Least of variables

lnIMP	Logarism of Import
lnINF	Logarism of Inflation
lnLAf-	Logarism of Labor force Participation
lnM2-	Logarism of Broad Money
lnexp	Logarism of export
Inf	Inflation
lnGDPPC	Logarism of GDP per capita
lnGDS	Logarism of gross domestic saving

APPENDIX 2

LEAST OF COUNTRIES

Brundi	BDI	Malwi	MWI
Cameroon	CMR	Mauritania	MRT
Cong.Dem.Rep	ZAR	Mauritius	MUS
Congo	COG	Mozambique	MOZ
Ethiopia	ETH	Namibia	NAM
Gabon	GAB	Nigeria	NGA
Gambia	GMB	Rwanda	RWA
Ghana	GHA	Sierra Leone	SLE
Keniya	KEN	Tanzania	TZA
Lesetho	LSO	Uganda	UGA
Madagascar	MDG	Zambia	ZMB
		Zimbuabe	ZWE

APPENDIX 3

```
. xtreg   lngdppc lnoda lnm2 lnlafo lnimp odasqr notlandlockd lninf, fe
note: notlandlockd omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =       127
Group variable: ctrynum                         Number of groups   =        23

R-sq:  within  = 0.4914                         Obs per group: min =         3
       between = 0.0013                                        avg =       5.5
       overall = 0.0627                                        max =         6

                                                F(6,98)            =     15.78
corr(u_i, Xb)  = -0.7931                        Prob > F           =    0.0000
```

lngdppc	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnoda	.0753414	.0429808	1.75	0.083	-.0099526	.1606355
lnm2	-.2651466	.0770416	-3.44	0.001	-.4180332	-.1122599
lnlafo	-.9566443	.5511949	-1.74	0.086	-2.050473	.137184
lnimp	.4370948	.078314	5.58	0.000	.2816832	.5925064
odasqr	1.87e-39	5.35e-39	0.35	0.727	-8.75e-39	1.25e-38
notlandlockd	0	(omitted)				
lninf	-.1394914	.0196797	-7.09	0.000	-.1785451	-.1004377
_cons	6.264009	2.342865	2.67	0.009	1.614669	10.91335

APPENDIX 4

Random-effects GLS regression — Number of obs = 138
Group variable: ctrynum — Number of groups = 23

R-sq: within = 0.3068 — Obs per group: min = 6
between = 0.0302 — avg = 6.0
overall = 0.1871 — max = 6

Wald chi2(5) = 41.11
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0000

lngdppc	Coef.	Std. Err.	z	P>|z|	[90% Conf.	Interval]
oda	-.0246696	.0126472	-1.95	0.051	-.0454723	-.0038669
lnimp	.1217349	.0519146	2.34	0.019	.0363431	.2071268
odassqr	.0699742	.0335545	2.09	0.037	.014782	.1251663
lninf	-.1117736	.0210062	-5.32	0.000	-.1463256	-.0772215
lngs	-.012221	.0397099	-0.31	0.758	-.077538	.0530961
_cons	2.457184	.2193475	11.20	0.000	2.09639	2.817979
sigma_u	.11969099					
sigma_e	.26362318					
rho	.17090671	(fraction of variance due to u_i)				

APPENDIX 5

```
Random-effects GLS regression                   Number of obs      =       138
Group variable: ctrynum                         Number of groups   =        23

R-sq:  within  = 0.0326                         Obs per group: min =         6
       between = 0.4578                                        avg =       6.0
       overall = 0.2588                                        max =         6

                                                Wald chi2(5)       =     20.69
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0009
```

lngs	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
oda	-.0146804	.0081248	-1.81	0.071	-.0306047	.0012439
lafo	-.0103552	.0088263	-1.17	0.241	-.0276544	.006944
inf	1.12e-07	.0001057	0.00	0.999	-.0002071	.0002073
lngdppc	.0790249	.2415153	0.33	0.744	-.3943364	.5523863
lnexp	.2270388	.1164599	1.95	0.051	-.0012184	.455296
_cons	2.512863	1.022782	2.46	0.014	.5082483	4.517478
sigma_u	.35770635					
sigma_e	.56186876					
rho	.28841145	(fraction of variance due to u_i)				

Declaration

I, the undersigned, declare that this project paper is my original work and has not been presented for Master's degree in any other university, and that all sources of material used for the project have been duly acknowledged.

Declared by:

Name: Sabita Tofik

Signature: ……

Date: ……

Confirmed by (advisor)

Name: Wassie Birhanu (PhD)

Signature: ……

Date: ……

Place and date of submission: ……