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THE IMPACT OF FOREIGN AID ON AGRICULTURAL GROWTH OF ETHIOPIA

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DECLARATION

I, the undersigned, declare that this Thesis is my original work; prepared under the guidance of Wondemagegn Chekol (PhD). All the sources of materials used for this thesis have been dully acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

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ENDORSEMENT

This thesis has been submitted to Saint Mary's University, School of Graduate Studies for examination with my approval as a university advisor.

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Advisor Signature and Date

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ACRONYMS

ADLI - Agricultural development led Industrialization

ADF- Augmented Dickey-Fuller

AGE-Agricultural Growth of Ethiopia

AIC- Akaike information criteria

DAC- Development Assistance Committee

CAADP-Comprehensive Africa Agriculture Development Programme

DF- Dickey –Fuller

EC- Ethiopian Calendar

ECM - Error Correction Model

EPRDF- Ethiopian People`s Revolutionary Democratic Front

FOA-Foreign Aid

GTP1- Growth Transformation Plan one

GTP II Growth Transformation Plan Two

HIC- Hannan –Quinn information criteria

LDCs- Less Developing Countries

MoFED- Ministry of Finance and Economic Development

NBE -National Bank of Ethiopia

ODA- Official Development Assistance

SBIC- Schawarz-Bayesion information criteria

SSA -Sub Saharan Africa

VAR -Vector Auto Regression

VECM -Vector Error Correction Mode

ABSTRACT

Majority of the poor in terms of share and number, live in rural areas where the main source of income is agriculture. The agriculture sector is at the heart of economies of least developed countries like Ethiopia with less productivity of this sector, supporting this sector via foreign aid may lead agricultural development to stimulate growth in many poor countries. This study have an objective of whether Foreign Aid has an impact on agricultural growth of Ethiopia or not, with time series data of ranging from 1985 up to 2014 using vector error correction model in order to know if they have a short run and long run relationship. All necessary time series tests that is stationary test, co-integration test; diagnostic test and model stability test are taken. The result of the study reveals that Foreign Aid has a positive and significant impact on agricultural growth of Ethiopia in the long run while there is no association in the short run. Therefore accepting Foreign aid with efficient utilization to public spending in general and sector wise for the sake of agricultural as well as economic growth it is very important.

KEY WORDS: Foreign Aid and Agricultural growth

CHAPTER ONE: INTRODUCTION

1.1. Background

Majority of the poor, in terms of share and number of poor, live in rural areas where the main source of income is agriculture (Meijerink & Roza, 2007). The agricultural sector is at the heart of the economies of the least-developed countries (LDCs). It accounts for a large share of gross domestic product (GDP) ranging from30% to 60 % is about two thirds of them, employs a large proportion of labor force (from40% as much as 90% in most case), represents a major source of foreign exchange, supplies the bulk of basic food, provides subsistence and other income to more than half of the LDCs population. The strong forward and backward linkages within the rural sector and with other sectors of the economy provide added stimulus for growth and income generation (OECD, 2001).Therefore supporting the agriculture sector in developing countries very important to decrease poverty and promote economic growth.

An example from history is the case of Green Revolution. In the 1960s, when Asian population was growing in an unprecedented rate, experts were concerned about a widespread famine in Asia. In response, agricultural research was funded by governments and private foundations to improve seeds and farming techniques. These investments together with good policies led to Green Revolution—to which Asia in particular and the world at large owe their current stability. Therefore, among other basic drivers of growth, growth of agriculture is very important for the developing countries to catch up with the rest of the development caravan by entering the industrialization stage. Furthermore, a study finds that each additional dollar income from agriculture adds $2.5 on average to the overall economy (Pinstrup-Andersen et al., 1995). The effect of that dollar ripples through the economy as it changes hands, through increasing productivity in other sectors as well. (Mohammed, 2017)

Alain and Elisabeth (1988) explain that agricultural growth stimulates industrial growth by (1) providing the scarce labor force for industry; (2) lowering food prices which in turn will affect nominal wages and the price of raw materials; (3) import substitution and increased exports and, hence, acquiring foreign exchanges; (4) providing market for industrial products; and (5) contributing in investment in the rest of the economy by taxation and other means. Gollin et al. (2002) state that growth in agricultural productivity is central to development as low agricultural productivity can substantially delay industrialization. However, agricultural growth is highly dependent on the

appropriate “balance” between agriculture and other sectors in terms of direct government investment, public budget allocation and the burden of taxation levied on different sectors (Johnston & Mellor, 1961).

According to the 2007 World Development Report states the primacy of agricultural development to stimulate growth in many poor countries. The cause of agricultural productivity growth cannot be divorced from growth outcome, and agriculture is the main driver of growth and it is the focal point to examine its ability to stimulate growth in other sector for less developing countries. Alemayehu (2001) argued that in explaining growth in Ethiopia it will be necessary to examine the agricultural sector, its linkage with the other sectors and household behavior in rural Ethiopia.

The agriculture sector in developing countries which is based on rainfall variability challenged by lack of technology, lack of education, lack of finance and being dependent on rain fed agriculture. To overcome these challenges, the governments in these countries do not have sufficient financial resources (Firehiwot, 2017)

African leaders have begun to mobilize local resources for agricultural growth in order to reverse the trend of poor government spending on agriculture. This effort involves a powerful initiative to support smallholder farmers using the Comprehensive Africa Agriculture Development Programme (CAADP). Through CAADP, African nations have pledged to devote 10% of their national budgets to agriculture. Between 2007 and 2009, Rwanda increased its investment in agriculture by 30%; in Sierra Leone, agricultural spending has gone from 1.6% of the budget to 9.9% in 2010 (Reuben, 2014)

To tackle the problem of low development assistance, global leaders gathered at L'Aquila in 2009 and pledged $22bn toward food security, helping to reverse three decades of declining donor support for agriculture. The G20 in Pittsburgh called for a multilateral fund to scale up assistance for the agricultural sector. To advance this commitment, the United States, Canada, Spain, South Korea, and the Bill and Melinda Gates Foundation launched the Global Agriculture and Food Security Programme to help the world's poorest farmers (Reuben, 2014)

It is generally argued that foreign aid tries to achieve one or more of a broad economic and development objectives : to stimulate economic growth through, agriculture, bringing new ideas and

technologies, building infrastructure to strengthen important sectors such as education, health, environment or political systems, to support subsistence consumption of food and other essential commodities, especially during relief operations or humanitarian crises , to help stabilize an economy following economic shocks (UN, 2007).

Official development assistance (ODA), with its main objective of promoting economic development and welfare in the form of Foreign aid has played as an instrumental role in the implementation of development program to combat the challenges related with less economic growth (Todarro ,1994).

Ethiopia has received USD14.1 billion in terms of Official Development Assistance (ODA) during GTPI implementation period 2003 – 2007 (Ethiopian fiscal year). Out of this, agriculture gets the highest share which is 24.3 % and the health sector is 14.8 % (MoFED, 2015).

As indicated from the above figure agriculture sector covers the highest portion of foreign aid compared to other sector in Ethiopia. Thus, this paper will attempt to examine the impact of foreign aid on agricultural growth of Ethiopia.

1.2. Statement of the Problem

The volume of ODA from bilateral and multilateral agency flows has grown from an annual rate of under USD5 billion in 1960 to USD50 billion in 2000 and then USD128 billion in 2008 (Todaro and Smith, 2012) and USD 131.6 billion in 2015 (OECD, 2016). Africa in general and SSA in particular receives a greater share of global aid than any other region in the world which is USD 49.5 billion. With in East Africa, Ethiopia receives the largest percentage of total ODA from all donors, followed by Kenya and Tanzania topped the list in east Africa (UNDP, 2016).

The tremendous increase in the flow of foreign aid to developing countries from time to time, there is an argument about aid effectiveness which goes back to decades. There are debates on the impact of foreign aid on economic growth, one side argue that aid has a positive effect on economic growth, particularly in countries with sound economic and trade policies (Ozgur, Ilker and lewlli, 2008). On the other side, researchers like Moyo (2009) challenged the theoretical strand surrounding the effectiveness of aid and opine that the billions of dollars in aid sent from wealthy countries to developing Africa nations has not helped to reduce poverty and increase growth because aid leads to developing countries do not use their resource endowment efficiently and depend on developed

nations. And Mohammad (2017) supports the idea of Moyo foreign aid adversely affects economic growth in developing countries, unless good policies are followed.

Generally, many researchers try to study the effect of foreign aid on economic growth, and they cannot conclude on the significant effect of aid on economic growth. This is because the economic agents associated with aid administration are dynamic and also many of them did not disaggregate the GDP into different sector levels to capture the different impact of earmarked aid on the sectors (Firehiwot, 2017)

As indicated in the above, the link between foreign aid and economic growth has been widely discussed but little attention has been paid to the link between foreign aid and agricultural growth. Many foreign aid receiver countries are developing nations including Ethiopia and their economies are dominated by agricultural sector for that reason it is very important to study the relationship between foreign aid and agricultural growth to reach further conclusion.

1.3. Objective of the Study

1.3.1. General Objective of the study

- The General objective of this study is to analyze the impact of foreign aid on agricultural growth of Ethiopia.

1.3.2. Specific Objective of the Study

- To assess the trend of Foreign Aid and Agricultural growth in Ethiopia
- To investigate empirically the impact of Foreign aid on agriculture sector growth in Ethiopia.

1.4. Significant of the Study

The link between foreign aid and economic growth has been widely discussed but little attention has been paid to the link between foreign aid and agricultural growth therefore this study is important to know the relationship between foreign aid and agricultural sector growth in Ethiopia. The result of this study is useful for improving planning, implementation, monitoring and evaluation in the area of foreign aid allocation for the sake of agricultural as well as economic growth. Furthermore the study helps as a guide line for other graduate students for detailed study on this topic and other sector.

1.5. Scope and Limitation of the Study

The study analysis the impact of foreign aid on Agricultural Growth of Ethiopia using a time series data ranging from 1985 up to 2014(for 30 years). The availability of data inadequacy is a critical limitation of this study because the thesis is mainly based on secondary data.

1.6. Organization of the Study

This study is organized under five chapters. The first chapter contains background of the study, statement of the problem, objective of the study, significance of the study, scope and limitation of the study and organization of the research paper. The second chapter reviews both theoretical and empirical literature. Chapter three deals with about research methodology. Chapter four is discussions of the results of the study and finally chapter five contains conclusion and recommendation.

CHAPTER TWO: LITERATURE REVIEW

2.1. Theoretical Literature

2.1.1. Historical Background of Foreign Aid

At the Bretton Woods Conference in 1944 the World Bank along with International Monetary Fund (IMF) were created. According to its charter, the World Bank then had the dual function of promoting reconstruction in war-torn countries and promoting economic development in less developed countries (Mikesell, 1970). Development assistance from the World Bank included promoting the flow of international capital in the form of foreign direct investments and loans. Prior to 1974 the size of loans provided by the World Bank for reconstruction and development were relatively small. It was because the Bank needed to impart confident by following strict criteria and conservative policies (Mohammed, 2017)

Originally it was thought that guaranteeing loans made by private investors would establish a major activity of the Bank, but then the Bank chose to proceed with direct lending. Initially the Bank directed its loans to specific projects in developing countries that met the Banks's conditions. Later when the demand for large amount of global aid was emerging as developing countries became independent, the idea of project-based loans of the Bank and technical assistance of the U.S. government were rejected by the developing countries. Instead, to accelerate economic growth measured by an increase in per capita income, these countries were in favor of large foreign aid programs administered by the United Nations with less strings attached to them (Mohammed,2017)

In the late 1950s and 1960s, the standard of foreign aid policy makers and development economists was the "take off into self –sustaining growth "hypothesis presents by Walter Rostow. To sustain economic growth, Rostow suggested that during the take off period domestic savings can be supplemented by foreign capital to increase the level of investment. Later in the1970s, with the better understanding of the development process, the "take off" theory becomes less popular.

In 1960s, Paul Rosenstin-Rodan developed the theory of "big Push", the idea was that in order to pave the ground for the takeoff, the balanced economic theory is required to promote development on all fronts and ensure a relatively rapid rate of growth in all sectors, including agriculture, industry, infrastructure and human skills. and similar with Rostow theory Paul`s theory was later found inconsistent and infeasible and was rejected by other development economist Hirshman , believe that

growth proceeds by process of induced investments in which one sector moves ahead of others in an economy, which in turn induces investments in other sectors of the economy (Mikesell and Zinser 1973).

William (2018) states that aid agencies should set more modest objectives than expecting aid to "launch the takeoff into self-sustained growth." Aid agencies have misspent much effort looking for the Next Big Idea that would enable aid to buy growth. Poor nations include an incredible variety of institutions, cultures and histories: millennia-old civilizations in gigantic China and India; African nations convulsed by centuries of the slave trade, colonialism, arbitrary borders, tropical diseases and local despots; Latin American nations with two centuries of independence and five centuries of extreme inequality; Islamic civilizations with a long history of technical advance relative to the West and then a falling behind; and recently created nations like tiny East Timor. The idea of aggregating all this diversity into a "developing world" that will "take off" with foreign aid is a heroic simplification. World Bank President James Wolfensohn (2001) talked in 2001 about how "we" must act to achieve the goal of "ensuring a beneficial globalization" by doubling foreign aid. President George W. Bush said in his announcement of increased aid in March 2002: "We must include every African, every Asian, every Latin American, every Muslim, in an expanding circle of development." In virtually no other field of economics do economists and policymakers promise such large welfare benefits for modest policy interventions as "we" do in aid and growth.

Erik (2000) examine the evaluation of the development of Doctrine and the role of foreign aid from 1950-2000 and conclude the conception of the role of developmental aid evolved in parallel with the evolution of the development doctrine. In the fifties, the role of aid was seen mainly as a source of capital to trigger economic growth through higher investment. Faith in the capacity of recipient governments to plan successfully and use aid efficiently was strong. In the sixties, the role of foreign assistance, in the light of the two-gap models, was considered important in removing either a savings deficiency through an increased flow of foreign savings or a deficit in the current account of the balance-of-the payments by providing the necessary foreign exchange. The seventies witnessed a major change in the role of aid, i.e. that the primary objective of foreign assistance should be to raise the standard of living of the poor largely through increased employment. The focus on poverty alleviation required new types of investment and new forms of intervention. With the advent of the debt crisis and the debt overhang, in the eighties the role and conception of aid changed in a major way. The primary purpose of aid became twofold; as a stop gap measure to salvage the shaky

international financial system and to encourage the implementation of appropriate adjustment policies in third world countries through conditionality attached to programme lending. In that decade, characterized by pro-market and anti-government rhetoric, there was strong sentiment to reduce aid drastically and have private capital flows substitute for it. Finally, the decade of the nineties was marked by a strong and lingering case of 'aid fatigue' influenced by the rising fear that foreign assistance was generating aid dependency relationships in poor countries. The issue of the effectiveness of aid conditionality was also critically debated. The socio-economic havoc created by the Asian financial crisis engendered a fundamental re-examination of the role of aid and the uncritical acceptance of the Bretton Woods rules of the game and the 'Washington consensus'. The World Bank, in particular, took the leadership in advocating poverty alleviation and improvement in human welfare as the overarching objective of development and of foreign assistance.

2.1.2. Determinant of Foreign Aid

The basic justification for the transfer of resources to LDCs in the form of aid takes many factors in to account. The 1950s and 1960s of the 'Marshal Plan' of aid incipient gave a financial assistance to revive the economy of western Europeans. Though it started with the goal of reestablishing the war – torn economy, latter on its scope and objective were widened and aid started to flow to the majority of LDCs largely to meet the development purposes (Todaro and Smith, 2012).

Many literatures proposed that donor countries give aid primarily because it is their political or economic self interest purpose. Some donors and development assistances may be prompted by moral and humanitarian desire to assist the less fortunate`s like emergency food relief programs. But there is no evidence to suggest that over long period of time donor nation assist others without awaiting some corresponding benefits (political, economic, military etc) in return. Thus, motivation of donor nation in giving foreign aid can therefore be classified in to two broad aspects, but often interrelated, categories as political and economic (Todaro, 1994). And moral motivation is another factor

- **Political motivation**

Political motivations have been a most important factor for aid granting nations, especially for a major donor country like the United States. Even in the1940smarshal plan aimed at reconstructing the war thorn economy of Western Europe has been a means of spreading their political ideology.

After the flow of resources to war devastated economy the support shifted to the LDCs economies in mid-1950s. Here also the aid program of the US has a policy of making support for "friendly" less developed nations by making emphasis towards political, economic and military aspects, especially those considered geographically strategic. most aid programs to developing countries were therefore focused more toward their needs for political security and the like than encouraging the long-term social and economic development (Todaro, 1994) .Aid flows to further the donors' interests .the flow of funds tends to vary in accordance with the donors political assessment of changing international scenario rather than the relative need of potential recipients.

- **Economic motivation**

Within the broad context of political and strategic priorities, foreign aid programs of the developed nations have had a strong economic rationale. Even though political motivation may have been of Paramount importance for other donors, the economic rationale was at least given lip service as the overriding motivation for assistance.

Providing aid to LDCs ensures that the savings gap and the foreign exchange gap are filled. For domestic investment to take place domestic savings must occur. If these are absent then a flow of development assistance can help to finance investment projects.

- **Moral motivation**

Whether on grounds of basic humanitarian responsibilities of the rich toward the welfare of the poor or because of a belief that the rich nations owe the poor nations conscience money for past exploitations, many proponents of foreign aid in both developed and developing countries believe that rich nations have an obligation to support the economic and social development of the third world .they then go on to link this moral obligation with the need for greater LDC autonomy with respect to the allocation and use of aid funds (Syed , Imtiaz , and Mohammed , 2005)

2.1.3. Displacement Theories

Displacement theories suggest that there are possibilities that more aid inflows may not raise investment by as much as of the value of aid inflow and therefore an increase in aid may not lead higher rate of economic growth. One possibility is that aid inflows may displace domestic savings as a result 'crowd out' private investment. The debate in this view has been reproduced within the saving debate and the fiscal response debate. Another prospect concerns the impact of aid on real exchange rate .aid could affect export earnings, and then it reduces the ability to increase investment as required. This is the case of 'Dutch disease effect'.

While research on aid effectiveness mainly focuses on the analysis of the direct impact aid has on growth, there are also factors that indirectly influence aid effectiveness: first, the Fungibility of aid, second the so called Dutch disease and third aid Volatility.

- **Fungibility**

Fungibility incurs when aid inflows are directed to different uses than those initially planned by donors and recipient governments (McGillivary and Morrissey, 2000). In addition, fungibility can occur when aid recipient governments, because of aid inflows targeting a sector, divert their own funds that would have been invested in that specific sector to another.

Petterson (2007) focusing on sector aid and studying 57 aid recipient countries , finds that this form of aid is fungible 65% of aid flows have different uses than the ones planned for- but supports that fungible sectoral aid is not less effective than non- fungible aid. A crucial factor that can induce fungibility is when donors and recipients do have different approaches on how money should be allocated. Conditionally and close monitoring by donors of aid flows allocation are some methods that might restrict the different use of funds. In case where aid flows are high and monitoring capabilities are increased, levels of fungibility should be negatively related to aid flows; however, fungibility should not always be considered as a negative aspect, as a trusted recipient government that follows good policies may be given the opportunity to make alterations in aid allocations (Pettrson, 2007).

- **Aid volatility**

Where aid is volatile or unpredictable, recipient governments are less able to plan expenditures effectively. This raises the costs of financial management and can worsen the composition of government spending (e.g. divert resources from capital investment towards recurrent expenditure).

The issue of uncertainty and volatility of aid inflows becomes important , developing countries are more sensitive to external shocks and have fewer instruments and resources to overcome them (Pallage and Robe ,2001). Volatility and lack of predictability can negatively affect medium and long term developing plans of aid recipients.

- **Dutch disease**

Dutch disease arises when the high level of aid flow brings about real exchange rate appreciation and creates booming sector (non tradable sector) at the cost of recession in the other sectors (tradable sectors). The symptom of Dutch disease can be observed once the increase of aid inflows draws resources away from tradable to non tradable sectors. As a result, tradable production declines and hence threatens export performance. It is obvious that the effect of Dutch disease will erode the recipients export earnings and hence the ability to import. When Dutch disease arises due to the high level of aid inflow creating a booming in the economy, it is important to analyze the level of aid inflows that may cause the Dutch disease effect, indicate that aid may not have a positive impact on growth if high levels of aid inflow make tradable sectors less competitive in the world market through the appreciation of the real exchange rate and the lowering of export earnings.

2.1.4. Agriculture and Foreign Aid in LDCs

Majority of the poor, in terms of share and number of poor, live in rural areas where the main source of income is agriculture (Meijerink & Roza, 2007). The agricultural sector is at the heart of the economies of the least-developed countries It accounts for a large share of gross domestic product ranging from 30% to 60 % is about two thirds of them, employs a large proportion of labor force from40% as much as 90% in most case, represents a major source of foreign exchange from 25%to to as much as 95% in three quarters of countries, supplies the bulk of basic food and provides subsistence and other income to more than half of the LDCs population. The strong forward and

backward linkages within the rural sector and with other sectors of the economy provide added stimulus for growth and income generation (OECD, 2001).

LDCs face many difficulties, both internal and external, in their efforts to develop their agriculture and to achieve their objectives of improving food security and increasing export earnings. Internal difficulties include low productivity, inflexible production and trade structures, low skill capacity, low life expectancy and educational attainments, poor infrastructure, and deficient institutional and policy frameworks, ODI (Overseas development institute, 2012).

Significant progress in promoting economic growth, reducing poverty and enhancing food security cannot be achieved in most of these countries without developing more fully the potential human and productive capacity of the agricultural sector and enhancing its contribution to overall economic and social development. In almost all LDCs official development assistance (ODA) is the main catalyst of investment in agriculture. However, such external assistance to the sector has been on the decline since the early 1990s, according to ODI (Overseas development institute, 2012).

Nevertheless, in the past, farm organizations in industrialized countries were concerned about the use of foreign aid funds in improving agriculture in less developed countries (Janvry & Sadoulet, 1988; Kherallah et al., 1994). They argued that funding agricultural research in less developed countries will cause an increase in agricultural output in LDC and hence reduce agricultural exports of industrialized countries.

On the other side in response to the farm organizations, many economists concluded that improving agricultural productivity in less developed countries increase income in these countries and the rising income will increase demand for imports from industrialized countries (Bachman, 1965; Kherallah et al., 1994). Therefore, agricultural assistance to less developed countries is recommended..

2.1.5. Agriculture and Foreign Aid in Ethiopia

Ethiopia has been witnessed three major political regime changes in the recent history, the importance of agriculture has been recognized by each government in this period. However, different policies pursued by the different regimes have resulted in very different outcomes in agricultural and rural development, particularly between the last two regimes in the past 35 years. In this period, the Derg regime (1975EC-1991EC) has been characterized as an agrarian socialist regime with

widespread government controls in all economic spheres including agriculture. After overthrowing the imperial regime of Haile Selassie, the Derg announced an agrarian reform program to declare all rural land to be the property of the state together with the nationalization of almost all other assets in the industrial and services sectors such as manufacturing factories, financial institutions, big hotels and many residential buildings. While the agrarian reform had prohibited all tenancy relations and provided a large number of rural households with equal access to cultivation land according to their needs, the restriction on plot size per family, the prohibition of hired agricultural labour , the intensification of collectivization, the establishment of large-scale state farms , and a series of other anti-market and state-controlled economic instruments had not only significantly negatively affected the incentives of farmers but also distorted the market mechanism in guiding land allocation and promoting productivity improvement. While central planning types of development strategies had identified agricultural as an engine of growth and targeted the improvement of food security through agricultural productivity , most growth targets became just a piece of paper and had never been able to achieve. Ethiopia suffered the worst famine on record in 1984 and the country's economy was in the dismal state at the end of Derg regime (OECD, 2010).

Since 1991, Ethiopia has pursued a policy of Agricultural Development Led Industrialization (ADLI). ADIL mainly focuses in developing of smallholder agriculture needs to be developed first to facilitate demand for industrial commodities overall production, as well as invest in those industries with most production linkages to rural areas. Since the late 2000s, ADIL has been gradually complemented by efforts to support a process of structural transformation. The First Growth and Transformation Plan (2010-2015) , increasingly promoted light manufacturing in key sectors where the country has supposed comparative advantage for industrial sector . This was supported by a two-pronged industrial policy: crosscutting sectoral support in the form of tax incentives and preferential access to land, credit, and foreign exchange, and a reliance on industrial park as a tool to attract FDI. The Second Growth and Transformation Plan (2015-2020), GTP2, puts an even stronger emphasis on structural transformation, industrialization, urbanization, and export promotion, where progress in GTP1had modest (WB, 2016).

Ethiopia also suffers the problem of financial and economic problem and in order to survive this critical issue the country is almost the big recipient of Official Development Assistance or foreign aid, still the contribution of the official development assistance is not questionable. According to the UNDP report of 2015 the total expenditure of the nation was birr 132.4 billion (21% to recurrent, 32% to capital expenditure, and 47% was transfer to regional governments) annual ODA flow increased by 6.4 % on average between 2011/2012 and 2013/14, 39.7% of the disbursement went to support for enhancing expansion and quality of social development and 35.9% was allocated for maintaining agriculture as major source of economic growth.

Agriculture is the backbone of the Ethiopian economy covers 38.8% of real GDP this particular sector determines the growth of all other sectors and consequently, the whole national economy. On average, crop production make up 60 % of the sector's outputs, whereas livestock accounts for 27 % and other areas contribute 13 % of the total agricultural value added(UNDP, 2016).As agriculture take a lion share of Ethiopian economy, agriculture get 3.4 billion or 24.3 % of the total disbursement of total official development assistance during 2010-2015 (MoFED, 2015).

2.2. Empirical Literature

Even though there are polar views on the effects of economic growth on development and poverty reduction, it is argued that economic growth benefits the poor on average. Although the majority of early development strategies relied on urban bias and industrialization as the main source for economic growth and development during 1960s and 1970s agriculture has been considered to have an active role in the development process. Agricultural growth promotes poverty reduction; hence the agricultural sector is an 'engine of growth for' at early stages of development. Economic growth to poverty reduction has found that general GDP growth has led less impact on poverty reduction than growth in agricultural sector, partly because of the high level of poverty in rural areas of developing countries. Thus growth in agricultural sector would be more pro-poor in the rural areas of developing countries than growth in the non agricultural sector since agricultural growth is considered to have direct and indirect linkage with the growth process and it can be used as the engine of growth for agricultural demand led industrialization (Ozgur, Ilker, and lewll, 2008).

Foreign agricultural aid has a positive and significant relationship with agricultural productivity ,the study reveals that bilateral foreign agricultural aid influence agricultural productivity more than

multilateral foreign agricultural aid , while multilateral foreign agricultural aid influences agricultural GDP more than bilateral foreign agricultural aid .this means that while bilateral agricultural aid can be more influential for agricultural productivity, multilateral aid can have greater influence on agriculture`s contribution to the economy than the bilateral agricultural aid .The finding may indicate that it is not only the amount of aid that can influence agriculture but that the nature, origin, and purpose of aid can be important in measuring it impact. It will be important to scale up foreign agricultural aid in order to increase its impact on agricultural productivity and it contribution to the economy of SSA. However, the sectoral foreign agricultural aid allocation should give priority to factors that will enhance agricultural productivity in SSA (Reuben, 2014).

(Godwin and Ben ,2007) study the effect of aid flows on Nigeria's agricultural growth , by using simultaneous equation system was specified with agricultural growth , savings , aid and agricultural imports as endogenous variables . The result show that official development assistance significantly impact agricultural growth in a positive manner, lending credence to the hypothesis that agricultural growth is promoted by development assistance, however the view that aid flows more to countries with low savings is not supported by the findings of this study. Moreover, the view that aid flows generate increased imports by recipient countries is not inconsonance with the results of this study. The negative association between aid and per capita income may be evidence that countries that are the poorest receive more foreign aid. Finally agricultural imports and aid were negatively signed, implying that aid does not necessarily fill a trade gap and may not promote trade ties between donor and Nigeria.

Mohammad (2017) had a study on the impact of Official Development Assistance on Agricultural Growth and Agriculture Imports in Developing countries and according to his result is a positive relationship between agricultural growth and ODA both in the short run and long run. And he concludes that ODA to developing countries increase these countries` demand for agricultural products. That is, official development assistance flow into developing countries help increase income per capita and therefore leads to an increase in agricultural imports into the developing countries.

Adamu & Ighodaro (2011) attempted to find out the impact of foreign aid on economic growth in ECOWAS countries using panel data for 14 countries covering the period 1999 through 2009. The

model allowed for both language and country effects which were found to be significant. Foreign aid was found to have a significant and positive effect on growth among the ECOWAS countries. The effect of foreign aid on economic growth was found to be stronger in the French- speaking countries.

Malik (2008) examined the effectiveness of foreign aid on economic growth using a co-integration and the ECM for the period 1965- 2005 in the six poorest highly aid dependent African countries (Central African Republic, Malawi, Mali, Niger, Sierra Leone and Togo). The empirical result estimated for each country shows that in the five out of the six countries, foreign aid has a significant negative long run effect on economic growth, the only exception was Togo. Foreign aid has a long run positive impact on growth in Togo. In the short run aid has no significant effect on economic growth per capita for most of the countries except for Niger

Akpokodje & Omojimite (2008) use a simultaneous equation model to investigate the effect of foreign aid on agricultural growth during 1970-2007 for Nigeria. Using agricultural growth, savings, aid and agricultural imports as endogenous variables, they finding was foreign aid has a significant positive effect on agricultural growth in Nigeria

Alabi (2014) attempted to establish the impact of agricultural foreign aid on agricultural growth in Sub-Saharan Africa using a dynamic specification, Generalized Method of Moments (GMM) framework. The econometric analysis suggests that foreign agricultural aid has a positive and significant impact on agricultural GDP and agricultural productivity.

According to Firehiwot (2017) the impact of Official Development Assistance on Agricultural Growth of Ethiopia using a time serious data and the study shows that official development assistance has a positive and significant impact in the long run for the growth of Ethiopian agriculture.

As indicated from the above empirical literature review, there are different argument on the impact of foreign aid on economic growth as well as on agricultural growth one side argue that aid has a positive effect on economic growth, On the other side, challenged the effectiveness of foreign aid and states that foreign aid has not helped to reduce poverty and increase growth.

This study will investigates the impact of Foreign Aid on Agricultural Growth of Ethiopia, based on annual time serious data using co-integrated vector error correction model (VECM) in order to know

the relationship between foreign aid and agricultural growth of Ethiopia in the long run as well as in the short run.

To analyze the impact of foreign aid on agricultural growth of Ethiopia, the dependent variable is Agricultural Growth of Ethiopia (AGE) and the independent variable is Foreign Aid (FOA) meaning that foreign aid expected to be explained agricultural growth of Ethiopia during model specification Since according to UN 2007 report it is generally argued that foreign aid tries to achieve one or more of a broad economic and development objectives and the one is stimulate economic growth through agriculture. All necessary time series tests that is stationary test, co-integration test; diagnostic test and model stability test will be taken.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Data type and Sources

The kind of data used in this study is secondary time series data ranging from 1985 up to 2014 (30 years observation) with econometric model to analyzing the impact of foreign aid on agricultural growth of Ethiopia. The data obtained from Ministry of Finance and Economic Development (MoFED), National Bank of Ethiopia (NBE) and World Bank (WB).

3.2 Model Specification

To analyze the impact of foreign aid on agricultural growth of Ethiopia, the dependent variable is Agricultural Growth of Ethiopia (AGE). Foreign Aid (FOA) is independent variable. This independent variable is expected to explain the dependent variables. According to UN 2007 report it is generally argued that foreign aid tries to achieve one or more of a broad economic and development objectives and the one is stimulate economic growth through agriculture. According to Todarro, 1994 it can be defined as a bilateral, multilateral and concessional transfer of resource between countries.

Then the model specification will be:-

Agricultural Growth of Ethiopia = f (Foreign Aid)

$$AGE=f(FOA)$$

3.3 Econometric Estimation

The study uses is a time series data there will be testing for stationary or unit root test and co-integration test if Co-integration between variables exist Vector Error Correction Model (VECM), will be used but there is no co integration between variables Vector auto regressive (VAR) model will employed.

$$AGE=f(FOA)$$

$$AGE=\beta_0+\beta_1 FOA+\varepsilon_t$$ Where

- **AGE-** Agricultural Growth of Ethiopia

- **FOA-** Foreign Aid
- $\boldsymbol{\beta_0}$ $\boldsymbol{\beta_1}$– parameters & $\boldsymbol{\varepsilon_t}$ -error term

3.4 Econometric Estimation Techniques

As the data used is time series, A data series is said to be stationary if its error term has zero mean, constant variance and the covariance between any two times period depends only on the distance or lag between the two periods and not on the actual time which it is computed. However in reality most macroeconomic variables are non stationary. If variables entering into the estimation are non stationary, then the result obtained would be spurious. Therefore hypothesis testing and inference using such results will be invalid. To avoid such wrong inferences from non stationary regressions, the time series property of the data should be checked before the estimation of the long run model.

3.4.1 Unit root Test

Since the study uses time series economic data, testing the variables for stationarity in econometric analysis is becoming mandatory. If variables entering a regression are not stationary, then the results obtained using ordinary least squares (OLS) techniques would be spurious. That is the fact that the variables share common trends will tend to produce significant relationship between the variables rather than the true causation (Harris, 1995).

Most economic time series data are unlikely stationary, the first step is to test whether the variables are stationary i.e. checking for the presence of unit roots, to avoid the problem associated with spurious regression. Various mechanisms have been developed to transform non stationary time series variables to attain stationarity. If a variable has deterministic trend, including trend variable in the regression removes the trend component and makes it stationary such process is called trend stationary since the deviation from the trend is stationary. However, most time series data have a characteristic of stochastic trend. If a variable has stochastic trend, it needs to be differenced in order to obtain stationarity. Such process is called difference stationary process (Gujarati, 2004). In this paper unit root test will be employed using Augmented Dickey-Fuller (ADF) tests.

In general, if a (non stationary)time series has to be differenced *d* times to make it stationary ,that time series is said to be integrated of order *d* , a time series Yt integrated of order *d* is denoted as Yt~I(*d).* if a time series Yt is stationary to begin with (i.e. it does not require any differencing) , it is

said to be integrated of order zero , denoted by Yt~I(0). Most economic time series are generally I (1); that is generally become stationary after taking their first differences (Gujarati, 2004).

3.4.2 Co-Integration Test

Variables will be co-integrated if they have a long-term, or equilibrium, relationship between them. Co-integration among the variables reflects the presence of long run relationship among non stationary variables in the system. Testing for co-integration is important because differencing the variables to attain stationarity generates a model that does not show long run behavior of the variables. Thus testing for co-integration is the same as testing for long run relationship (Gujarati, 2004).

In order to determine whether or not a long-run equilibrium relationship exists among the unit root variables in a given model, we need to test empirically that the series in the model are co-integrated. To conduct test for co –integration, we use Johanson maximum likelihood estimation procedure.

3.4.3 Vector Error Correction Model (VECM)

If two variables are co-integrated or proved to have long run relationship, the testing procedure will go for the construction of an error correction model. The error correction mechanism (ECM) is a mechanism used to correct any short run deviation of the variables from their long run equilibrium.

If two variables Y and Z are co-integrated, then the long term or equilibrium relationship that exists between the two can be expressed as ECM (Gujarati 2004) .this means one shall go for the step of an error correction model if and only if the two variables are co-integrated. The ECM can be given by:

Then after all in doing so the results of the model specification and test statistics will be presented and all the estimation of the empirical results is made by the use of **STATA 14.0** stata software packages.

3.4.4. Diagnostic Tests and Model Stability

i. Autocorrelation test

Autocorrelation is the correlation between the error terms arising in the time series data. The error term **μ**i at time period t is correlated with error terms μi+1, μi+2…….. And so on .such correlation in error term often arises from correlation of the omitted variables that the error terms capture.

ii. Normality test

The Jarque –bera normality test is used to see whether the regression errors are normally distributed or not

iii. Stability test

Stability test is required to know that we have included all variables we need to explain the dependent variables and also testing for omitted variable bias is important for one model since it is related to the assumption that the error term and the independent variables in the model are not correlated (E(e/X) = 0).

CHAPTER FOUR: RESULT AND DISCUSSION

4.1. Trend of Foreign Aid and Agriculture Growth in Ethiopia

4.1.1. Trend of Foreign Aid (FOA) in Ethiopia

The role of foreign aid in the economic development of a poor country (like Ethiopia) is unquestionable. Foreign aid can be put in to use in the economy where there exists a resource gap. The presence of a resource gap (saving-investment, fiscal and foreign exchange gap) forces the country to look outward for foreign capital in order to fill either of the gaps which are perceived to be the binding constraint for economic growth(Tasew,2011)

According to Fissiha (2006) shows the importance of foreign aid in the development endeavor of the country, in the Imperial and Derg regime, where the majority of investment was financed by external capital. In Ethiopia, an inflow of external resources such as loans and grants has started in the mid of 1950, the year in which the relationship between the United States and Ethiopia reached a higher level. For instance pre 1975, about 75 % of the required total investment during the series of five year development plan periods (1957-1973) was covered by external capital. The magnitude of loans and grants that Ethiopia received in the years preceding the revolution was considerable. But due to the existing political- economic system it hardly contributed to economic progress. It was characterized by trifling development objectives. Similarly, during the post revolution period too, "37 percent of total investment expenditure of the annual campaign of 1979-1983" was financed by foreign aid.

According to Tasew (2011) the magnitude of aid flow to Ethiopia varies depending on the nature and characteristics of the political system, the economic system that the regime follows, and the relationship with donor countries and institutions. During the socialist period, Ethiopia had been receiving development assistance from Eastern Block donors particularly from the Soviet Union and East Germany, as well as from Western bilateral and multilateral donors to some extent. In the Derg period (1974/75-1990/91) the country received Birr 1.1 billion on average terms per year. The average share of aid (ODA) was 4.8 percent in the same period. Comparatively the total flow of foreign aid has increased under the current economic system due to changes in policies which meet the interests of donors, and adoption of a market-oriented economic system being the major one. Since the policy change by the present regime the magnitude of development aid (both loan and

grant) has increased continuously. In this period (1991/92-2008/09) average annual flow of aid has reached to Birr 10.8 billion and its share in the GDP also rose to 13 percent from a 4.8 percent in the Derg period. The period 1996/97-2000/01witnessed a decline in aid which was below the average share of the GDP, the lowest share of 7 percent being observed in 1997/98. The major factor for the decline in the specified period was the war with Eritrea where the majority of donors were uncomfortable with the war. Despite the huge flow many claim that aid to Ethiopia is ineffective in bringing about the desired changes like poverty reduction. But this does not imply that aid is totally wasted (or, aid is ineffective at all) because there are some improvements in the social indicators like enhancing access to education and health services.

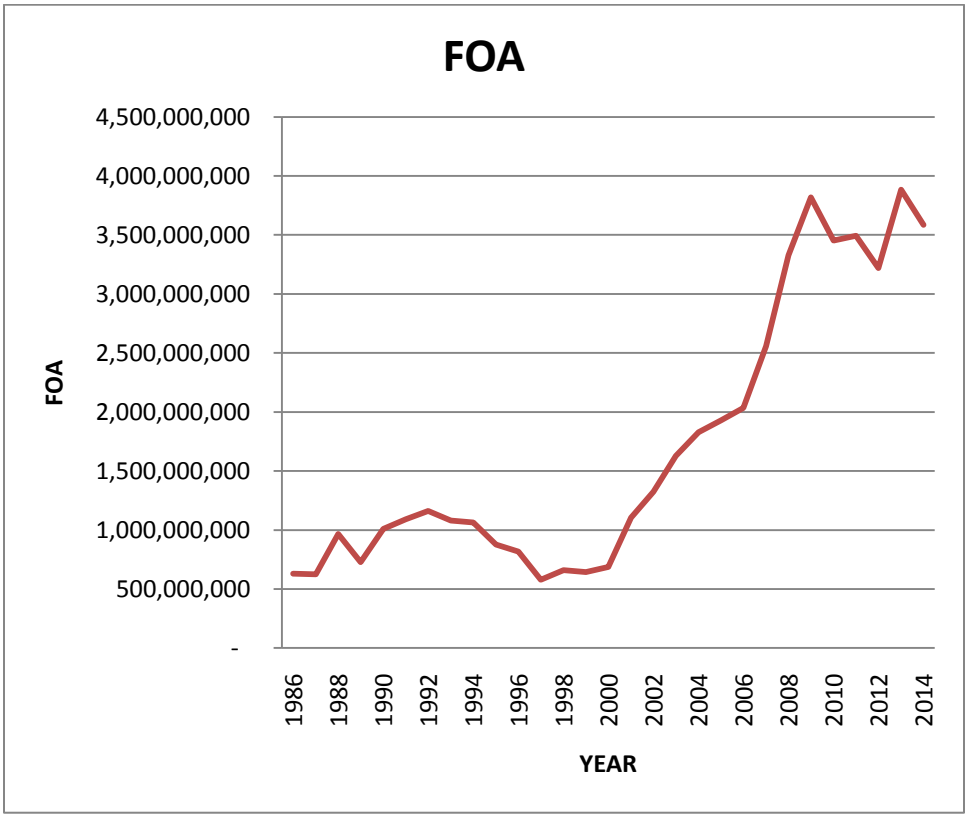

Figure 4.1: FOA trend in Ethiopia
Source: Author computation based on World Bank data base

The magnitude of aid flow to Ethiopia from 1986-2001 unstable whereas the total flow of foreign aid has increased significantly during 2002-2007 this is mainly due to change in policies which meet the interests of donors, and adoption of a market-oriented economic system by the current government of

Ethiopia. As a result, the magnitude of foreign aid both in the form of loan and grant has increased continuously. Again Post 2008 the magnitude of foreign aid in became unstable or fluctuate this may be due to the effect of political instability in Ethiopia.

4.1.2. Trend of Agricultural Growth in Ethiopia (AGE)

Agriculture is the foundation of the Ethiopian economy but is plagued by periodic drought due to both natural factor such as lack of optimal rainfall and human factors such as soil degradation caused by overgrazing and deforestation. Yet agriculture is the country's most promising resource; a potential exists for self-sufficiency and for export

In Ethiopia as agriculture is the mainstay of the economy growth performance is significantly (if not totally) determined by the performance of agriculture, which in turn is influenced highly by the vagaries of nature. The extreme dependence of the economy on the rain-fed agriculture can be solved (or at least minimized) if an alternative scheme of irrigation agriculture is practiced widely to enable farmers produce more than once in a year. Strong performance in the agricultural sector is reflected by a record of high economic growth. A case in point is the year 2001 according to the African Economic Outlook (2003) which states that the strong growth in total output in 2000/01 was reflected in all sectors of the economy. Agriculture remained the mainstay of the economy, increasing its share to 45.1 percent in the year from 43.6 percent of GDP in 1999/00. The agricultural sector expanded strongly in 2000/01 with a real growth rate of 11.5 percent, compared with 2.9 percent in 1999/00. The strong growth in agricultural production in the year was due largely to improved weather conditions (Tasew, 2011)

Alemayehu (2005) argues that dependence on rain-fed agriculture has a far reaching consequence on the overall performance of the economy. According to him dependence on rain fed agriculture has a negative multiplier effect on production levels in subsequent years; that is, the shock in one period is carried over into the next as the early years of the drought deprive peasants not only of current income but also of wealth (e.g., they may sell or otherwise lose assets, in particular oxen). Further he explained that more promising weather during the next agricultural season may not see an increase in harvest due to the perpetuation of the effect in terms of lack of capital or the farmers may be forced to migrate in search of food.

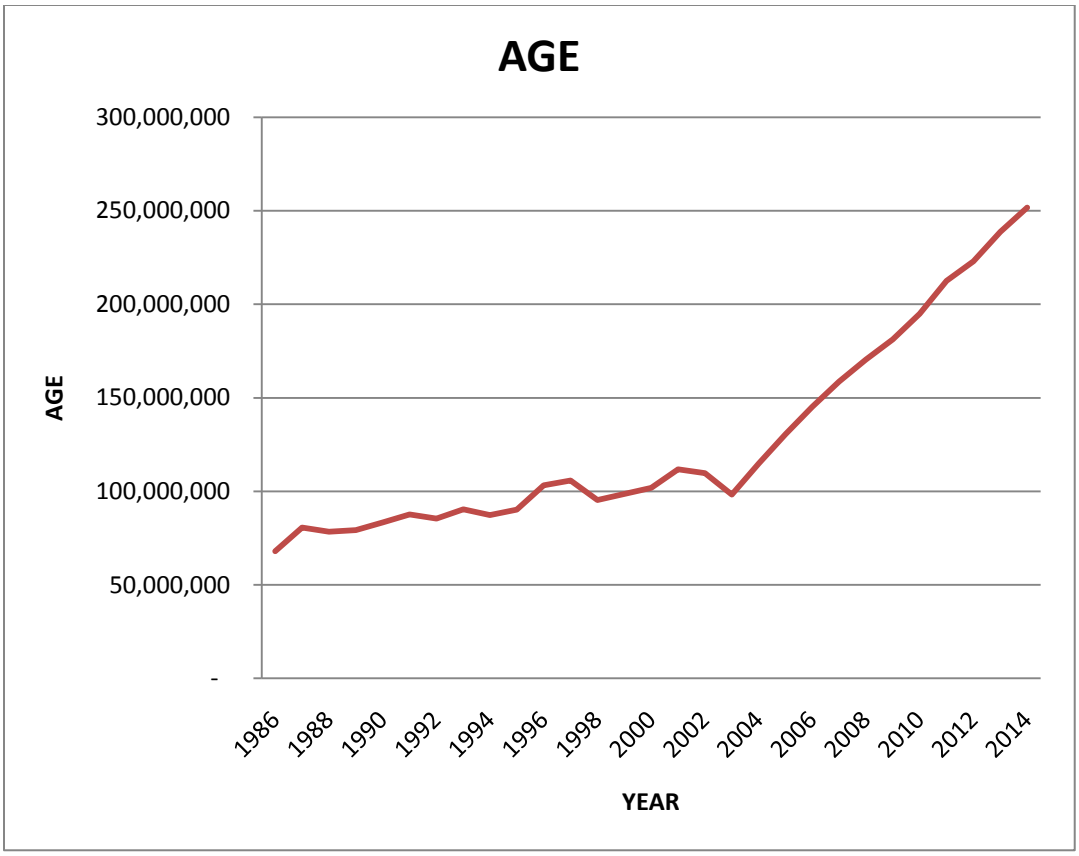

Figure 4.2: Agricultural Growth trend in Ethiopia

Source: Author computation data from MoFED

As indicated from the above graph during 1986 up to 2002 Ethiopian agriculture sector was not show significant growth, retard by as serious draught, population growth and climate variability while after 2003 until present it shows remarkable progress this is mainly due to increment of agricultural input (fertilizer, irrigation) and good weather.

4.2. Unit Root Test

Before any meaningful regression is performed with the time series variables, it is essential to test the existence of unit root test in the variables and hence to establish their order of integration. The variables used in the analysis need to be stationary and should be co-integrated in order to give a meaningful relationship from the regression. In order to test the stationary on variables, there is formal test called Augmented Dickey –Fuller test (DF) unit root test.

4.2.1. Augmented Dickey –Fuller Test

In case of Dickey –Fuller Test there may create a problem of autocorrelation. To tackle autocorrelation problem, Dickey –Fuller have developed a test called Dickey –Fuller Test it has three equations or model.

Yt=B1+dYt+et ……equation 1-Intercept only

Yt=B1+B2t+dYt-1+ai+et…….equation 2-Trend and intercept

Yt= dYt-1+ai+et…… equation 3-No Trend, No intercept

Null Hypothesis H0: Variable is not stationary or got unit root

Alternative Hypothesis H1: Stationary

Then to make the variable stationary we should go for differencing until the variable became stationary, in Dickey-Fuller Test for unit root if the absolute test statistic greater than 5% of critical value we reject Null Hypothesis and accept Alternative Hypothesis but the absolute test statistic less than 5% of critical value we accept Null Hypothesis and reject Alternative Hypothesis and the result must be the same in the above three equations.

In this study dependent and independent variable of the model i.e. Agricultural Growth of Ethiopia (AGE) and Foreign Aid (FOA) are not stationary or it has a unit root at level so that the variables must be differencing until became stationary.

Table 4.1- AGE -Dickey – Fuller Test for unit root test at first difference

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
	---------- Interpolated Dickey-Fuller ---------			
Z(t)	-3.402	-3.730	-2.992	-2.626

MacKinnon approximate p-value for Z(t) = 0.0109

D.dage	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
dage						
L1.	-.6256273	.1838928	-3.40	0.002	-1.003624	-.2476302
_cons	4153743	1876508	2.21	0.036	296525.8	8010961

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
	---------- Interpolated Dickey-Fuller ---------			
Z(t)	-4.407	-4.352	-3.588	-3.233

MacKinnon approximate p-value for Z(t) = 0.0021

D.dage	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
dage						
L1.	-.8388177	.1903464	-4.41	0.000	-1.230844	-.4467919
_trend	452172.5	186683.1	2.42	0.023	67691.52	836653.5
_cons	-103158	2747569	-0.38	0.710	-6690313	4627134

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
	---------- Interpolated Dickey-Fuller ---------			
Z(t)	-2.416	-2.655	-1.950	-1.601

D.dage	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
dage						
L1.	-.3690657	.1527304	-2.42	0.023	-.6824426	-.0556888

Source: Calculated based on survey data

As indicated from the above stata result AGE variable at first difference; the test statistic greater than 5% of the critical value in three equations of Dickey-Fuller test for unit root therefore the variable became stationary at first difference.

Table 4.2-FOA -Dickey – Fuller Test for unit root test at first difference

---------- Interpolated Dickey-Fuller ---------

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.798	-3.730	-2.992	-2.626

MacKinnon approximate p-value for Z(t) = 0.0001

D.dfoa	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
dfoa						
L1.	-.9682093	.2017758	-4.80	0.000	-1.382965	-.5534532
_cons	1.02e+08	6.05e+07	1.68	0.104	-2.25e+07	2.26e+08

---------- Interpolated Dickey-Fuller ---------

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.814	-4.352	-3.588	-3.233

MacKinnon approximate p-value for Z(t) = 0.0004

D.dfoa	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
dfoa						
L1.	-1.02787	.2135096	-4.81	0.000	-1.467601	-.5881389
_trend	6505362	7341818	0.89	0.384	-8615395	2.16e+07
_cons	1.43e+07	1.16e+08	0.12	0.903	-2.25e+08	2.53e+08

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
	---------- Interpolated Dickey-Fuller ---------			
Z(t)	-4.350	-2.655	-1.950	-1.601

D.dfoa	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
dfoa L1.	-.8400801	.1931299	-4.35	0.000	-1.23635	-.4438103

Source: Calculated based on survey data

As indicated from the above stata result FOA variable at first difference; the test statistic greater than 5% of the critical value in three equations of Dickey-Fuller test for unit root therefore the variable became stationary at first difference

Variables are not stationary at level, that's why we use first difference of the variables therefore the variables in first difference suggest the presence of stationary. And the absolute values of the ADF test statistics for all variables in the first difference are greater than its critical value at 5% level of significant, this indicate that the variables are stationary at first difference, so the null hypothesis that suggests each variables has unit root can be rejected by the ADF unit root test by accepting the alternative hypothesis.

4.3. Co-Integration Test Result

Co-integration test is usually preceded by based on an optimal lag length selection criteria because the co-integration test affected by number of lags. There are many tests that can be used to choose appropriate lag length selection criteria. These are the Akaike information criteria (AIC), the Schawarz-Bayesion information criteria (SBIC) and The Hannan –Quinn information criteria (HIC). The optimal lag length for this study is determined by using the Akaike Information Criteria (AIC), according to the Akaike information criteria, the VAR estimate with the lowest AIC value is the most efficient one.

Table 4.3: the lag length selection Criteria

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-1051.57				5.4e+32	81.0438	81.0717	81.1406
1	-986.726	129.69	4	0.000	5.0e+30	76.3635	76.4471*	76.6539*
2	-985.719	2.0143	4	0.733	6.4e+30	76.5938	76.7331	77.0776
3	-978.349	14.739*	4	0.005	5.0e+30*	76.3346*	76.5297	77.012
4	-977.175	2.3497	4	0.672	6.4e+30	76.5519	76.8027	77.4229

Source: Calculated based on survey data

As indicated from the above result of Akaike Information Criteria (AIC), the optimal lag is 3. So that in Johansen Co-integration Test it will be used lag 3 and variables are assumed to be non stationary at level but when it converts them in to first difference they must be stationary.

Cointegration means that despite being individually non stationary, a linear combination of two or more time series can be stationary. Cointegration among the variables reflects the presence of long run relationship among non stationary variables in the system. Testing for cointegration is important because differencing the variables to attain stationarity generates a model that does not show long run behavior of the variables. Thus testing for cointegration is the same as testing for long run relationship. In general, if variables that are integrated of order ‘d’ produce a linear combination which is integrated of order less than ‘d’-say ‘b’ then the variables are co-integrated and hence have long run relationship(Gujarati,2004).

Table 4.4: Johansen co-integration test

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	10	-1028.4569	.	25.3359	15.41
1	13	-1016.5363	0.58646	1.4948*	3.76
2	14	-1015.7889	0.05386		

maximum rank	parms	LL	eigenvalue	max statistic	5% critical value
0	10	-1028.4569	.	23.8412	14.07
1	13	-1016.5363	0.58646	1.4948	3.76
2	14	-1015.7889	0.05386		

Source: Calculated based on survey data

As indicated from the above stata result in maximum rank 1 the trace statistic less than 5% of critical value so it cannot be reject null hypothesis rather we accept null hypothesis meaning that there is 1 co-integration in Johanson test this implies that our variable; Agricultural Growth of Ethiopia and Foreign aid they are co-integrated or they have long run association ship, they are moving together in the long run.

when the variables are co-integrated we can run vector error correction model (VECM).In addition to trace statistic there is the second statistic which is called max statistic that confirm the trace statistic. Procedure, method and results are the same with trace statistic.

4.4. Vector Error Correction Model (VECM)

Vector Error Correction Model (VECM) is a single equation model that used to show the relationships of variables in the long run as well as in the short run. In Equation ce1 the coefficient is called error term or speed of adjustment towards long run equilibrium, it has negative coefficient with significant p- value.

VECM enables to capture the short run dynamics of the model and formulated based on the identified long run relationships. The VECM has co-integration relation built into the specification so that it restricts the long run behavior of the endogenous variable to converge to their cointegrating relationships while allowing for short run adjustment dynamics. The cointegrating term is known as the error correction term since the deviation from long run equilibrium is corrected gradually through a series of partial short run adjustments. Thus cointegration implies the presence of error correcting representation and any deviation from equilibrium will revert back to its long run path.

Existence of cointegration allows for the analysis of the short run dynamic model that identifies adjustment to the long run equilibrium relationship through the error correction model (ECM) representation. If the number of cointegrating vector(s) is/are determined and once the endogenous and exogenous variables are identified in the system, it is possible to formulate a VECM. Using the variables of our interest in the model a system of equations is developed that portray the VECM. Hence, assuming that Y_t is endogenous variable(s) and X_{jt} representing weakly exogenous variables in the model, we can model Y_t. Y_t is modeled using the lagged first difference of Y_t itself, the lagged first differences of the explanatory variables and the error correcting term-which is designed to capture the speed of adjustment to the long run equilibrium.

Table 4.5: Vector Error Correction Model

				AIC	= 76.26195
Log likelihood = -1016.536				HQIC	= 76.44747
Det(Sigma_ml) = 1.73e+30				SBIC	= 76.88587

Equation	Parms	RMSE	R-sq	chi2	P>chi2
D_age	6	6.5e+06	0.6913	47.03125	0.0000
D_foa	6	2.9e+08	0.3290	10.29499	0.1128

	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
D_age |						
_cel |						
L1 |	-.1737998	.0463667	-3.75	0.000	-.2646768	-.0829227
age |						
LD. |	.1029657	.179818	0.57	0.567	-.2494712	.4554026
L2D. |	-.2696362	.1796996	-1.50	0.133	-.6218408	.0825685
foa |						
LD. |	-.006768	.0051324	-1.32	0.187	-.0168272	.0032913
L2D. |	-.0069143	.0057303	-1.21	0.228	-.0181455	.004317
_cons |	5456518	1837298	2.97	0.003	1855479	9057556
D_foa |						
_cel |						
L1. |	4.182468	2.069444	2.02	0.043	.1264326	8.238504
age |						
LD. |	7.585677	8.025662	0.95	0.345	-8.144331	23.31569
L2D. |	12.46908	8.020373	1.55	0.120	-3.250558	28.18873
foa |						
LD. |	.160322	.229069	0.70	0.484	-.288645	.6092891
L2D. |	.5004989	.2557573	1.96	0.050	-.0007762	1.001774
_cons |	226742.1	8.20e+07	0.00	0.998	-1.60e+08	1.61e+08

Source: Calculated based on survey data

Co-integrating equations

Equation	Parms	chi2	P>chi2
_ce1	1	122.8173	0.0000

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_ce1						
age	1	.	.	.	.	.
foa	-.0757663	.0068367	-11.08	0.000	- .089166	- .0623666
_cons	-1.56e+07	.	.	.	.	.

Source: Calculated based on survey data

Then the normalized co- integration equation can be written as:-

$$\mathbf{AGE = 1.56e+07 + 0.0757663FOA}$$

4.4.1. Vector Error Correction Model-Long run causality

As we have seen from stata result the error correction coefficient is -0.1737998 and the P- value is 0.000 this implies that the error correction term speed of adjustment is at the rate of 17.38% to return to equilibrium aftershock happens to hold its long run equilibrium, the significant of this coefficient shows explanatory variable of the model i.e. Foreign aid has an impact for the growth of Ethiopian agriculture in the long run.

Foreign aid has a positive and significant impact on the agricultural growth of Ethiopia in the long run. Foreign aid plays a vital role for the growth of Ethiopian Agriculture, since agricultural sector get the highest share of foreign aid among other sectors.

4.4.2. Vector Error Correction Model-Short run causality

. test ([D_age]: LD.foa L2D.foa)

(1) [D_age]LD.foa = 0

(2) [D_age]L2D.foa = 0

chi2(2) = 2.81

Prob > chi2 = 0.2458

The above VECM-short run causality result indicated that the probability of chi2 greater than 5% critical value. This implies that there is no association ship between foreign aid and agricultural growth of Ethiopia in the short run.

4.5. Diagnostic Tests and Model Stability

4.5.1. Autocorrelation test

Diagnostics test are usually undertaken to detect model misspecification and as guided for model improvement. Tests include serial correlation, normality, stability are taken on this study. The serial correlation test can be done using the Lagrange multiplier (LM) test. It helps to identify the relationship that may exist between the current value of the regression residuals and lagged values. As it stated below on the stata finding of our data there is no autocorrelation between.

Table 4.6: Diagnostic test for autocorrelation

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	0.3259	4	0.98808

H0: no autocorrelation at lag order

Source: Calculated based on survey data

According to the stata result for diagnostic test for autocorrelation the P-values at lag one is 0.98808 which is greater than 5% critical value hence we failed to reject the null-hypothesis therefore the model is free from autocorrelation problem.

4.5.2. Normality test

The Jarque –bera normality test is used to see whether the regression errors are normally distributed or not.

Table 4.7: Jarque- Bera test of normality

Jarque-Bera test

Equation	chi2	df	Prob > chi2
D_age	0.320	2	0.85214
D_foa	0.123	2	0.94056
ALL	0.443	4	0.97885

Source: Calculated based on survey data

The above stata Jarque-Bera test of normality shows that the data distributed are normal because the probability of p-value is above 5% critical value.

4.5.3. Stability test

The stability of the model shows the validity of the estimated model; there for it should be tested before preceding it further.

Table 4.8: Eigenvalue test of Stability condition

Eigenvalue stability condition

Eigenvalue		Modulus
1		1
.8035868		.803587
-.6515073		.651507
.1556772	+ .5261905i	.548737
.1556772	- .5261905i	.548737
.3091638		.309164

The VECM specification imposes a unit modulus.

Source: Calculated based on survey data

The above stata result shows that there is a well stability of the parameters in the long run that bounds with in the 95% of critical values as shown above so that the model satisfies the stability condition.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1 Conclusion

This study investigates that the impact of Foreign Aid on Agricultural Growth of Ethiopia, using a co-integrated vector error correction model (VECM).The time series date ranging from 1985-2014 used at annual base. Before using the time series data checking whether the data are stationary or not is mandatory, ADF unit root test is implemented to check the stationary in this study and the result of ADF test shows that variables are stationary at first difference. Co-integration analysis used to see that whether there is a long run relationship or not between variables in the model according to Johansen maximum likelihood co-integration.

Vector Error Correction Model (VECM), implemented in this study to show both the long run and short run relation among variables, the error correction coefficient is -0.1737998 and P value of 0.000 this implies that error correction term ,speed of adjustment is at the rate of 17.38% to return to equilibrium aftershock happens to hold its long run equilibrium. The significant of this coefficient shows that explanatory variable has an impact for the growth of Ethiopian agriculture in the long run which is Foreign Aid has a positive and significant impact for the growth of Ethiopia Agriculture in the long run.

While in the short run the VECM short run causality test reveals that there is no association between foreign aid and agricultural growth of Ethiopia.

Diagnostic tests and model stability results show that there is no the problem of autocorrelation, normal distribution and stability condition of variables.

5.2. Recommendation

Agriculture is the foundation of the Ethiopian economy but is plagued by periodic drought due to both natural factor such as lack of optimal rainfall and human factors such as soil degradation caused by overgrazing and deforestation. Yet agriculture is the country's most promising resource; a potential exists for self-sufficiency and for export. Maintaining an appropriate developmental policies and capable Institutions in this sector is very important to accelerate the growth of Ethiopian agriculture sector.

The study indicates that Foreign aid has a positive and significant impact on agricultural growth of Ethiopia in the long run therefore accepting Foreign aid with efficient utilization and proper planning, implementation, monitoring and evaluation of foreign aid to public spending in general and sector wise for the sake of agricultural as well as economic growth very important.

REFERENCE

Adamu, P. & Ighodaro, C. (2011). The Impact of Foreign Aid on Economic Growth in ECOWAS Countries.

Akpokodje, G. & Omojimite, B.. (2008). The Effect of Aid Flows on Nigeria's Agricultural Growth. *Pakistan Journal of Social Sciences,* 5, 514-520

Alabi, R. A. (2014). Impact of Agricultural Foreign Aid on Agricultural Growth in Sub-Saharan Africa: A Dynamic Specification. African Growth and Development Policy (AGRODEP) *Working Paper*, 0006, July

Bachman, K. (1965). Agricultural Economics and Technical Aid in Foreign Development. *Journal of Farm Economics, 47*(5), 1079-1090.

Erik,T. (2000).The evolution of the development doctrine and the role of foreign aid,1950-2000

Firehiwot, Z. (2017).The impact of official development assistance on agricultural growth of Ethiopia

Fissiha ,S. (2006). Impact of Conditionality on Aid Effectiveness, Vienna University of Economics and Business Administration, PhD Thesis.

Gollin, D, Parente, S, & Rogerson, R. (2002). The role of agriculture in development. *American Economic Review*, 160-164.

Gujarati, D. (2004). Basic Econometrics.4th ed. Published in the McGraw-Hill Companies

Harris, R. (1995). Co-integration Analysis in Econometric Modeling. London, University of Portsmouth

Petterson, J..(2007). Foreign Sectoral aid fungability, growth and poverty reduction , Journal of International Development , Volume 19,issue 8, Page 1074-1098

Johnston, B. & Mellor, J. (1961). The role of agriculture in economic development. *The American Economic Review, 51*(4), 566-593.

McGillvary , M & Morrissey, O.(2000)., A Review of Evidence on the Fiscal effect of Aid,center for research in Economic Development and International Trade, University of Nottingham , Melbourne

Meijerink, G. & Roza, P.(2007). *The role of agriculture in economic development* (No. 4). Wageningen UR.

Malik, G. (2008). Foreign Aid and Economic Growth: A cointegration Analysis of the six Poorest African Countries. University of Western Sydney, Economic Analysis and Policy, 33(2).

Mikesell, R. & Zinser, J.(1973). The nature of the savings function in developing countries: a survey of the theoretical and empirical literature. *Journal of Economic Literature*, *11*(1), 1-26.

Mikesell, R. (1970). *The economics of foreign aid*. Transaction Publishers.

MoFed (2015). Annual statistical bulletin on Official Development Assistance over the five GTP1 period, Ethiopia

Mohammed, S. (2017). The impact of official development assistance on Agricultural Growth and agricultural Imports in developing countries

Moyo, D. (2009). Dead aid: Why aid is not working and how there is a better way for Africa. Macmillan.

OECD (2001).Annual Report

OECD (2009).Annual Report

ODI (2012).Measuring Aid to Agriculture and Food security, ISSN, 0140-8682, Working Paper

Ozgur, k, Ilker, k & Lewell, G. (2008). The impact of agricultural aid on Agriculture sector growth, Dallas

Reuben, A. (2014). Impact of Agricultural Foreign Aid on Agricultural Growth in Sub-Saharan Africa a Dynamic Specification

Syed A, Imtiaz A, & Muhammed S. (2005). Is Foreign Aid Necessary for the Economisc Development of Less Developed Countries with Special Reference To Pakistan? , Article V, Number 2, IPRI journal

Tasew,T.(2011). Foreign aid and economic growth in Ethiopia

Todaro, M. & Smith, S. (2012). Economic development 11th .e. united states; prentice hall

Todaro, M. (1994). Economic Development. 5th .ed. London: Longman Publishing Ltd. London

UNDP (2007). United Nation Development Program Report

UNDP (2016). United Nation Development Program Report

APPENDIX

Appendix one: ADF Unit Root test result of 14.0 stata software

1. AGE -Dickey – Fuller Test for unit root test at first difference

tsset obs-yearly , time variable: obs, 1985 to 2014

delta: 1 year

dfuller dage, regress lags (0)

Dickey-Fuller test for unit root Number of obs = 28

---------- Interpolated Dickey-Fuller ---------

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-3.402	-3.730	-2.992	-2.626

MacKinnon approximate p-value for Z(t) = 0.0109

D.dage	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
dage						
L1.	-.6256273	.1838928	-3.40	0.002	-1.003624	-.2476302
_cons	4153743	1876508	2.21	0.036	296525.8	8010961

---------- Interpolated Dickey-Fuller ---------

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.407	-4.352	-3.588	-3.233

MacKinnon approximate p-value for Z(t) = 0.0021

D.dage	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
dage						
L1.	-.8388177	.1903464	-4.41	0.000	-1.230844	-.4467919
_trend	452172.5	186683.1	2.42	0.023	67691.52	836653.5
_cons	-103158	2747569	-0.38	0.710	-6690313	4627134

---------- Interpolated Dickey-Fuller ---------

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-2.416	-2.655	-1.950	-1.601

D.dage	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
dage						
L1.	-.3690657	.1527304	-2.42	0.023	-.6824426	-.0556888

Source: Calculated based on survey data

2. **FOA -Dickey – Fuller Test for unit root test at first difference**

tsset obs- yearly,time variable: obs, 1985 to 2014,
delta: 1 year
dfuller dfoa, regress lags(0)

Dickey-Fuller test for unit root Number of obs = 28

---------- Interpolated Dickey-Fuller ---------

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.798	-3.730	-2.992	-2.626

MacKinnon approximate p-value for Z(t) = 0.0001

D.dfoa	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
dfoa						
L1.	-.9682093	.2017758	-4.80	0.000	-1.382965	-.5534532
_cons	1.02e+08	6.05e+07	1.68	0.104	-2.25e+07	2.26e+08

---------- Interpolated Dickey-Fuller ---------

Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.814	-4.352	-3.588	-3.233

MacKinnon approximate p-value for Z(t) = 0.0004

D.dfoa	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
dfoa						
L1.	-1.02787	.2135096	-4.81	0.000	-1.467601	-.5881389
_trend	6505362	7341818	0.89	0.384	-8615395	2.16e+07
_cons	1.43e+07	1.16e+08	0.12	0.903	-2.25e+08	2.53e+08

---------- Interpolated Dickey-Fuller ---------

Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.350	-2.655	-1.950	-1.601

D.dfoa	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
dfoa						
L1.	-.8400801	.1931299	-4.35	0.000	-1.23635	-.4438103

Source: Calculated based on survey data

Appendix Two: Estimations

2.1. The lag length selection Criteria

. tsset obs, yearly

time variable: obs, 1985 to 2014

delta: 1 year

. varsoc age foa

Selection-order criteria

Sample: 1989 - 2014 Number of obs = 26

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-1051.57				5.4e+32	81.0438	81.0717	81.1406
1	-986.726	129.69	4	0.000	5.0e+30	76.3635	76.4471*	76.6539*
2	-985.719	2.0143	4	0.733	6.4e+30	76.5938	76.7331	77.0776
3	-978.349	14.739*	4	0.005	5.0e+30*	76.3346*	76.5297	77.012
4	-977.175	2.3497	4	0.672	6.4e+30	76.5519	76.8027	77.4229

Source: Calculated based on survey data

2.2. Johansen co-integration test

. tsset obs, yearly

time variable: obs, 1985 to 2014

delta: 1 year

. vecrank age foa, trend(constant) lags(3) max

Johansen tests for cointegration

Trend: constant Number of obs = 27

Sample: 1988 - 2014 Lags = 3

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	10	-1028.4569	.	25.3359	15.41
1	13	-1016.5363	0.58646	1.4948*	3.76
2	14	-1015.7889	0.05386		

maximum rank	parms	LL	eigenvalue	max statistic	5% critical value
0	10	-1028.4569	.	23.8412	14.07
1	13	-1016.5363	0.58646	1.4948	3.76
2	14	-1015.7889	0.05386		

Source: Calculated based on survey data

2.3. Vector Error Correction Model(VECM)

```
. tsset obs, yearly
time variable:  obs, 1985 to 2014
delta:  1 year

. vec age foa, trend(constant) lags(3)

Vector error-correction model

Sample:  1988 - 2014                                    Number of obs     =        27
                                                        AIC               =   76.26195
Log likelihood = -1016.536                              HQIC              =   76.44747
Det(Sigma_ml)  =  1.73e+30                              SBIC              =   76.88587

Equation           Parms      RMSE       R-sq        chi2        P>chi2
------------------------------------------------------------------------------------------
D_age                  6     6.5e+06     0.6913     47.03125     0.0000
D_foa                  6     2.9e+08     0.3290     10.29499     0.1128
------------------------------------------------------------------------------------------

------------------------------------------------------------------------------------------------------------------------
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------------------------------------------------
D_age        |
      _cel   |
         L1  |  -.1737998   .0463667    -3.75   0.000    -.2646768   -.0829227

        age  |
         LD. |   .1029657    .179818     0.57   0.567    -.2494712    .4554026
        L2D. |  -.2696362   .1796996    -1.50   0.133    -.6218408    .0825685
```

foa |						
LD. |	-.006768	.0051324	-1.32	0.187	-.0168272	.0032913
L2D. |	-.0069143	.0057303	-1.21	0.228	-.0181455	.004317
_cons |	5456518	1837298	2.97	0.003	1855479	9057556
D_foa |						
_cel |						
L1. |	4.182468	2.069444	2.02	0.043	.1264326	8.238504
age |						
LD. |	7.585677	8.025662	0.95	0.345	-8.144331	23.31569
L2D. |	12.46908	8.020373	1.55	0.120	-3.250558	28.18873
foa |						
LD. |	.160322	.229069	0.70	0.484	-.288645	.6092891
L2D. |	.5004989	.2557573	1.96	0.050	-.0007762	1.001774
_cons |	226742.1	8.20e+07	0.00	0.998	-1.60e+08	1.61e+08

Source: Calculated based on survey data

Co-integrating equations

Equation	Parms	chi2	P>chi2
_ce1	1	122.8173	0.0000

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta |	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_ce1 |						
age |	1	.	.	.	.	.
foa |	-.0757663	.0068367	-11.08	0.000	- .089166	- .0623666
_cons |	-1.56e+07	.	.	.	.	.

Source: Calculated based on survey data

VECM-Short run causality

. test ([D_age]: LD.foa L2D.foa)

(1) [D_age]LD.foa = 0

(2) [D_age]L2D.foa = 0

chi2(2) = 2.81

Prob > chi2 = 0.2458

Source: Calculated based on survey data

Appendix Three: Diagnostic tests

1.1. Diagnostic test for autocorrelation

. tsset obs, yearly

time variable: obs, 1985 to 2014

delta: 1 year

. veclmar, mlag(1)

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	0.3259	4	0.98808

H0: no autocorrelation at lag order

Source: Calculated based on survey data

1.2. Jarque- Bera test of normality

. tsset obs, yearly

time variable: obs, 1985 to 2014

delta: 1 year

. vecnorm, jbera

Jarque-Bera test

Equation	chi2	df	Prob > chi2
D_age	0.320	2	0.85214
D_foa	0.123	2	0.94056
ALL	0.443	4	0.97885

Source: Calculated based on survey data

1.3. Eigenvalue test of Stability condition

. vecstable

Eigenvalue stability condition

Eigenvalue		Modulus
1		1
.8035868		.803587
-.6515073		.651507
.1556772	+ .5261905i	.548737
.1556772	- .5261905i	.548737
.3091638		.309164

The VECM specification imposes a unit modulus.

Source: Calculated based on survey data

Appendix Four: Raw Data 1985-2014G.C

	OBS	FOA	AGE
1	1985	718410000	58665485
2	1986	631110000	68025790
3	1987	623280000	80635820
4	1988	965440000	78451308
5	1989	727790000	79269533
6	1990	1009250000	83447171
7	1991	1091870000	87726171
8	1992	1162510000	85376225
9	1993	1080730000	90470129
10	1994	1063090000	87223536
11	1995	876490000	90183933
12	1996	816010000	103147945
13	1997	578350000	105798834
14	1998	660170000	95292139
15	1999	643110000	98650734
16	2000	687220000	101792828
17	2001	1103130000	111846691
18	2002	1324380000	109749946
19	2003	1626430000	98174548
20	2004	1828370000	114909407
21	2005	1927830000	130646691
22	2006	2033560000	145061723
23	2007	2558420000	158668054
24	2008	3328700000	170489656
25	2009	3818830000	181175028
26	2010	3452500000	194969478
27	2011	3492890000	212469712
28	2012	3220630000	222927378

29	2013	3884860000	238752105
30	2014	3585110000	251750110

Where, **OBS**-Observation

FOA-Foreign Aid and

AGE-Agricultural Growth of Ethiopia