

# Is Foreign Aid Panacea for Economic Growth? Case of Ethiopia: A Time Series Data Approach

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## Abstract

The effect of foreign aid on economic growth has been widely examined, yielding a contradictory and ambiguous results for developing economy like Ethiopia as it has long been an *integral part* of their annual budget. Thus, the main aim of this study is to identify aspects of the determinants of growth in Ethiopia in particular with the role of aid played in affecting economic growth. The study used modern econometric analysis/estimation techniques to investigate the above relationship by employing data set ranging from 1980 to 2013. The study found that a positive but insignificant impact of foreign aid on economic growth of Ethiopia. Accordingly, the government of Ethiopia is advised to base its economy on domestic resource mobilization rather than debt financing.

**Keywords:** Foreign Aid, Economic Growth, Cointegration, ECM, Ethiopia

## 1. Introduction

Foreign aid refers to the transfer of goods, capital or services from an international organization or country to offer some benefits for recipient's country. Foreign aid comes in the form of military, emergency humanitarian or economic aid. It aimed at providing assistance in case of crisis or disaster (Todaro, 2006). In addition, developmental aid is given by developed countries to support development in general which can be either economic development or social development in the long-term, rather than alleviating problems in the short term.<sup>2</sup>Aid from various sources can reach recipients in the form of either bilateral or multilateral delivery system (OECD, 2009).

The ultimate objective of development assistance is to reduce poverty and improving living standard of the tried world. So as to reduce poverty, sustainable economic growth is mandatory. To fulfill this sustainable economic growth there must be an investment on human, physical, institutional and infrastructural development. It is this component which is believed as the basis for the overall development performance of the country. However, the problem of economic growth of developing countries is related with the shortage of capital, which is crucial to their economic performance. Yet, the rate of capital for investment is determining by saving rate. However it is difficult to save in LDCs (Collier and paw, 2007).

Therefore, foreign capital inflows are receiving due attention recently because of their potential to finance investment and perceived to promote economic growth in recipient country. The growing divergence in saving and investment rates, export-import gap (foreign exchange constraints to import capital goods) and budget deficits in developing countries make them to depend highly on inflow of foreign capital. As (Girma and morrisey, 2005; Tasew, 2011) has aptly stated, poor countries lack sufficient domestic resources to finance investment and the foreign exchange to import capital goods and technology. Foreign aid which finance investment can directly fill the savings-investment gap and, as it is in the form of hard currency, aid can indirectly fill the foreign exchange gap.

According to Todaro and smith, (2006) the basic argument in the two- gap model is that most developing countries are faced either with shortage of domestic saving but with too much investment opportunities and or shortage of foreign exchange to finance the requirement of imports of capital and investment inputs. In fact developing countries experience slow economic growth with high population growth. Owing to this fact, estimation get worst when comes to Sub Saharan Africa countries like Ethiopia.

According to Human Development Index, (2011) report, Ethiopia is the third populous country in Africa and second populous country in sub-Saharan Africa with population estimated about 90 million in. Further, the country is also one of the lowest per capita income with about \$ 387 in 2011 and the lowest in SSA with GDP estimated \$ 41.9 billion, medium Gini coefficient of 33.6 and low human development index (HDI) of 0,396 (World Bank, 2012). In addition, Ethiopia economy is subsistence since it highly depend on agriculture, which in turns depends on nature (rain fed). Over 35% population depends on this sector for earning their means of livelihood. Agriculture accounts for all most half of GDP and more than 90% of export earnings. However, the share of agriculture is declining as the share of service in GDP rising recently. On the other hand, the share of manufacturing sector is relatively static on 13%-14% is only. In addition, foreign exchange is an important implication for functioning of the economy. The country is strongly dependent on coffee export as the main means of foreign exchange earnings,

<sup>1</sup> The study is conducted when the author was an undergraduate (BA) student at the department of economics of Addis Ababa University in Ethiopia.

<sup>2</sup> Developmental aid is given to governments through individual countries, international aid agencies and multilateral institutions such as World Bank and other development charity organizations.

while non coffee exports contribution- to the sectors is quite weak. As a result, the country remains victim of foreign exchange constraint and adverse to shocks in terms of trade (World Bank, 2013).

The other most important feature of the Ethiopian economy is presence of resource gap. The resource gap can be explained by the presence of saving-investment gap, foreign exchange gap and financial gap. In recent years feasible statistics shows that there is a visible numerous gap between saving and investment over different regimes of Ethiopia. It was an average of 1.1% of the GDP during the Derg period (1974-91) and 25.2% of the GDP in EPRDF (1991/ 92-2010). The presence of resource gap (gross domestic investment-gross domestic saving) forces the country to rely on an inflow of foreign aid to finance the gap (MOFED, 2012).

Generally, the scenario of Ethiopia is not different from the other poor countries. The capability of Ethiopia in improving the level of investment and promotion of economic growth through domestic capital sources and private capital inflow alone is far from adequate. Thus, the presence of these resource gaps in one way or other shows that the domestic economy is not capable of generating enough income to bridge these gaps. Hence, these makes the significance of foreign aid indisputable to the performance of the economy.

Despite massive inflows of aid to developing countries like that of Ethiopian economies and extensive empirical works for decades on the aid growth link, the aid effectiveness literature was remains controversial. Theoretically, the traditional proponents argue that foreign aid can enhance economic growth by bridging saving-investment gap, foreign exchange gap and fiscal gap that developing countries might face regularly over time. According to the (Harrod, 1948; Domar, 1947) in developing countries saving is too low to achieve a target growth and therefore foreign aid plays a major role in relieving the saving constraints and increase investment and hence leading to economic growth. Furthermore, according to Chenery and Strout (1966), foreign aid is also used to finance import capital goods for investment owing to foreign exchange gap that arise from low export earnings of developing countries<sup>1</sup>.

Empirically, evidence equally argues with the finding that shows foreign aid has a positive significant impact on economic growth (Tasew, 2011; Irandoust and Hatemi, 2005; Dawit and Yemisrach, 2013). They claimed that foreign aid in the form of capital inflows are necessary for economic growth of LDCs as it complements domestic resources and also supplements domestic savings. Furthermore, foreign aid assists to close the foreign exchange gap, provide access to modern technology and managerial skill and also allows access to foreign market that they never had before.

However, a series of studies argue that the negative relation might exist between foreign aid flows and economic growth. They declare that the negative relation may arise factors such as economic policies, state intervention, business cycles and stability of foreign aid flows in the recipient countries. They maintain that state intervention in the economy has a negative impact on economic growth and hence the effectiveness of foreign aid is conditional on good policy environment (Singh, 1985; Burnside and Dollar, 1997). Also, the findings of Hanna (2012) support the above findings in which aid does not have greater value on growth of Ethiopian economy. She found that especially aid fails to fill the resource gap that occur from domestic resources ( $S-I$ ) and foreign resource ( $X-M$ ) and she concluded that aid has negatively affect economic growth.

Similarly, Ahmed (2009) found that aid has significant contribution in enhancing investment both in the long run and short run but aid found to be ineffective even in enhancing growth. Conversely, Tadesse, (2011) conclude that when aid is interacting with policy the growth impact of aid appears significant. The result casts doubt since the country is known for its weak macroeconomic policy environment. However, the aid policy interaction term has produced a significant negative effect on growth implying that bad policies can constrain aid effectiveness and volatility of aid.

Moreover, many of current studies conducted on the topic of foreign aid in case of Ethiopia was focused mainly on assessing ten years data in order to examine the trend of aid inflow using descriptive analysis only<sup>2</sup>. Amongst those, a study of (Meried, 2004, Asrat, 2005, Hanna, 2012) examined the effect of foreign aid on economic growth of Ethiopia using a 10 years annual data and thus, it is difficult to draw conclusion based up on their assessment since they did not turn back to past regimes and compare the trend as well as the impact of foreign aid has on the economic growth. Though, other studies using econometrics analysis investigated foreign aid impact on economic growth over 30 years data also subjected to measurement and estimation technique errors. Current study attempted to improve such controversies and weaknesses<sup>3</sup>.

<sup>1</sup> According to Bacha (1990) and Taylor (1990) some governments of developing countries simply do not have the revenue raising capacity to cover a desired level of investment. Thus, external assistance that provided directly to the government could potentially relax this fiscal gap as long as it was used for investment purposes. In sum, gap models assert that foreign aid can supplement savings, foreign exchange and domestic revenues

<sup>2</sup> Current study tried to collect and analyze sufficient years of data as possible. Over 30 years data set ranging from 1980 to 2013 have been collected and helps the study to compare over various aid flows, trends and actual aid disbursement of all three regimes of Ethiopia.

<sup>3</sup> For example a study by Mekedes (2012) and Jigsa (2013) analyzes both long run and short run impact of foreign aid on economic growth by applying co integration technique and error correction (ECM) method. The empirical result of both shows that, foreign aid has a significant negative effect on economic growth both in the long run and short run. The negative effect of foreign aid indicated as lack of good fiscal and monetary policies. However, the negative impact of aid may not show the reality of aid ineffectiveness but rather the short comings is in the

Therefore, the inconclusiveness in debate regarding the effect of foreign aid on economic growth is the core of this study. Using a MOFED and NBE a data set ranging from 1980-2013, this study investigates the effect of foreign aid on economic growth in case of Ethiopia. In essence does foreign aid positively contribute to economic growth or negatively affect economic growth? The current paper has demonstrated a positive and statistically insignificant relationship between foreign aid and economic growth in the long run using measures of foreign aid with the help of time series econometric techniques.

Thus, the main purpose of this study is to analyze at what extent foreign aid contribute to the growth of Ethiopian economy. Specific objectives are:

- ❖ To review the volume and trend of foreign aid flows in Ethiopia.
- ❖ To analyze if there is a significant impact of foreign aid on economic growth of Ethiopia
- ❖ To analyze if there is a long run and short run dynamics of foreign aid and economic growth in case of Ethiopia

This study focused on the following hypotheses such that for the impact foreign aid on economic growth in Ethiopia;

- **H<sub>0</sub>:** There is no significant impact of foreign aid on economic growth in case of Ethiopia
- **H<sub>0</sub>:** There is no long run and short run significant relationship between foreign aid and economic growth of Ethiopia

To accomplish the stated objectives, this study attempted to answer the following research questions:

- Does foreign aid significantly impacted Ethiopian economic growth?
- Does long run relationships exist between foreign aid and economic growth in context of Ethiopia?

## 2. METHODOLOGY

### 2.1 Description of Variables

A time series data over 30 year's period which covers from 1983 to 2013 were used. Therefore a secondary data have been collected. The choice of the time period are completely depends on availability of data which are extracted from the National Bank of Ethiopia(NBE) and Ministry of Finance and Economic Development (MOFED) database. List of variables and data description are summarized as follows.

**Table 1 : List of Variables**

| List of Variables                             | Description  |
|---|--|
|   | <b>Dependent Variable</b>  |
| <b>Real Gross Domestic Product per capita</b> | base year=2010 at constant USD price                                       |
|   | <b>Independent Variables</b>   |
| <b>Foreign Aid</b>                            | Net ODA received as % of GNI   |
| <b>Foreign Direct Investment (FDI)</b>        | Foreign direct investment, net inflows (% of GDP)                          |
| <b>Domestic Investment</b>                    | Real capital and domestic investment is proxied by Gross capital formation |
| <b>Net Export(NX)</b>                         | Value of a country's total export- the value of total imports              |
| <b>Inflation (INF)</b>                        | Inflation, Consumer prices (Annual %)                                      |

Source: NBE & MOFED

### 2.2 Model Specification

The main purpose of this study is to analyze the impact of foreign aid on economic growth of Ethiopia. Since foreign aid cannot explain all the variation in GDP following the literature, the model includes several other variables as well. The method employed in the study is based on recent advancements in the theoretical and empirical aid-growth relationships. Various time series tests are performed such as normality, unit root test, co integration test, serial correlation, heteroscedasticity, Ramsey and other diagnostic tests to examine either these variable are positively or negatively affect economic growth. Thus, the growth model to be used in this paper specified as follows.

#### 2.2.1 Theoretical Arguments

I considered the growth model of Robert Solow and Trever Swan (1956) as my basic regression model which appeared as a basic step in the empirical works of Sergii (2009) with more additional variables in the quantitative Analysis of aid growth relationships<sup>1</sup>.

$$Y = X\beta + \varepsilon \text{ --- (1.0)}$$

model specification. The problem is that aid and investment are used together as explanatory variable which lead to problem of double counting as part of foreign aid is used to finance investment.

<sup>1</sup> In addition to other additional variables, the choice of variable is in line with the choice made in studies of (Manzoor 2005; Mubarak 2005; Salami et al, 2008; Frimpong et al, 2010).

Where  $Y$  is real output,  $\beta$  is the slope of coefficient matrix,  $X$  is explanatory variables matrix and  $\mathcal{E}$  the stochastic error term which represents measurement error in the explanatory variables.

According to Sergii (2009), there is no single way to measure each and every explanatory variable. That is why many empirical studies based on neoclassical, neo Keynesian, and endogenous growth theories face a common problem of failing to produce an exact list of explanatory variables. Yet theoretically, some growth models such as: neoclassical growth model use population and investment growth in the growth linear regression equation. Sergii, (2009) justifies this argument empirically by restating the neoclassical statement that, population and investment impact economic growth positively. Moreover some other researchers such as (Melaku, 2000) and (Million, 2002) include labor in the model in that it represents the human factor in producing good and service of all economy and is among the primary factors that contribute and influence economic growth. As Barugi (1997) explained that inflation has traditionally been considered as a positive factor in stimulating growth of production. However, it's questionable whether inflation brings a positive or negative influence on economic growth. But the relation of inflation with growth can be either positive or negative.

Therefore, to show the impact of foreign aid on the economy, studies has been under taken by economist like Domar (1992), Salvator (1991), and Balassa (1978) including export as another input in the production function with a belief that there is great productivity in export due to scale effects and externalities that arise because of export expansion. Moreover, authors like Feder (1982) and Teyler (1981) have acknowledged the possibility of a positive relationship between exports and GDP may be determined because exports are components of RGDP per capita.

In addition to linear relationship between real output and investment, inflation, net export, some other empirical literature focused on the possibility of “non-linear” relationship between economic growth and capital formation. For example, Kirshenbaum (1998) and Dielo (2004) argued that capital formation can be included in growth regression in a non-linear way. In order to maintain acceptable degrees of freedom and to evade potential multicollinearity problem we included all variables which are frequently used in the growth regression, domestic investment, inflation, growth rates and capital formation. Accordingly based on above mentioned work, the basic model given in equation (1) allowed us to capture the link between capital formation and growth in particular, and the other explanatory variables in general. This study will adopt basic Cobb-Douglas production function. Hence using the standard production function notation, national output can be expressed as

$$Y_t = AL_t^{\beta_1} K_t^{\beta_2} \text{-----} (2)$$

Where,  $Y_t$  is total domestic output,  $K_t$  is total stock of capital<sup>1</sup>,  $L_t$  is total active labor force and  $A_t$  is level of technology.

The general model is specified as follows:

$$A_t = f(AID_t DI_t FDI_t INF_t NX_t) \text{-----} (3)$$

By substituting equation 3 in to 2, the national income (GDP) function can be written as;

$$RGDP_t = L^\alpha * K^{\beta_1} * AID_t^{\beta_2} * INF_t^{\beta_3} * NX_t^{\beta_4} \text{-----} (4)$$

By rearranging, the logarithm form of the above equation is expressed as follows:

$$\ln RGDP_t = \alpha \ln L_t + \beta_1 \ln K_t + \beta_2 \ln AID_t + \beta_3 \ln INF_t + \beta_4 \ln NX_t + \varepsilon_t \text{---} (5)$$

Where  $\beta$ =coefficient,  $RGDP$  = Real gross domestic products per capita in terms of USdollar,  $INFL$  –

*Inflation* ,  $FDI$  – Foreign Direct Investment ,  $DI$  – Domestic Investment,  $NX$  – Net export and  $\mathcal{E}_t$  is Stochastic disturbance term which serve as a proxy for all the omitted variable that may affect  $RGDP$  per capita.

Before estimating our model, due to the following advantages suggested by Sarel (1996) and Mubarak (2005), the variables were transformed in to natural logarithm form. Since, implications of the log-transformation are more plausible than those of a linear model<sup>2</sup>. Accordingly for short run dynamics, since all variables in exception of inflation are integrated at order I or I(1), the real GDP per capita, foreign direct investment, foreign aid, and domestic investment as a share of real GDP per capita are computed using differences of the logarithms. The model is linear in both the parameters and in the logarithms of the explanatory variables. Therefore it can be estimated by OLS regression given that the assumptions of the classical linear regression model are fulfilled. Thus, the elasticity (log-log) form of the model in (5) becomes:

$$d \ln RGDP_t = \beta_0 + \beta_1 d \ln AID_t + \beta_2 d \ln FDI_t + \beta_3 d \ln DI_t + \beta_4 d \ln INF_t + \beta_5 d \ln NX_t + ECM(-1) + \varepsilon_t \text{---} (6)$$

Where,  $d \ln GDP_t = d \log(RGDP_t)$  ,  $d \ln AID = d \log(AID_t)$  ,  $d \ln FDI = d \log(FDI_t)$  ,  $d \ln DI = d \log(DI_t)$ ,  $d \ln NX = d \log(NX_t)$ ,  $inf = (INF_t)$ . The expression  $d \log$  represents the first difference of the

<sup>1</sup> In Ethiopia, there is no available capital data. Therefore, I replace stock of capital by gross fixed capital formation (fixed capital formation) which is used as a proxy variable in various literatures of (Muhammad and Toseef, 2015; Pigka-Balanika, 2013).

<sup>2</sup> Log-transformation smoothens at least partially the time trend in the data set. Moreover, the log-transformation, to some extent eliminates the strong asymmetry in inflation distribution, and stabilizes variance by reducing heteroscedasticity problem if exist.

natural logarithms which shows the difference percentage change (elasticity).

### 3. Descriptive Analysis

#### 3.1 Overview of Ethiopian Economy

The performance of an economy is highly explained by the soundness of the macroeconomic policy environment, political framework and various institutional setup of a country. Thus, the design of the macroeconomic policy is a reflection of the political process. Economic performance in Ethiopia is highly correlated with the political framework. Before 1974, the macroeconomic policy was largely informed by a market-oriented economic system. During the period of 1974-1991 (the Derg period) Ethiopia witnessed a centralized economic system, where the state played a major role in all spheres of economic activity. The post-Derg (EPRDF) period (since 1991) is similar with the market-oriented system of imperial regime. Frequent macroeconomic policy changes followed by a change in regime may sometimes have a harmful effect on the overall performance of the economy. In political terms, three main regimes in the recent history of the country can be identified: the imperial regime (1960-1974), the Derg regime (1975-1991), and the Ethiopian People's Revolutionary Democratic Front (EPRDF) (1992-present).

Economic performance in the imperial regime was respectable, with real GDP growing by 4 percent annually, while average growth of per capita GDP was 1.5 percent (Alemayehu, 2007). The Derg took power in 1975 and embarked highly on the nationalization of almost all types of property: land, private property, large-scale manufacturing firms and financial institutions. The period was characterized by a huge role of the state in all aspects of economic activity. The regime was characterized by a centrally planned economic system with a strong military power and discrimination against private property ownership and entrepreneurship. Martins, (2007) showed that economic performance under the regime was poorer than the past, with GDP growing at 1.9 % per year, while the growth of economy was negative in per capita terms (-0.8 percent). The policy environment, erratic performance of the agricultural sector (e.g. severe drought in 1984-85) and a lengthy civil war were the main contributors to this sluggish economic record.

Another major change in the Ethiopian economic and political context occurred in 1991 was a coalition of rebel forces (EPRDF) succeeded in overthrowing the military regime. In terms of macroeconomic policy, 1991 witnessed a marked departure from the previous socialist system of the Derg regime in which openly adopting a market-oriented economic policy. Growth during the post-Derg period is quite good where total and per capita GDP on average grew by 3.7 percent and 0.7 percent per annum, respectively<sup>1</sup>.

#### 3.2 Forms of aid in different regimes of Ethiopia<sup>2</sup>

Among the three regimes, the imperial regime received the least total aid flow compared to the other two regimes due to two main reasons. The first reason was, internationally pre 1970 was the period when cold war was not the major factor for countries to help others through aid to attract them to their camp and secondly, decisive drought and famine that had swept the northern part of country was hiding from international media attention. Food aid and average aid money in the form of ODA grant is top of the list during the last two regimes. For the first regime capital flow to the private sector came first in the form of total aid. While aid in the form of technical cooperation ranks second for the first two regimes, ODA loans takes second for the current regime. Aid in the form of food aid takes fourth whereas aid flows to private sectors were at the bottom of the list for the last two regimes (Getnet, 2009).

#### 3.3 Major Donors in different regimes of Ethiopia

In terms of major multilateral donors in each regime EU, UN agencies, World Bank, World Food programs, and Africa Development Bank ranked top of the list irrespective of the regime change. EU was ranked at the top of the list in terms of total aid flow followed by UN agencies, while World Bank comes second. Similar patterns can be observed for the average aid flow, except that for all three régimes, the World Bank came closer to the top of the list (Getnet, 2009). Regarding bilateral donors, five countries make top list of bilateral donors during the three regimes of Ethiopia. These countries are US, Sweden, Germany, Italy, and the Netherlands. Looking at bilateral donors in each regimes UK, Japan, and Canada plays a great and significant role. While still US holds the top position as a major bilateral donor during the first and current regimes, Italy took the top rank for its aid money flow during military regime.

#### 3.4 Size and Trends of Aid flow in different regimes of Ethiopia

<sup>1</sup> Attaining variability in growth, terms of trade movement and change in real exchange rate were also significant in explaining growth variability. Other factors that contribute to macro-instability include unpredictability of resource inflow and regional security. Achieving of Ethiopia's sustainable growth rate will involve, therefore, enhanced implementation of policies and strategies to achieve expected growth (MOFED, 2008).

<sup>2</sup> The three regimes of Ethiopia are: Imperial Regime (1931-74), the Derg Regime (1974-1990) and the current (EPRDF) Regime (post 1991).

The role of foreign aid in the economic development of a poor country such as Ethiopia is unquestionable. Foreign aid can be put to use in the economy where there is a resource gap exists. 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 in the long run.

Foreign aid has played a major role in Ethiopia's development effort since the end of World War II. It has been instrumental in bridging the country's savings-investment and foreign exchange gaps. Its importance as a source of financing for human capital, administrative capacity, institutional building and policy reform is also undeniable. Thus increasing efforts were made to mobilize foreign aid in the last two regimes. According to Fissiha, (2006) foreign aid plays an important role for development endeavor of the country 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 USA and Ethiopia reached at higher level. For instance, pre 1975 about 75 percent 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<sup>1</sup>. The magnitude of aid flow to Ethiopia is not stable; it varies depending on the nature and characteristics of the political ideology, the economic system that the regime follows, and the affiliation with donor countries and institutions. Certainly such uncertainty and instability in the flow of aid makes long term development planning difficult<sup>2</sup>.

Comparatively, the total flow of foreign aid has increased in the post 1991 period (under current economic system) due to changes in policies which meet the interests of donors, and adoption of a market-oriented economic system. As a result, 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 rise to 13 percent from a 4.8 percent (during the Derg period). The period 1996/97-2000/01 witnessed a decline in aid which was below average share of GDP. The lowest share of 7 percent being observed in 1997/98<sup>3</sup>. The country has been receiving aid in various forms ranging from technical assistance to food aid. During the period from 1960 to 2003, Ethiopia received more aid flows in the form of ODA grant followed by ODA loan. Aid in the form of technical cooperation and food aid take the third and then it can easily be seen that flows in the form of FDI and portfolio investment are at bottom of list for the period under consideration (Adugna, 2004).

### 3.5 Recent Trend of ODA in Ethiopia

Although Ethiopia is making great progress in increasing domestic revenue, a substantial amount of Ethiopia national budget is financed from external source. Moreover, a recent DAG report stresses there is a need for scaling up external financing and aid to reach the MDGs. DAG (2007) indicates that humanitarian and food aid constitutes large share of external assistance (30%-50% of total aid). However, the report concedes, Ethiopia's ODA per capita is still significantly lower than the Sub-Saharan Africa average (Adugna, 2004).

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<sup>1</sup> 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.

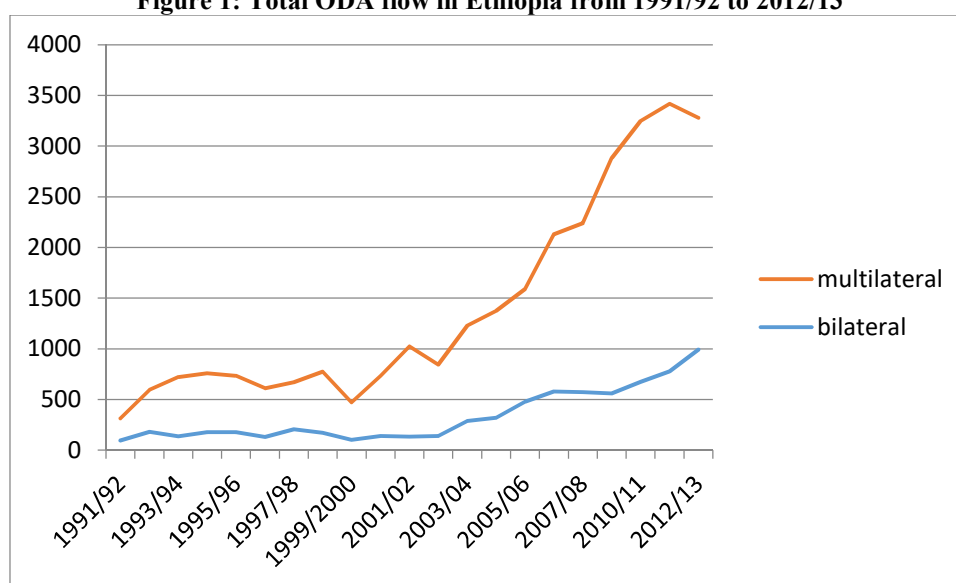
<sup>2</sup> During the socialist regime (1975-1990), Ethiopia had been receiving development assistance from eastern Block donors particularly from the Soviet Union and East Germany, as well as from western bilateral and multilateral donors to some extent. During that period the country received Birr 1.1 billion on average terms per year. The average share of aid (ODA) in the GDP was 4.8 percent (in the same period).

<sup>3</sup> The major factor for the decline in the specified period was the war with Eritrea where the majority of donors were opposing the war. Despite the huge flow many claim that, aid to Ethiopia is ineffective in bringing about the desired changes, for instance, in terms of poverty reduction and enhancing economic progress. But this does not imply that aid is totally wasted (or, ineffective at all) because there are some improvements in the social indicators like enhancing access to education and health services.

**Table 2: Total ODA flow in Ethiopia in the form of both bilateral and multilateral donor bases from 1991/92 to 2012/13**

| Fiscal year | Bilateral | Multilateral |
|-------------|-----------|--------------|
| 1991/92     | 95.3      | 219.5        |
| 1992/93     | 180.1     | 415.7        |
| 1993/94     | 136.6     | 586.1        |
| 1994/95     | 177.1     | 583.2        |
| 1995/96     | 177.9     | 554.4        |
| 1996/97     | 131.1     | 478.9        |
| 1997/98     | 205.9     | 463.9        |
| 1998/99     | 170.6     | 604.2        |
| 1999/2000   | 101.7     | 370.1        |
| 2000/01     | 139.3     | 593.4        |
| 2001/02     | 132.3     | 890.9        |
| 2002/03     | 138.7     | 706.1        |
| 2003/04     | 288.1     | 940.6        |
| 2004/05     | 320       | 1056         |
| 2005/06     | 478.1     | 1110.5       |
| 2006/07     | 579.5     | 1550.4       |
| 2007/08     | 572.5     | 1668.3       |
| 2008/09     | 561.5     | 2321.1       |
| 2010/11     | 674.5     | 2571.6       |
| 2011/12     | 777.899   | 2638.9       |
| 2012/13     | 991.706   | 2287.25      |
| TOTAL       | 7030.41   | 22611.1      |

**Figure 1: Total ODA flow in Ethiopia from 1991/92 to 2012/13**



**Source- own computed, 2014**

As you can see from the above chart through 1991/92 to 2012/13, multilateral aid is greater than bilateral aid. The main reason is that western donors need aid to be properly used by the receivers and the government of Ethiopia is recording one of the fastest growth in the world, which can be seen as a first factor for aid release. Secondly, the foreign relation policy of the country over the last one decade Ethiopia had almost better relation with both western and eastern worlds without their ideological differences.

### 3.6 Actual Aid Disbursement

Total aid received significantly increase from US \$2404.4 million in 2008/9 to US \$2,444.0 in 2009/10 and from US \$2,702.0 million in 2010/11 to 2,614.1 million in 2011/12. Despite the general increase in aid received, there were fluctuation in the level of aid. For example, the total aid received in 2010/11 was \$2,702.0 million, which is decreased to \$2,614.1million in 2011/12.

**Table 3: Actual aid disbursement**

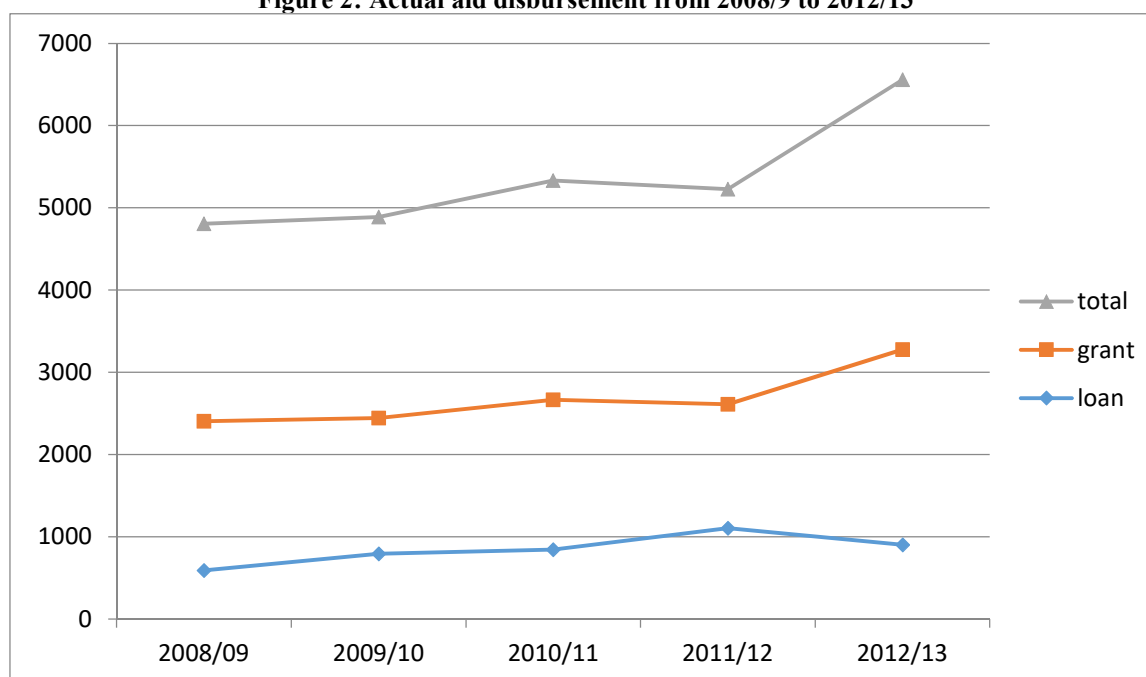
| <i>Donor Group/Donor Agency/Aid modality</i> | <i>Year</i>  | <i>2008/2009</i> | <i>2009/2010</i> | <i>2010/2011</i> | <i>2011/2012</i> | <i>2012/2013</i> |
|--|--------------|------------------|------------------|------------------|------------------|------------------|
| <i>Bilateral Group( in US \$)</i>            | Grant        | 423.7            | 431.5            | 695.7            | 690.5            | 897.623          |
|  | Loan         | 75.4             | 108.5            | 219.3            | 450.8            | 94.083           |
|  | <b>Total</b> | <b>499.2</b>     | <b>540</b>       | <b>915</b>       | <b>1141.3</b>    | <b>991.706</b>   |
| <i>Multilateral Group (in US \$)</i>         | Grant        | 1389.1           | 1219.5           | 1161.1           | 819.1            | 1476.89          |
|  | Loan         | 516.2            | 684.9            | 626.6            | 653.5            | 810.36           |
|  | <b>Total</b> | <b>1905.3</b>    | <b>1904.4</b>    | <b>1787.7</b>    | <b>1472.6</b>    | <b>2287.25</b>   |
| <b>Total</b>                                 |              | <b>2404.4</b>    | <b>2444</b>      | <b>2702</b>      | <b>2613.90</b>   | <b>3278.95</b>   |

Source- own computed, (2014)

Among the donor groups and agencies, the international financial institution (IFI) showed the highest actual aid disbursement of US \$4,876. Bilateral group \$3,407.8, UN groups \$2,370.2 and the least actual disbursement is by European Union which is about US \$1,052.1.

Accordingly, the actual disbursement of aid from 2008/9 to 2012/13 are presented in the following chart:

**Figure 2: Actual aid disbursement from 2008/9 to 2012/13**



Source-own computed, 2014

As it presented on the above figure, from 2011/12-2012/13 grants are dramatically increased as a result of attractive foreign policy that interests flows of grants and or due to fastest growth of Ethiopia economy which urges proper use of aid for developmental effort.

#### 4. Econometric Analysis

##### 4.1 Results of Diagnostic tests

##### 4.1.1 Stationarity Test

In analyzing time series data, testing for Stationarity is a vital condition. Before checking for a cointegration long-run relationship among the variables of the augmented production function, we determine if they are stationary or not and the order of integration. Using the classical OLS estimation method with non-stationarity of variables, time series data will result 'spurious' regression result. To avoid this problem, a non-stationary time series must be transformed, i.e. differenced. Most economic variables are non-stationary at levels I (0) in which they become



stationary after being differenced ones I (1). Based on the forgoing argument, the Dickey Fuller (DF) unit root test was conducted to identify whether or not the variables in gross domestic function are stationary.

**Table 4: DF unit root test with constant, trend and lags**

| Variables     | At level(0) | At first difference I(1) | p-value at level | p-value at differenced I(1) |
|---------------|-------------|--------------------------|------------------|-----------------------------|
| <i>lnRGDP</i> | 3.071       | <b>-4.171*</b>           | 1.0000           | 0.0007                      |
| <i>lnAID</i>  | 0.626       | <b>-4.085*</b>           | 0.9882           | 0.0001                      |
| <i>lnFDI</i>  | 0.741       | <b>-6.083*</b>           | 0.9906           | 0.0000                      |
| <i>lnDI</i>   | 0.013       | <b>-7.658*</b>           | 0.9596           | 0.0000                      |
| <i>INF</i>    | -3.827      | <b>-7.046*</b>           | 0.0026           | 0.0000                      |
| <i>NX</i>     | 3.648       | <b>-4.686*</b>           | 1.0000           | 0.0001                      |

Source –own computed, 2014

\* Stationary at 1%

From the above table as we can see that most variables are not stationary at level, I(0). But if the variables are differenced once, they become stationary implying that they are integrated of order of I (1). As it shown in the table; real GDP, foreign aid, foreign direct investment, domestic investment, and net export are stationary at 1%, after differencing once except for inflation which is stationary at level.

#### 4.1.2 Co integration Test

Co integration test is under taken to ensure whether long term relationships exists among variables of under study. This study employs Dickey Fuller (DF) test to test for co integration of the variables. The null hypothesis of co-integration states that the residual ( $\hat{\epsilon}_t$ ) is non-stationary, which implies no long run relationship exists between RGDP and explanatory variables. And the alternative hypothesis states that the residual ( $\hat{\epsilon}_t$ ) is stationary and implies that there is a cointegration between dependent and independent variables. Accordingly, if t-statistic value of residual is greater than the critical values (in absolute terms), we reject the null hypothesis of no-cointegration and conclude that there is a long run relationship between the regressand and the regressors.

**Table 5: Result of Co integration test**

| Dickey Fuller (DF) at I(0) |        |                 |        |
|----------------------------|--------|-----------------|--------|
| Residual                   | -4.734 | Critical values |        |
|                            |        | 1%              | 5%     |
|                            |        | -3.696          | -2.978 |
|                            |        |                 | 10%    |
|                            |        |                 | -2.620 |

Source – own computed, 2014

\* Stationary at 1%

As it shown in above table, the calculated Dickey Fuller (DF) residual is greater in absolute terms than the critical value of DF at 1%. The implication of this is that even if all variables are not stationary at level, their linear combination is stationary which implies that the variables have long run or equilibrium relationship.

#### 4.1.3 Multicollinearity Test

In this study multicollinearity test is conducted to identify the correlation among explanatory variables and to avoid double effect of independent variable from the model. The problem of multicollinearity usually arises when certain explanatory variables are highly correlated with other independent variable. In other words, multicollinearity describes the relationship among explanatory variables. To detect multicollinearity problem we use Variance Inflation Factor (VIF) test. If  $VIF < 10$  then this means that multicollinearity is not serious and if it is greater than 10 then there is a problem of multicollinearity. The result indicates that the mean of VIF is 2.00 which assures that there is no multicollinearity problem.

#### 4.1.4 Heteroscedasticity Test

I also conducted heteroscedastic diagnostic test. As theoretically expressed by (Brooks, 2008)  $var(e) = \delta^2$  has been assumed that the variance of the errors is constant; this is known as the assumption of homoscedasticity. If the errors do not have a constant variance, they are said to be heteroscedastic. In order to check the presence of heteroscedasticity, we used Breusch-Pagan/Cook-Weisberg test. The hypothesis,  $H_0$  is constant variance which is homoscedasticity and the alternative hypothesis is heteroscedasticity. The result shows the test is significant and we fail to reject the null hypothesis that says conditional variance of the residual is constant for the model. Thus, the assumption of homoscedasticity is fulfilled.

The following is the test result of this problem.

$$chi2(1) = 0.10$$

$$Prob > chi2 = 0.7551$$

## 4.2 Discussions of the Results

### 4.2.1 Long run Model

The OLS regression under this study shows that the  $R^2$  of the model describes 97.9 % of the long run variation in

the dependent variable is explained by the explanatory variables that are being employed in the model. Thus, statistical value that measure goodness of fit and over all significance of the model is represented by  $R^2$  is high. And since  $F - calculated$  is greater than  $F - tabulated$ , the overall model is significant. Thus, the result is presented as follows:

$$F(5, 28) = 263,67$$

$$(Prob > F) = 0.0000.$$

In addition, various diagnostic tests are performed; all tests confirmed that the model is well specified and regression analysis is adequate. Amongst them, Breush-Godfrey Lagrange Multiplier (LM) test for serial autocorrelation, the Jarque-Bera test for normality, the White's test for heteroscedasticity and Ramsey's general test of model misspecification are reported and all tests did not detect any problem of serial correlation, heteroscedasticity, non-normality and model misspecification.

The model specified for estimation purpose was the following:

$$\ln RGDP_t = \beta_0 + \beta_1 \ln AID_t + \beta_2 \ln FDI_t + \beta_3 \ln DI_t + \beta_4 \ln NF_t + \beta_5 NX_t + \varepsilon_t \text{ ----- (7)}$$

**Table 6: Result of the estimated long-run Model**

| Variables    | Coefficients | St. error | t-statistics | p-value |
|--------------|--------------|-----------|--------------|---------|
| <i>lnAid</i> | 0.0025895    | 0.0307098 | 0.08         | 0.933   |
| <i>lnFdi</i> | 0.0747285    | 0.0223389 | 3.35 *       | 0.002   |
| <i>lnDi</i>  | 0.4164237    | 0.0809601 | 5.14*        | 0.000   |
| <i>Nx</i>    | -2.23e-09    | 1.06e-09  | -2.11*       | 0.044   |
| <i>Inf</i>   | 0.0043312    | 0.0016435 | 2.64 *       | 0.014   |

$R^2=97.92$   
 $ADJ-R^2= 0.9755$   
 $Prob > F = 0.0000$   
 $F(5,28)=263.67$   
**Diagnostic Tests**  
 $Mean VIF=2.00$   
 $DW=1.65$   
 $Hetest= chi2(1) = 0.10$   
 $Prob > chi2 = 0.7551$   
 $Ovi test= F(3, 23) = 2.63$   
 $Prob > F = 0.0742$

**Source – own computed, 2014**

\* Shows that the variable is significant at 1%.

From the above table, estimated coefficients of the foreign aid in the long run growth model is consistent with expected sign and yet, statistically insignificant at 95 % confidence interval. Though, foreign direct investment, domestic investment and inflation entered this equation with a positive coefficient and significant at 1%. The positive sign supports the argument that all this variables increases economic growth whereas, net export is negatively affect economic growth and significant at 1%.

The outcome of foreign aid obtained from the above regression has a positive impact which is consistent with theoretical expectation of Harrod- Domar and two gap model in which foreign aid can be used as a key tool in bridging the gap between saving and investment, trade gap and fiscal gap<sup>1</sup>. However, due to fungibility and the leakage of aid in to unproductive expenditure in public sector, its effect on the economy become insignificant. The finding is contrary to the findings of (Ali, 2006; Mallik, 2007; Lensink and Morrissey, 2000; Chauvet and Guillaumont, 2008; Van Wijnbergen, 2009) which reports a significant negative effect of aid on economic growth.

Based on the result obtained from the table 6, foreign direct investment has a significant positive effect which shows direct relationship between economic growth and foreign direct investment. The coefficient of foreign aid is interpreted as a 1% change in foreign direct investment on average leads to a 0.07 % increase in economic growth holding other variables constant. This can be explained by the argument that an increase in the inflow of capital in the form of foreign direct investment further improves the capital account and hence economic growth of the country by creating employment opportunities, technological spillovers and know-how, managerial skills, employee training, international production networks and access to markets and hence productivity gains for the hosting economy<sup>2</sup>. The outcome is in line with the findings of (Seetanah, 2001; Antnoi, et al 2013; Ayanwale,

<sup>1</sup> The finding is also consistent with the empirical findings of Hansen and Tarp, 2001, which reports the insignificant influence of aid on economic growth.

<sup>2</sup> Know-how, foreign expertise, training and technological spillovers that flow from foreign direct investment will create competition among domestic industries which in turn boost a total productivity of the country

2007; Sukar, 2004)<sup>3</sup> and inconsistent with the findings of (Carkovic and Levine, 2002; Xu, 2000).

The coefficient of domestic investment is as expected i.e. positive and significant. Since, domestic investment in tangible assets affects economic growth through domestic capital accumulation, while domestic investments in human capital, research and infrastructure enhance economic growth through total factor productivity growth. Thus, domestic investment create condition for having varieties of projects which attracts foreign investment, private and public investment and hence increase total productivity and economic growth. Investment in both private and public comes with a lot of benefits such as job creation, increase in per capita income, reduction in the level of poverty, increase in standard of living and hence bolster economic growth<sup>4</sup>.

For net export the expected sign of coefficient is ambiguous (either negative or positive). Accordingly, the finding indicate that net export has a significant negative effect which shows inverse relationship between growth and real net export. Since negative net exports implies a trade deficit and it can be explained by the argument that an increase in import of industrial inputs and consumer goods leads to further deterioration of the current account of Ethiopia. The fall in the current account of a country will in turn decrease GDP and economic growth of Ethiopia.

Finally, the coefficient on inflation is as expected, positive and significant which indicates that when inflation increases by 1 unit on average, economic growth increases by 0.004% holding other variables constant. The outcome is consistent with our expectation and Keynesian theories which consider inflation as a reflection of high aggregate demand. According to the above finding stable inflation may foster investment and economic growth by promoting efficient and effective use of productive resources<sup>5</sup>.

#### 4.2.3 Short run dynamics

Cointegration is a relationship between two non-stationary, I (1), variables. These variables share a common trend and tend to move together in the long-run. In this section, a dynamic relationship between variables which embeds a cointegrating relationship known as the short-run error correction model is examined. Hence the short run dynamics is explained using Engel Granger representation of the ECM. To this end the model for the ECM is formulated as follows:

$$dlnRGDP_t = \beta_0 + \beta_1 dlnAID_t + \beta_2 dlnFDI_t + \beta_3 dlnDI_t + \beta_4 INF_t + \beta_5 dNX_t + ECM(-1) + \varepsilon_t \quad (9)$$

**Table 7: Result of Error Correction Model**

| Dependent variable <i>dlnRGDP</i>             |              |           |              |         |
|---|--------------|-----------|--------------|---------|
| Variables                                     | Coefficients | St. error | t-statistics | p-value |
| <i>IndAid</i>                                 | 0.0216152    | 0.0244754 | 0.88         | 0.385   |
| <i>IndFdi</i>                                 | 0.003625     | 0.0314195 | 0.12         | 0.909   |
| <i>IndDi</i>                                  | 0.1648529    | .0506293  | <b>3.26*</b> | 0.003   |
| <i>dNx</i>                                    | -9.33e-10    | 1.50e-09  | -0.62        | 0.540   |
| <i>Inf</i>                                    | 0.0014625    | 0.001181  | 1.24         | 0.227   |
| <i>ECM(-1)</i>                                | -0.3836587   | 0.138282  | -2.77        | 0.227   |
| <i>Constant</i>                               | 0.0186147    | 0.0139948 | 1.33         | 0.195   |
| <i>R</i> <sup>2</sup> = 0.4904                |              |           |              |         |
| <i>ADJ-R</i> <sup>2</sup> = 0.3728            |              |           |              |         |
| <i>F</i> (6,26) = 4.17                        |              |           |              |         |
| <i>Prob &gt; F</i> = 0.0046                   |              |           |              |         |
| Diagnostic Tests                              |              |           |              |         |
| Mean <i>VIF</i> = 2.00                        |              |           |              |         |
| <i>DW</i> = 1.65                              |              |           |              |         |
| Normality test = <i>Prob &gt; z</i> = 0.90882 |              |           |              |         |
| <i>Hettest</i> = <i>chi2</i> (1) = 0.10       |              |           |              |         |
| <i>Prob &gt; chi2</i> = 0.7551                |              |           |              |         |
| <i>Ovi test</i> = <i>F</i> (3, 23) = 2.63     |              |           |              |         |
| <i>Prob &gt; F</i> = 0.0742                   |              |           |              |         |

Source: own computed, 2014

\*Shows that the variable is significant at 1%

The result from short run dynamics revealed that aid has insignificant impact on economic growth indicating that most of the aid has been used to finance investment which has a long gestation period<sup>6</sup>. Therefore, foreign aid is ineffective in promoting economic growth in the short run. On the other hand, domestic investment is found to be very significant in the short run growth function. The increase in the national saving and public investment in the economy leads to increased economic growth in the short run.

Error Correction Model (ECM). The ECM result shows that error correction term has a statistically significant coefficient with expected sign. Based on the result in table 4.2.4 38% of disequilibrium in one period will be

<sup>3</sup> The finding is also consistent with findings of earlier literatures of Borensztein et al. 1998, Balasubramanyam et al 1996 and Graham, 1995.

<sup>4</sup> For more details see Jhingan, 2006

<sup>5</sup> Thus, annual average inflation has a significant positive effect which is consistent with the theoretical argument that general inflation is an important variable in determining economic growth of developing countries.

<sup>6</sup> The finding is consistent with the finding of Tadesse, 2011, in which he concludes that aid impact may not be reflected in the short run due to long gestation period.

corrected in the subsequent period. The negative of the error correction term shows that at any period, if the foreign aid balance were above equilibrium level, it will start falling in the next period to correct for disequilibrium. Since not all variables are stationary at level, there might be disequilibrium in the short run.  $R^2$  the model describes that 49 % of the short run variation in dependent variable is explained by the explanatory variables in the model. Hence, the model explains GDP well in the short run. In addition to this F calculated  $F(6, 26) = 4.17$  and its  $\text{Prob} > F = 0.0046$  is greater than F tabulated. So over all models is significant since the calculated is greater than tabulated one. In the short run too, the model passed all the tests and hence there is no problem.

#### 4.3 Hypothesis Testing

**Hypothesis 1** states that there is no significant impact of foreign on economic growth of Ethiopia. From **table 6** indicated that foreign aid recorded a coefficient of 0.002 under long run model with  $p \text{ value} = 0.933 > 0.05$ , this implies that hypothesis was accepted. Foreign aid has a positive but insignificant effect on RGDP growth rate of Ethiopia.

**Hypothesis 2** stipulates that there is no long run relationship exists between foreign aid and economic growth of Ethiopia. However, from DF cointegration test result reported under **table 5**, the calculated Dickey Fuller (DF) residual is greater in absolute terms than the critical value of DF at 1%, shows the rejection of Null hypothesis and postulates that the variables have a long run relationships.

### 5. Conclusion and recommendation

#### Conclusion

The paper examined the foreign aid behavior in Ethiopia over the period of 1980 to 2013. In order to achieve stated objectives, related theoretical and empirical literatures were reviewed; secondary data's which are relevant for our study is collected and analyzed using time series econometrics methods. In addition, the paper briefly looks at the development of additional variables which are significant for modeling the effect of foreign aid.

Thus, the main concern of the study has been to investigate the major determinant of economic growth in the case of Ethiopia with special reference to foreign aid. To achieve the stated objectives, both descriptive and econometric analysis are employed. According to descriptive analysis, a flow of official development assistance (a proxy of foreign aid) to Ethiopia is increased significantly after the fall of military regime in 1991. Following the end of socialist system, the volume of aid reached peak and then declined reaching its lower level (between 1996 -2000). Further, the study also found that from the two major source of aid, the volume multilateral aid is greater than bilateral aid for Ethiopian economy.

And also, the Dickey fuller test for unit root test supports the view that all the variables appearing in the growth function are stationary at first difference  $I(1)$ , except inflation which is stationary at level  $I(0)$ . From the long run model, growth is positively related to foreign aid and other control variables such as foreign direct investment (FDI), domestic investment and inflation. Whereas the effect of net export is negative on economic growth.

Furthermore, this paper investigated an error correction model, capturing the short run dynamics of growth. The estimated coefficients of domestic investment are found to be significant while the latter four have a pronounced effect in the short run. In contrary to the long run model foreign direct investment, inflation and net export were insignificant in the short run. The coefficient of the error correction term is estimated around -0.38 which suggest that about 38 % of the disequilibrium in aid flows will adjust towards long run equilibrium path over the period of 1980-2013.

#### Policy Implications

Achieving economic growth sustainability is a challenging process for Ethiopia. The government of Ethiopia has to base its economy on domestic resource mobilization rather than debt financing so as to become in a better situation than now. Thus, to avoid a heavy dependency on foreign aid:

1. The government should take a measurement toward encouraging domestic saving through incentives and other mechanisms that motivates the masses to save and invest in productive economy. Therefore, the government is required to set a sound macroeconomic policy environment which stimulates domestic saving and hence adequate enough to finance investment and close the saving investment gap in the long run.
2. In line with encouraging domestic saving, the monetary policy should be designed to nurture the private sector by creating an easy access of credit so as to encourage and bolster private investors.
3. The government of Ethiopia has to also follow a tight fiscal policies which includes expanding the domestic tax base, strengthening VAT systems and streamlining tax exemptions which enables the country to finance domestic investment and public expenditures and therefore less dependence on foreign aid to assure developmental needs.
4. In order to minimize the foreign exchange constraints which makes dependence on aid compulsory,

diversification along with policies of export promotion are crucial. In addition, the poor track of export in the past decades also points the need to reduce dependence on primary commodities as the dominant way of foreign exchange earnings.

5. Finally, the government should have to create a stronger and more durable, more inclusive growth by providing a space for key infrastructure and priority social spending. Further, the government have to devise a robust policies that enables the country to focus on intra-African trade and other economic integrations in order to maximize a gain of global value chains.

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