Foreign Aid and Economic Growth in Ethiopia: The Two Gap Model Approach

Gadisa Abera[1], Wondaferaw Mulugeta[2] , Jibril Haji[3]

[1]Lecturer, Department of Economics, Jimma University
[2]Associate Professor, Department of Economics, Jimma University
[3]Lecturer, Department of Economics, Jimma University

The corresponding author can be reached using:aberagadisa@yahoo.com

Abstract

Foreign aid mainly Official Development Assistance (ODA) with the objective of development is increasing in magnitude and getting more focus both from the recipient and donor perspectives. But empirically its effectiveness is debatable and inconclusive. Developing countries mainly Ethiopia has been experiencing the resource gap (saving and trade gaps) which leads to significant inflow of foreign aid. Therefore, the objective of the study was to examine the effect of foreign aid on economic growth through the transmission mechanism of investment and import equations using Autoregressive Distributed Lag (ARDL) estimation techniques for the period 1981 to 2015.The bound test for co-integration revealed that the existence of long run co-integration among variables in all three Investment and import (transmission) and growth equations. From the long run equations, we found that foreign aid has a negative and significant impact on per capita income growth in long run. Aid also has positive and significant effect in investment and growth equations. Aid having positive and significant effect in transmission equations but the negative and significant effect on per capita income growth indicates that the import financed by aid is more of noninvestment goods and outweighs the investment. Finally, the study recommends as per the two-gap model since the binding constraint is foreign exchange gap the country need to focus on domestic capacity development mainly to substitute import.

Keywords: Two gap model, Autoregressive distributed lag (ARDL), Bound test

1. INTRODUCTION

There is no doubt some evidence of international aid in ancient times. But in the modern era, the issue of aid began to surface in the 19th and early 20th centuries as the Western powers considered their colonies and other poor countries. In Britain, the Colonial Development Act of 1929 was the culmination of a long process of moving from laissez-faire in the economic operation of the colonies to assistance, but it was a restrictive kind (Hjertholm and White, 2000:100, as cited onKanbur,2003).

But the real expansion and crystallization of an aid doctrine, in the US but also elsewhere, came in the aftermath of the Second World War. By common consent, there were two major events in the evolution of aid in the 1940's. The Marshall Plan symbolized bilateral assistance, from the United States to countries of Europe. The setting up of the United Nations, and the Bretton Woods conference that set up the World Bank and the International Monetary Fund (IMF) represented the multilateral tendency in development assistance (Ibid).

Early economic growth theories in the 1950s and 60s stressed that the basic problem for many developing countries was precisely capital formation. These theories were in the view that development assistance was important for these countries as capital formation played a great role in economic growth. The reason behind such argument is that these countries have insufficient private and public savings to finance large investments such as economic infrastructure. Furthermore, developing countries had few resources in form of foreign exchange to finance imports of machinery and other capital goods. Therefore, Foreign Aid(FA) was essential to fill the savings-investment gap and the trade gap by increasing investments and thus growth (Papanek, 1972).

In Ethiopia, an inflow of external resources such as loans and grants has started in 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 series of five-year development plan period (1957-1973) was covered by external capital. Thus the magnitude of loans and grants that Ethiopia received in the years preceding the revolution was not even small. 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 (Dejene, 1989)

In the subsequent years (1980-97), Ethiopia's total ODA receipt exceeds the US $ 17 billion in nominal terms (US $23 billion in real terms). Based on the 1996 prices, the annual inflow of net ODA (loans, grants, technical assistance, and food aid) to Ethiopia averaged US$ 1.2 billion per year in the 1980s, and then raised to US $1.4 billion per year in the period 1991-1996 before slowing subsequently.(Abegaz, 2001).

The role of foreign aid in the growth process and hence its implication for poverty reduction of developing countries has been a topic of intense debate. Previous empirical studies on foreign aid and economic growth generate mixed results. For example, (Papanek,1973), (Dowling and Hiemenz,1982), (Gupta and Islam,1983), (Hansen and Tarp,2000), (Burnside and Dollar,2000), (Gomanee,2003), (Dalgaard,2004), and (Karras,2006), find evidence for positive impact of foreign aid on growth; whereas (Brautigam and Knack,2004) find evidence for the existence of negative relationship between foreign aid and growth. There are also studies that find no evidence for the effect of foreign aid on economic growth. For example, (Mosley, 1980), (Mosley, 1987),

(Boone, 1996), and (Jensen and Paldam, 2003) find evidence to suggest that aid has no impact on growth.

The aid growth studies used different models and arrived at different conclusions. In addition developing countries especially Ethiopia faces huge resource gap that encourages the study to focus on the gap model. Generally the fact that international financial flow for the sake of development bilaterally or through multinational organizations like World Bank and IMF is the top issue of most discussions between developed and developing countries on one hand. On the other hand, the very contradicting findings of the aid effectiveness empirically and use of different models and levels of the study indicates the existence of a huge gap in the area to be investigated in general. Specifically in Ethiopia the presence and the increasing trend of these resource gaps in one way or another shows that the domestic economy is not capable of generating enough finance to close these gaps and make the country's reliance on foreign capital inflow compulsory and the study of aid growth nexus by the gap model to have more sound.

The study is aimed at analysing the relationship between Foreign aid and economic growth in general. The study focusing on the two gap model can contribute to literature and can help policy makers of donors and aid recipient countries to direct aid for development. The study is organised as section one introduction, section two review of related literature, part three methodology ,the fourth part results and discussion and finally conclusion and recommendations.

2. REVIEW OF RELATED LITERATURES

International aid, or development assistance, is defined by the Development Assistance Committee (DAC) of the Organization for Economic Cooperation and Development (OECD) to "include grants and loans to developing countries and territories which are: (i) undertaken by the official sector of the donor country, (ii) with the promotion of economic development and welfare in the recipient country as the main objective and (iii) at concessional financial terms (i.e. if a loan, have a grant element of at least 25 percent)" In addition to these financial flows, technical co-operation costs are included in ODA; but grants, loans, and credits for military purposes are excluded. Transfer payments to private individuals, donations from the public, commercial loans and foreign direct investment (FDI) are not counted. Moreover, while it is common to treat ODA and foreign aid as the same thing, this is misleading. Assistance funded by non-governmental organizations (NGOs), which is a foreign aid but not ODA, has grown very significantly in the last 25 years and now equals about one-third of official assistance. In addition, food aid and aid for relief are not part of the study aid definition.

Theoretically, savings, fiscal and foreign exchange constraints limit the growth potential of many developing economies. The perception is that if foreign aid can close the gap caused by these constraints, it must have a positive correlation with investment and growth (Bacha, 1990)

Pieces of research that test the hypothesis foreign aid -led growth hypothesis have their conceptual underpinnings on early growth models. Foreign aid theories employed today are variants of the different growth and development theories. Classical economists like Adam Smith, Alfred Marshall and David Ricardo stressed that capital is an important determinant of growth and development. (Schumpeter, 1954) goes further and argues that foreign aid only leads to growth when combined with the transfer of entrepreneurship and new skills thereby enhancing the absorptive capacity of the recipient economy. Another theory that has influenced the aid effectiveness literature is the Investment Saving-Liquidity preference Money supply (IS–LM)

macroeconomic theory. In the IS-LM framework, aid effectiveness is evaluated by assessing short run and long run changes in output as a result of the amount aid entering the country.

In the early 1950s and 1960s, the economic growth theories were introduced that emphasize precisely capital formation is the major determinant to achieve economic growth in the developing countries, but the capital formation was actually missing in LDC's thus capital oriented development model were developed to address the shortage of capital formation in these countries. Among those capital oriented models, the big push theory developed by Paul Rosenstein-Rodan in the early 1960's and the (Chenery and Strout ,1966) two-gap model (the saving gap and the foreign exchange gap) become popular and were broadly used as a basis for both administration of foreign aid programs at the country level and estimation of global aid requirement.

For the last 60 years, various empirical studies were conducted to investigate the relation between aid and growth by using different data, time period and method of analysis. The studies so far can be categorized into two broad areas (micro level and macro level). Most micro level evidence found positive evidence (mainly project level evaluations by the world bank and report by Independent Evaluation Group(IEG)).Since our focus is at macro level let's look the three basic generations of studies at this level. The first generation studies were on aid saving and growth. (Hansen, 2000) testifies, first generation studies generally concluded that aid does tend to increase total savings, but not by as much as the aid flow. Quite reasonably, this simply suggests a non-negligible proportion of aid is consumed rather than invested. The second generation of literature moved on to explore the impact of aid on growth via investment. Using data for a cross section of countries, a large number of studies of this kind were produced during the 1980s and early 1990s. (Hansen, 2000) conclude that the findings from these studies consistently indicate a positive link between aid and investment. The third generation of more sophisticated econometric studies came to dominate the academic and public discourse about aid. This was motivated by the availability of much better data, allowing analysts to look at changes both across and within countries over time (i.e., panel data became available).

(Morrissey, 2001) noted in his study, aid had a contribution to economic growth, by increases investment in physical and human capital, and increases the capacity to import capital goods or technology. The Author argued that foreign aid did not hurt investment or saving rates, rather by transferring technology aid increases the productivity of capital and promotes endogenous technical change.

(Karras, 2006) examined the correlation between foreign aid and growth in per capita GDP using annual data from 1960 to 1997 for a sample of 71 aid-receiving developing countries and the study concluded that the effect of foreign aid on economic growth was positive, permanent, and statistically significant; He further found that an increase in foreign aid by $20 per person leads to an increase in the growth rate of real GDP per capita by 0.16 percent.

Not all studies, however, provide full support for this aid-growth-policy view. (Ram, 2004) argues that there is insufficient evidence to support the view that aid enhances economic growth and reduces poverty in countries with superior quality economic policies (Burnside and Dollar 2000) and (Easterly, et.al, 2004) find that on its own aid has no effect on growth, although when it is interacted with a 'sound' monetary and fiscal policy environment there is a conditional effect. In addition, (Alesina and Weder, 2002) find that more corrupt countries do not receive less aid. This result is attenuated by (Brautigam and Knack, 2004) who show that high levels of aid in Africa

are associated with deterioration in governance. Along this line, (Bakare, 2011) finds a negative relationship between foreign aid and output growth in Nigeria, which imply that foreign aid tend to worsen output growth in the country rather than improving it.

Specifically in Ethiopia, (Fentaye, 2015) examined the impact of foreign aid on economic growth in Ethiopia through transmission channel over the period 1980/01 to 2013/14 using multivariate cointegration analysis. The empirical result from the growth model shows that aid has a significant positive impact on growth in the long run. The empirical result from investment model also indicated that the positive and significant contribution of aid on investment in the long run. In other words, the theoretical view of the gap models which is Aid can enhance growth by financing the saving gap is proven in this study. The growth equation further revealed that rainfall variability has a significant negative impact on economic growth. This study indicated also that the country has no problem of capacity constraint as to the flow of foreign aid

(Ejigu,2015) on his study on the impact of foreign aid on economic growth of Ethiopia used Harrod-Domar growth model with Multivariate VAR approach finds Aid has a significant Positive long-run effect on economic growth and insignificant in short run

(Yohannes, 2011) study the impact of foreign aid on economic growth in Ethiopia by using Harrod –Domar model with maximum likelihood estimation finds aid, in the long run, has a positive and significant effect through its contribution to investment while in the short run insignificant effect.

From all the above growth aid studies in the country, most of them focus on the investment financing of aid through investment equation. Though investment is the key in growth theories, in most developing countries aid finances import resulting from huge trade gap. In the case of Ethiopia, trade gap is persistent and increasing. The studies so far in the country did not include import equation as one transmission aid to growth. Therefore focusing on the two-gap model by including the import equation in the aid growth process adds value to aid growth model

3. METHODOLOGY OF THE STUDY
3.1. Data type and sources
The study used time series data over the year 1981 to 2015. The sources of the data were from Ministry of Finance and Economic Development (MoFED), National Bank of Ethiopia (NBE), Ethiopian Economic Association /EEA/, Central Statistical Authority/CSA/Organization for Economic Corporation and Development (OECD)(from OECD. stat database), International Monetary Fund/IMF/ world outlook database, World Bank WDI (world development indicator)

3.2. Econometric model frame work
Since this paper is fundamentally concerned with economic growth, the theoretical framework is based on the theories and models of economic growth. This section will lay down the groundwork for the Harrod-Domar growth model and the later extension, the Two-Gap model. The growth models classical, neoclassical and endogenous growth models discussed in the theoretical literature are the preliminary steps for the analysis of fundamental determinants of economic growth through which the impact of aid is indirectly assessed. By developing econometric model we go further step to directly evaluate aid effectiveness. To better capture the effect of aid on growth we need to use the growth model that best includes all growth determinants. The main purpose of this empirical model is to estimate the short- and long-run effect of growth determinants, in which foreign aid is considered as one of those determinants.

Theory suggests that foreign aid promotes economic growth by supplementing limited domestic savings as well as foreign exchange constraints of recipient developing countries. From the early literature the study conducted by (Chenery, 1966) which itself has its basis on the Harrod-Domar model of economic growth, has been important in this respect. Still today, economists in the International Financial Institutions apply the Harrod-Domar model to calculate short-run investment requirements for a target growth rate. They then calculate a Financing Gap between the required investment and available resources and often fill the Financing Gap with foreign aid. The Financing Gap Model has two simple predictions: (1) aid will go into investment one for one, and (2) there will be a fixed linear relationship between growth and investment in the short run. The three elements of the Harrod-Domar model are income (growth), investment (savings) and incremental capital-output ratio (ICOR) related in the form (Easterly W, 2003: 31)

$$g = I/ICOR$$

The incremental capital-output ratio (ICOR) represents the ratio of additional investment to additional output; **g** is the growth rate of the economy, and **I** represents investment (which is equated to savings).Hence, with the ICOR remaining constant, the rate of economic growth will be directly determined by the rate of investment. With investment assumed to be equal to savings, this implies that a poor country, with low savings, will have low investment and therefore low growth. It is thus expected that a supplementation of domestic savings by foreign aid will resort to an increase in investment, and hence economic growth. (Chenery and Strout, 1966) base the first step of this two-gap analysis on the case where resource limits on skills and savings are important, and describe this scenario as investment limited growth where the Harrod-Domar model is taken as the limiting case of no foreign assistance. In the second step, they consider the possibility of attaining self-sustaining growth when the balance-of-payments limit is effective and hence describe this situation as trade limited growth.

Recently different scholars in neoclassical growth theory and endogenous growth theory come to include various variables that are believed to affect the growth of a country. Rana and Dowling, 1988 Cited on (Fentaye, 2015) extended the Harrod-Domar growth work by including variables like labor force and policy variables.

It is consistent with those growth theories that capital is an important determinant of economic growth. Besides, the endogenous growth model of Fischer-Easterly model' has recognized the significant role of public policy in long-run economic growth and then supported the inclusion of policy variable in empirical growth regression. With its emphasis on the role of economic policy, the Fischer-Easterly model provides a natural context within which to study the aid-growth relationship, since many have argued that the developmental impact of aid is conditioned by the policy environment in recipient countries. Indeed since the 1980s, much aid from the multilateral lending agencies has been linked explicitly to macroeconomic policy reform and structural adjustment Krueger 1997, Greenaway 1998, McGillivray and Morrissey 1998 (Cited on Ramesh Durbarry,et.al., n.d).

So this study to use the basic advantages of the above from the model and to include a relevant variable in growth equation will focus on the extended Harrod-Domar growth model developed by (Rana, 1988 see on Fischer, 1993). The basic policy variables used by Rana and Dowling where inflation rate as ameasure of monetary policy, government expenditure to GDP ratio measure of fiscal policy and openness measure of trade policy. (Yohannis,2011) uses policy index(pt) as regressor which he finds from the regression result of growth in the budget deficit, openness to trade and inflation rate as explanatory variable developed by (Gomanee,2005)

The econometric model of the study has three equations (growth, investment and import equations). The growth equation is the basic econometric of the study while the investment and import equations are the transmission equations through which aid hits growth.
Accordingly, the long run growth model estimated was

$$LnRGDPPCt = \delta_0 + \delta_1\,INVNot + \delta_2\,Pi + \delta_3\,LnLABFt + \delta_4\,ODAt + et \dots\dots (\mathbf{1})$$

Where $LnRGDPPC$ is the growth of gross domestic product, INVNO is investment not financed by aid, pi is the policy index, labour force, ODA(official development assistance) are the major variables.
The long run investment model estimated

$$LnTINVt = \alpha_0 + \alpha_1 LnSt + \alpha_2 LnODAt + \alpha_3 INFt + \alpha_4 lnTDSt + ut. (2)$$

Where LnTINV is growth of total investment as ratio of GDP, S (gross domestic saving), ODA, Inf (inflation), TDS (total debt service)
The long run import equation

$$LnMt = \gamma_0 + \gamma_1 LnXt + \gamma_2 ODAt + \gamma_3\,LnRGDPt + et \dots\dots\dots\dots (3)$$

Where M (import as ratio of GDP),X (Export as ratio of GDP), ODA ,RGDP (real gross domestic product)

3.3. Estimation procedure

The unit root test where conducted by augmented dickey fuller and Pillips Perron. All three equations were estimated by Autoregressive Distributed Lag Model and the bound test of Pesaran, Shin and Smith were used. The growth and investment equations were estimated by case one of Pesaran Shin and Smith (without trend and intercept).The import equation was estimated by case three (unrestricted intercept -no trend).Akaike information criteria were used for lag length selection with maximum of four lags.

4. RESULTS AND DISCUSSIONS

4.1. The unit root test

From the unit root test carried out by Pillips Perron and Augmented Dickey Fuller revealed that the variables are integrated of different order and none of the variables are integrated of order two

4.2. Diagnostic and Model Stability Test

After estimating the basic ARDL models in all three (Growth, Investment and Import) models diagnostic tests like serial correlation, normality, heteroscedasticity, RESET were undertaken. The serial correlation, normality,and heteroscedasticity tests from the probability of F-statistic resulted in fail to the rejection of the null hypothesis. This indicates there are no problems of serial correction, heteroskedasticity and non-normality of the residuals. In addition to the above Ramsey's Regression Specification Error Test (RESET) was conducted. By the test, we failed to reject the null hypothesis (the included fitted values are jointly insignificant). Therefore there is no problem of miss-specification in our model. See the table below.

Table 4.1 Summary of Diagnostic Test Results by Eviews 9.0

Test	Null Hypothesis	Pro.F-stat	prob.chi^2	Decision
Hetrokedasticity (BPG)	Residuals are homoscedastic			
Investment		0.7715	0.5690	Fail to reject
Import		0.9539	0.8298	fail to reject
Growth		0.7207	0.6477	fail to reject
Serial correlation (BG LM TEST)	Residuals are not serially correlated			
Investment		0.5552	0.0984	Fail to reject
Import		0.8841	0.6346	fail to reject
Growth		0.3214	0.2043	fail to reject
Normality (J B)	Residuals a are normality distributed			
Investment		0.9277	not applicable	fail to reject
Import		0.2806	not applicable	fail to reject
Growth		0.4420	not applicable	fail to reject
RESET (Ramsey func. form)	No miss specification in the model			
Investment		0.1311	not applicable	fail to reject
Import		0.1573	not applicable	fail to reject
Growth		0.8962	not applicable	fail to reject

Note: BPG –Breusch –Pagan–Godfrey, BG=Breusch & Godfray, JB-Jarque Bera

After the residual diagnostic test, we conducted the model stability (parameter stability) test by CUSUM and CUSUMSQ tests. The model stability test revealed that parameters are stable.

4.3. The Bound Test

The bound test for cointegration according PSS conducted to test the existence of the long run relation among the variables. The bound test revealed that variables in all the three models have long run relationship. By comparing the F-value with the upper and lower critical values in all three models the f-values lie above the upper critical value revealing that the variables in all three models have long run relationship.

Table 4.2. Summary of bound test in all three models.

Table 4.2 Summary of Pesaran Bound Test				
H0: no long run relationship exist				
Model	No of regressors(k)	5% I[1] critical value (UPPER)	F-stat.	Decision
Investment	4	3.48	5.248	Reject the null
Import	3	4.35	6.454	Reject the null
Growth	4	3.48	6.094	Reject the null

4.4. Cointegration and long run estimation results

The bound test in all three models revealed that there exist long run relationship among the variables. Hence the error correction modelling and the long run model was estimated.as shown in the following table the coefficient of the error correction term lag one period is negative and significant. This coefficient measures the speed of adjustment of the dependent variable towards its long run equilibrium after shock. The long run coefficient of Foreign Aid   is positive and significant at one percent. This indicates that foreign aid finances both investment and import. This is in line with the two gap model that aid finances investment and import so that it fills both the investment and trade gap. Surprisingly the coefficient of   aid is negative and significant in growth model unlike the two gap model. This may result from the fact that the data of import in this study is general import not import of investment good presumed to be financed by aid as per the two gap model of chennery and strout.

Table 4.3 .Estimation result for the ECT and AID

Model	CointEq(-1)	NODAGNI
Investment	-1.38197	0.360458
	Se(0.274148)	Se(0.083059)
	Prob.(0.0007)	Prob.(0.0019)
Import	-0.915262	0.086426
	Se(0.310272)	Se(0.020358)
	Prob.(0.0145)	Prob.(0.0017)
Growth	-0.248476	-0.026652
	Se(0.069914)	Se(0.009225)
	Prob.(0.0017)	Prob.(0.0083)

5. CONCLUSION AND RECOMMENDATIONS

From the study result, we can conclude that import is financed by aid but that import does not contribute to per capita income growth in the long run. In the study period, we also conclude that foreign exchange gap is the binding constraint in the study period. In line with the two-gapmodel, aid fills the binding gap (foreign exchange gap). In addition to the flow of foreign capital, the study concludes that other variables like capital not financed by aid, labor, and Macroeconomic policy index have asignificant contribution to income growth. Generally, from the study, we

conclude that the government must focus on other growth determinates like labor force development, good policy, and domestic resource-basedinvestment than anaid to achieve sound and sustainable long-run economic growth

The empirical finding of the study revealed that in the long run, aid negatively influences the per capita income growth of the country. This directly is opposite to the transmission equations. Therefore, to enhance the contribution of external assistance, the government can adjust the use of aid in transmission equations. The negative significance of the AID in growth process in the long run my not imply not to receive aid but adjusting means of financing aid in investment and import (basic transmission equations).According to the two-gap model if the binding constraint is the foreign exchange gap Ways must be found of using unused domestic resources to earn more foreign exchange and/or raise the productivity of the imports.

In addition the study recommend that since the resource gap both in foreign exchange gap and saving gap are prevailing and growing which is making the country more dependent on theforeign resource, the government and policy makers has to stop and take a look for better policy measures to raise domestic saving and export capacity of the country. Since macroeconomic policy environment is the key determinant of growth and the condition for aid flow, the macroeconomic policy impact of aid could be the good future study area.

REFERENCES

Abegaz, A., (2001) *Aid and Development In A Africa,* Washington D.C: World Bank PP 167-225.

Adugna, L., (2008). *Anatomy of Foreign Aid to Ethiopia: 1960-2003.,* Boston, USA.: Department of the Economics University of Massachusetts,

African Development Bank, August 2009. *Development Research Brief Number 6,* s.l.: AfDB.

Aid effectiveness (2009) Finn Tarp.

Alemayehu, D. & Haile, G., (2000.) *Savings, Foreign Aid and Economic Growth: A review of theory and the existing Evidence.* s.l., Paper presented at the 10th Annual Conference on the Ethiopian Economy.

Alesina, A. & Weder, B., (2002.) Do corrupt governments receive less foreign aid?. *American Economic Review,* Volume 92(4), p. 1126–1137.

Amsalu, G., (2012). *The Effectiveness and Sustainability of Aid in Ethiopia', The Case of Joint UNICEF-UNFPA Adolescent and Youth Reproductive Health (AYRH) Right Project in Oromia Region, Ethiopia,* s.l.: s.n.

Asteriou, D. & Hall, S., (2007). *Applied Econometrics: A Modern Approach Using Eviews and Microfit, Revised Edition,* Palgrave Macmillan: s.n.

Bacha, A., (1999). A Three-Gap Model of Foreign Aid Transfers and the GDP Growth Rate in Developing Countries. *Journal of Development Economics,* Volume 32, pp. 279-296.

Bakare, A., (2011). The Macroeconomic Impact of Foreign Aid in Sub- Saharan Africa: The Case of Nigeria. *Business and Management Review,* Volume 1(5), p. 24 – 32.

Baletta., N. A., (1991). *The Role of Aid and Commercial Flows,* Panama: International Center for Economic Growth.

Baltagi, h. B., (2008). *Econometrics.* Syracuse, NY 13244-1020: Syracuse University, Center for Research.

Barret, C., (1998). Food Aid: Is It Development Assistance, Trade Promotion, Both, or neither?. *American Journal of Agricultural Economics,* Volume 80(3), pp. 566-571.

Bauer, P. T., (1991). *The Development Frontier: Essays in Applied Economics,* Cambridge, MA: Harvard University Press.

Brautigam, D. & Knack, S., (2004). Foreign aid, institutions, and governance in Sub-Saharan Africa. *Economic Development and Cultural Change,* Volume 52(2), p. 255–285.

Burnside, C. & Dollar, D., (2000.) Aid, policies, and growth. *American Economic Review,* Volume 90(4), p. 847–868.

Cashin, Paul & rate, (2004). Commodity Currencies and the Real Exchange Rate. *Journal of Development Economics, Vol 75,* pp. 239-268.

Chatrna & Ekanayake, (n.d.) The effect of foreign aid on economic growth in developing countries. *Journal of International Business and Cultural Studies,* p. 1.

Chatrna, E. M., Ekanayake & Dasha, n.d. The effect of foreign aid on economic growth in developing countries. Volume Journal of International Business and Cultural Studies.

Chenery, H. B. & Strout, A. M., (1966.) Foreign Assistance and Economic Development. *The* Volume LVI.

Conchesta.N, (2008). *Foreign Aid and Economic Growth: The case of Tanzania,* The Hague, The Netherlands: Institute Of Social Studies.

Dawit & Yemisrach,(2001). *The Impact of Foreign Financing on Economic Performance in Ethiopia,* Addis Ababa, Ethiopia: Paper Presented at the 11th Annual Conference on the Ethiopian Economy.

Dejene, A., (1989). *Famine Causation, Food Aid and Foreign Financial Assistance to Agriculture in Ethiopia',* s.l.: Paper presented in a National Work Shop on Food Strategy in Ethiopia, Alamaya University.

Djankov, S., Montalvo, J. & Reynal-Querol, M., (2008). The curse of aid. *Journal of economic growth 13(3),* pp. 169-194.

Dubarry, N., G. & D., G., (1998). *New Evidence on the Impact of Foreign,* Nottingham: CREDIT No. 98/8 the University of Nottingham.

Easterly, R., W., Rebelo & T, S., (1993) 32(3). Fiscal policy and economic growth: an empirical investigation. *Journal of monetary economics,* pp. 417-458.

Easterly, W. (2003). Can Foreign Aid Buy Growth?. *Journal of Economic Perspectives 17(3),* pp. 23-48.

Easterly, W., Levine, R. & Roodman, D.(2004). Aid, policies, and growth. *Comment. American Economic,* Volume 94(3), p. 774–780.

Ejigu, (2015). *The Impact of Foreign Aid on Economic Growth of Ethiopia (Through Transmission Channels),* s.l.: unpublished masters thesis.

Farah, A.(2009). Foreign Aid and " the big push " theory: Lessons from Sub-Saharan Africa. *Standard Journal of International Relation,* pp. 3-8.

Fentaye, S. (2015). The Impact of Foreign Aid on Economic Growth of Ethiopia (Through Transmission Channels). *InternationalJournal of Business and Economics Research,* Volume Vol. 4, No. 3, pp. 121-132.

Fischer, S. (1993) 32(3). The Role of Macroeconomic factors on growth. *Journal of Monetary,* pp. 485-512.

Getnet, A., (2009). *A Case Study on Aid Effectiveness in Ethiopia: Analysis of the health Sector Aid Architecture..* s.l., Wolfensohn Center for Development.

Gomanee, K., Girma, S. & Morrissey, O., (2005). Aid and growth in Sub-Saharan Africa: Accounting for transmission mechanisms. *Journal of International Development,* Volume 17, pp. 1055-1075.

Gomanee, k., Girma, s. & O, m., (2001). *Aid and Growth: Accounting for transmission in sub- Saharan Africa,* s.l.: s.n.

Griffin, K. & Enos J, L., (1970). Foreign Assistance: Objectives and Consequences. *Economic Dvelopement and cultural change ,* Volume 18(3), pp. 313-327.

Gupta & Islam, (1983). *Foreign Capital, Savings, and Growth: An International Cross- Section Study,* Boston: Boston, D.Riedel Publishing Company.

Hansen H & Tarp, F.(2000). Aid effectiveness disputed. *Journal of international development,* Volume 12, pp. 375-398.

Harris, (1995). *Using Cointegration Analysis in Econometric Modeling,* s.l.: Prentice.

Hjertholm, Peter & White., H., (2000). Foreign aid in historical perspective: Background and trends.

Jiffar, T. (2002). *The Impact of Foreign Aid on Public Spending: The Ethiopian Case,* Addis Ababa: unpublished masters thesis Addis Ababa University.

Johansen, S.(1991). Estimation and Hypothesis Testing of Cointegrating Vectors in Gaussian Vector
        Autoregressive Models, *Econometrica,* Volume 59, pp. 1551-1580.

Johansen, S. & Juselius, K.(1990). Maximum Likelihood Estimation and Inference on. *Oxford   Bulletin of Economics and Statistics,* Volume 52, pp. 169-210.

Johanson, s. (1988). Statistical Analysis of Cointegration. *Journal of economic dynamics and control,* Volume 12(2/3), pp. 231-254.

Kanbur, R.(2003). *The Economics of International Aid,* s.l.: Cornell University.

Kargbo, P. M. (2012). *The Impact of Foreign Aid on Economic Growth in Sierra Leone,* s.l.: Helsinki
        UNU-   WIDER.

Karras., G.(2006). Foreign aid and long-run economic growth: empirical evidence for a panel of
        Developing countries. *Journal of international development,* Volume 18 no 7, pp. 15-28.

Kim, M. G. (1999). *Unit Roots, Cointegration and Structural Change.* s.l. Cambridge University Press.

lee & Barro, R., (1993). International comparisons of Education Attainment", *Journal of Monetary
        Economics,* Volume 32, pp. 363-394.

Lipson.M, (1972). *Aid Allocation when aid is in addequate: Problems of implementation of the   Pearson Report,* Byres: s.n.

Lucas, R., (1988). On the Mechanics of Economic Development. *Journal of Monetary,* Volume 22(1),
pp. 3-42.

M.Yakama, (2013). *Testing the foreign aid led growth hypothesis in western Africa,* London:
        Department of   Management, Birkbeck, University of London.

McGillivray, M., Feeny, S., Hermes, N. & Lensink, R., (2006). Controversies over the impact of
        development aid: it works; it doesn't; it can, but that depends. *Journal of,* Volume 18,
        no.7, pp. 1031-1050.

Morrissey, O. (2001). Does aid increase growth?. *Progress in Development Studies,* Volume 1 no1,
pp. 37-50.

Mosley, (1987). *Aid, Saving, and Growth Revisited,* s.l.: s.n.

Moyo, (2009). *Dead Aid: Why Aid is Not Working and How There is Another Way for Africa.*   London:
The   Penguin Group,

Nayaran & Smith, (2004). The Relationship between the Real Exchange Rate and balance of
        payment:empirical   evidence from China from Cointegration and causality test. *Applied Economic Letters,* pp. 287-291.

Pesaran, M., H., S. Y. & Smith, R. J., (2001). Bounds testing approaches to the analysis of. *Journal of
        Applied Econometrics,* Volume 16, pp. 289-326.

Pesaran, M, S. Y. & R., S. J., (1999). *Bounds Testing Approaches to the Analysis of Long Run
        relationships,* s.l.: Edinburgh School of Economics. Discussion Paper Series number 46.

Qian, (2014). *Making Progress on Foreign Aid,* s.l.: Annual Rev- economics.

Rahman, (1968). Foreign capital and domestic savings: A test of Haavelmo's hypothesis with cross-
        country data. *Review of Economics and Statistics,* Volume 50, pp. 137-138.

Rajan, R. & Subramanian, A. (2007). Does Aid Affect Governance?. *American Economic Review
        97(2),* pp. 322- 327.

Rajan, R. & Subramanian, A.(2008). Aid and growth: what does the cross-country evidence really
        show?. *The Review of Economics and Statistics, 90(4),* pp. 643-665.

Ramesh Durbarry, Gemmell, N. & Greenaway, D., n.d. *New Evidence on the Impact of Foreign aid
on economic   growth,* Nottingham: Centre for Research in Economic Development and
        International Trade, Department   of Economics, University of Nottingham.

Ram, R. (2004). Recipient country's 'policies' and the effect of foreign aid on economic growth in
        developing   countries: additional evidence. *Journal of International Development,*   Volume
16:2, pp. 201-211.

Rana, P. & Dowling, (1988). The Impact of Foreign Capital on Growth: Evidence Asian Developing
        Countries. *The Journal of Institute of developing economies,* Volume 26(1), pp. 3-11.

Riddell, R., (2007). Does Foreign Aid Really Work?. *New York: Oxford University Press.*

Rodman, D., (2008). *Through the Looking Glass, and What OLS Found There: On Growth, foreign
        aid and reverse causality,* s.l.: Center for global development.

Rosenstein-Rodan, P. (1961). International Aid for Underdeveloped Countries''.. *Review ofEconomics and Statistics,* Volume 43, pp. 107-138.

Sachs, D., J. & Warner, A. M., (1995) . Economic reform and the process of global integration. *Brookings Papers on Economic Activity,* pp. 1-118.

Schimidit - Hebbel, L., S. & A., S., (1996). *"Saving and Investment: Paradigms, Puzzles, and policies'',* s.l.: The World Bank Research Observer, 11(1) 87-117.

Schumpeter, J. (1954). *History of Economic Analysis,* London: Allen and Unwin.

Tarp, F.(2009). *Aid Effectiveness,* s.l.: s.n.

Tasew, T. (2011). *Foreign aid and economic growth in Ethiopia,* Munich: Munich Personal RePEc Archive.

Thirlwall, A., (2006). *Growth and Development: With special reference to Developing economies.* 8 ed. Palgrave   MacMillan: s.n.

Todaro, M. (2003). *Economic development.* 8 ed. Addison-Wesley : s.n.

Tolessa, (2001). *The Impact of Foreign Aid on Domestic Saving, Investment, and Economic Growth: The case of Ethiopia',* Addis Ababa: Unpublished M.Sc. Thesis, AAU.

Tsadkan, A., (2013). *The nexus between public spending and economic growth in Ethiopia:* Addis Ababa: Unpublished Master thesis, Addis Ababa University.

Walter, E., (1995). *Applied Econometrics Time Series.* s.l.: Iowa State University Wiley.

White, H., (1992). The Macroeconomic Impact of Development Aid: A Critical Survey. *Journal of development   studies,* Volume 28 no 2, pp. 163-240.

White, H., (1998). *Aid and Macroeconomic Performance: Theory, Empirical Evidence, and Four Country case   (ed),* London; New York:: Macmillan Press; St. Martin's Press in association   with Institute of Social   Studies.

Wondwosen, T., (2003). *An Empirical Investigation of the Aid-Growth Relationship in Ethiopia,* Addis Ababa: Unpublished M.Sc. Thesis, AAU.

Yohannes, B.(2011). *The impact of foreign aid on economic growth in Ethiopia accounting for transmission   mechanism.,* s.l.: Unpublished Msc. Paper submitted to Addis Ababa University Department of   Economics.

Appendix

Long run and short run results in all models

1. Short run and long run   result in investment model

ARDL Cointegrating And Long Run Form
Dependent Variable: LNTINRGDP
Selected Model: ARDL(1, 4, 4, 4, 4)
Date: 05/18/17   Time: 15:51
Sample: 1981 2015
Included observations: 30

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNTDSRGDP)	0.066360	0.089305	0.743063	0.4764
D(LNTDSRGDP(-1))	0.178313	0.095891	1.859529	0.0959
D(LNTDSRGDP(-2))	0.142757	0.116294	1.227552	0.2508
D(LNTDSRGDP(-3))	0.116213	0.100246	1.159277	0.2762
D(LNNODARGNI)	0.362148	0.150959	2.398973	0.0400
D(LNNODARGNI(-1))	-0.002407	0.208177	-0.011560	0.9910
D(LNNODARGNI(-2))	-0.100593	0.198252	-0.507399	0.6241
D(LNNODARGNI(-3))	0.291562	0.141198	2.064911	0.0689
D(LNGDSRGDP)	0.242386	0.095256	2.544587	0.0315
D(LNGDSRGDP(-1))	-0.383321	0.161880	-2.367935	0.0421
D(LNGDSRGDP(-2))	-0.082017	0.111144	-0.737935	0.4794
D(LNGDSRGDP(-3))	-0.110814	0.095611	-1.159014	0.2763
D(INFN)	0.004295	0.002839	1.513014	0.1646
D(INFN(-1))	-0.000120	0.002692	-0.044566	0.9654
D(INFN(-2))	0.007731	0.003319	2.329175	0.0448
D(INFN(-3))	0.004205	0.004181	1.005710	0.3408
CointEq(-1)	-1.381969	0.274148	-5.040964	0.0007

Cointeq = LNTINRGDP - (-0.2795*LNTDSRGDP + 0.3605*LNNODARGNI + 0.9149*LNGDSRGDP -0.0063*INFN)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNTDSRGDP	-0.279509	0.033315	-8.389835	0.0000
LNNODARGNI	0.360458	0.083059	4.339770	0.0019
LNGDSRGDP	0.914895	0.079450	11.515422	0.0000
INFN	-0.006279	0.004506	-1.393483	0.1969

2. Short run and long run   result in investment model

ARDL Cointegrating And Long Run Form
Dependent Variable: LNMPGDP
Selected Model: ARDL(4, 4, 4, 4)
Date: 04/06/17   Time: 01:23
Sample: 1981 2015
Included observations: 30

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNMPGDP(-1))	-0.104291	0.322738	-0.323144	0.7532
D(LNMPGDP(-2))	-0.324779	0.338551	-0.959321	0.3600
D(LNMPGDP(-3))	0.474462	0.313015	1.515782	0.1605
D(LNXPGDP)	0.334798	0.086286	3.880089	0.0031
D(LNXPGDP(-1))	-0.329379	0.152109	-2.165419	0.0556
D(LNXPGDP(-2))	0.128545	0.140331	0.916014	0.3812
D(LNXPGDP(-3))	-0.227084	0.128175	-1.771669	0.1069
D(LNRGDP)	-0.644199	0.622079	-1.035560	0.3248
D(LNRGDP(-1))	0.464212	0.705316	0.658162	0.5253
D(LNRGDP(-2))	-0.673988	0.804148	-0.838139	0.4215
D(LNRGDP(-3))	-0.972969	0.667428	-1.457789	0.1756
D(NODAPGNI)	0.030192	0.013254	2.277990	0.0459
D(NODAPGNI(-1))	-0.004976	0.017971	-0.276890	0.7875
D(NODAPGNI(-2))	0.013319	0.018525	0.718987	0.4886
D(NODAPGNI(-3))	-0.034359	0.012900	-2.663520	0.0238
CointEq(-1)	-0.915262	0.310272	-2.949867	0.0145

Cointeq = LNMPGDP - (0.8653*LNXPGDP + 0.3727*LNRGDP + 0.0864
    *NODAPGNI -3.8208)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNXPGDP	0.865328	0.124318	6.960620	0.0000
LNRGDP	0.372657	0.092959	4.008839	0.0025
NODAPGNI	0.086426	0.020358	4.245270	0.0017
C	-3.820766	1.061674	-3.598813	0.0049

3. Short run and long run   result in investment model

ARDL Cointegrating And Long Run Form
Dependent Variable: LNRGDPPC
Selected Model: ARDL(3, 0, 0, 1, 0)
Date: 04/22/17   Time: 01:43
Sample: 1981 2015
Included observations: 31

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNRGDPPC(-1))	-0.032571	0.129772	-0.250990	0.8041
D(LNRGDPPC(-2))	-0.391486	0.132878	-2.946206	0.0072
D(LNLABF)	0.116170	0.033328	3.485650	0.0020
D(INVNO)	0.005356	0.001861	2.878264	0.0085
D(PI)	0.056037	0.037797	1.482559	0.1518
D(NODAPGNI)	-0.006622	0.002727	-2.428101	0.0234
CointEq(-1)	-0.248476	0.069914	-3.554032	0.0017

Cointeq = LNRGDPPC - (0.4675*LNLABF + 0.0216*INVNO + 0.5763*PI
    -0.0267*NODAPGNI)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNLABF	0.467531	0.009550	48.958267	0.0000
INVNO	0.021557	0.006921	3.114438	0.0049
PI	0.576344	0.211967	2.719030	0.0122
NODAPGNI	-0.026652	0.009225	-2.888971	0.0083