

The Impact of Disaggregated Foreign Aid on Domestic Saving in Ethiopia

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Abstract

This study investigates the empirical relationship between disaggregated foreign aid and domestic saving in Ethiopia over the period 1975–2017. An autoregressive distributed lag model (or bounds testing approach) and Granger causality are applied in the analysis. The empirical finding indicates that in the long run, gross domestic product and educational expenditures have a statistically significant positive effect on Ethiopia's gross domestic savings, while multilateral grants have a statistically significant negative effect. The findings imply that, in the long run, total aid crowds out domestic savings due to the fact that the negative impact of multilateral grants outweighs the positive impact of multilateral loans, bilateral loans, and bilateral grants. Moreover, the Granger Causality Test showed a bidirectional causality between domestic saving, bilateral grant, multilateral loan, and grant. This indicates that low levels of domestic savings attract high inflows of bilateral and multilateral loans and grants. Following that, the inflows of multilateral loans and bilateral grants improve the low level of domestic saving; however, the inflow of multilateral grants causes a reduction in domestic saving. On the other hand, there is a unidirectional causality that runs from domestic savings to bilateral loan inflows, indicating that low domestic savings are a cause of high bilateral loan inflows but not vice versa. The study's key policy implication for increasing domestic savings is that the government should improve the country's GDP growth and educational expenditures. Furthermore, the government must show increased concern for the end use of multilateral grants.

Keywords: Domestic saving, disaggregated foreign aid, ARDL, Ethiopia

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1 Introduction

In most developing countries, including Ethiopia, rapid and sustainable economic growth is the main objective of their economic policies. Such rapid and sustainable economic growth requires good quality and a higher level of investment. In turn, a higher level of investment requires a greater level of both foreign and domestic saving, and their collective impact on economic growth is unquestionable. Accordingly, the Harrod-Domar growth model also concludes that an economy is positively related to its saving ratio and negatively related to its capital-output ratio. Savings determine the national capacity to invest and, thus, produce goods and services, which in turn affect the economic growth potential of the country.

However, Chenery and Strout (1966) argue in their two-gap theory that in developing countries like Ethiopia, due to their low level of income, any substantial increase in saving is not possible, which leads to a shortage of domestic saving. Consequently, the saving rate has been below what is required for rapid and sustainable economic growth to have an effect on poverty reduction and self-sustaining development. In addition to that low level of savings, the required rise in capital stock (investment) creates a resource gap, which is considered a major contributory factor for the existing economic backwardness and one of the most serious constraints to sustainable economic growth in Ethiopia. Therefore, foreign aid has been introduced in the model as either augmenting savings or improving technology and acting as a complement to help bridge the savings-investment gap. Chenery and Strout (1966) further argue that it is not only a shortage of resources that delays the development process in most developing countries. The scenario in Ethiopia is no different from other developing countries; there is the existence of a high import intensity economy, limited capacity to produce capital goods, poor export performance, and a low level of foreign exchange earnings that create a shortage of sufficient foreign exchange to import capital goods and technology that determine the speed of economic development.

Bacha (1990) and Taylor (1990) note that in most developing countries there is also a third gap known as the fiscal gap," which arises due to the incompatibility between government expenditures and income. Developing country governments do not have the capacity to raise their revenues and cover a desired level of investment. Thus, it was concluded that foreign aid that is provided directly

to the government could potentially relax the fiscal gap as long as it was used for investment purposes.

The growing divergence in those gaps becomes the main reason for the delayed development process in most developing countries, and it becomes a justification for the huge transfer of foreign capital inflow from international institutions and developed nations to developing countries. This is mainly in the form of foreign aid, and such foreign capital inflow will minimize the three gaps in the recipient country by facilitating the process of development via supplementing resources available for investment and augmenting the supply of foreign exchange to finance imports. Gomannee et al. (2005) argue that foreign aid that is used to finance investment can directly fill the savings-investment gap. Besides, if the foreign aid comes in the form of hard currency, it can fill the foreign exchange gap. In addition, if foreign aid is issued to the government, it can also fund different government expenditures and help a small domestic tax base government. The knowledge gap in developing countries can be upgraded by a technical cooperation grant, which also relaxes the fiscal constraints of the government (Chenery and Strout, 1966). Furthermore, Rosenstein-Rodan (1961) argued that each dollar of foreign resources in the form of aid would result in an increase of one dollar in total savings and investments.

The idea of foreign aid begins after the end of World War II, when a leader's main concern shifts to rebuilding the world economy that was destroyed by the war and encouraging economic improvement across the world. Moreover, during the adoption of the charter of the UN during the conference on June 26, 1945, members of the organization were dedicated to promoting a better living standard in large freedoms and to employing international machinery for the promotion of economic and social advancement for all peoples. In 1948, through the Marshall Plan, the United States of America gave the first economic assistance of over \$ 13 billion (nearly \$ 110 billion in 2016 US dollars) to her European allies' nations, and that was used to encourage the level of production by increasing capital formation along with foreign exchange reserves. Subsequently, the achievement of the Marshall Plan creates a strong optimism about the prospect of helping the poor (Chenery and Strout, 1966). Moreover, besides supporting poor nations, the United States of America and European nations are using foreign aid as an important tool in order to promote their political interests, spread their economic ideology, and also combat terrorism.

Alemayehu and Kibrom (2011) note that, at the same time after World War II, Ethiopia was motivated to receive economic development aid from the developed western countries, but the amount of foreign aid disbursed to Ethiopia was very small. However, the devastating 1984 famine caused a sharp increase in official development assistance, mainly in the form of humanitarian aid. After that, due to repetitive droughts, fast population growth, growing balance of payments deficits, and a largely stagnant economy, the importance of foreign inflows in Ethiopia increased. Whereas during the period of the Cold War, the Soviet Union delivered a large amount of assistance in the form of military aid and ideological education, such ideology-based aids were terminated at the end of the war. Beginning in the early 1990s, following the change of political regime in the country, the inflows of foreign assistance that were designed for reconstruction, political stabilization, and structural adjustment programs were restarted. Furthermore, in the early 2000's, a massive amount of disbursement in the form of grants and loans was given to Ethiopia from multilateral donors such as the World Bank, the IMF, and the ADB, as well as from bilateral donors among DAC members and NDAC nations such as the USA, China, Japan, and Great Britain.

In recent times, Ethiopia has become one of the major recipients of international aid. In 2015, Ethiopia received 6% of the total aid disbursed and became the third largest ODA recipient country, following Afghanistan and Pakistan (OECD, 2018). For the past six decades, Ethiopia has received around USD 71 billion in official development assistance. From there, around USD 35 billion is received from bilateral sources, and the rest, USD 36 billion, is transferred from multilateral institutions. Forming the total official development assistance, around 95 percent of bilateral aid, or USD 33 billion, is in the form of grants, and the remaining 5 percent, or USD 3 billion, is in the form of loans. Furthermore, 58 percent of multilateral aid, or USD 21 billion, is in the form of grants, and the rest (USD 15 billion) is in the form of loans. On the other hand, 76% (USD 54 billion) of total official development assistance is in the form of grants, including technical cooperation, and the rest 24% (USD 17 billion) is in the form of loans.

However, after such huge capital transfers to developing countries, including Ethiopia, the effectiveness of aid in achieving its objectives (evaluated against minimizing the three gaps: promoting economic growth and poverty reduction) remains disappointing for aid donors and

becomes a puzzle for researchers of the area. Furthermore, the impact of foreign aid is different across countries and over time. Accordingly, the main objective of the study is to examine the impact of disaggregated foreign aid on domestic savings in Ethiopia.

Literature Review

Theoretical Review of Literature

Early growth models give emphasis to the role of capital and capital formation in development. Saving has long been assumed to be a crucial source of economic growth and the growth rate is determined by the saving rate.

Harrod - Domar Growth Model

The most famous models of aid induced growth are based on a simple version of the Harrod-Domar growth model (Harrod, 1939; Domar, 1946). The model assumes that there is an excess supply of labor due to that the growth is restricted only by the accessibility and productivity of capital. However, saving in developing countries are too low to achieve a target growth rate, in order that foreign aid is needed in order to augment domestic savings or investable resource and, in turn it increases the rate of domestic investment, which will lead a more rapid economic growth rate.

$$g = S / v - n , \text{-----} (1)$$

Where g refers to the growth rate of per capital income, s is the marginal saving rate, v is the incremental capital output ratio and n is the population growth rate. In this model, investment equals savings and anything that increases “ s ”, decreases “ v ”, or decreases “ n ” will increase “ g ”.

The Gap Model

The investment equals saving assumption faces a problem, and in most developing countries there is a savings-investment gap. Considering that aid has been introduced in the Harrod-Domar growth model as either supplementing savings or improving technology, (Rosenstein-Rodan, 1961) and Chenery and Strout (1966) suggest a gap model where foreign assistance would minimize the gap between the required savings rate in order to achieve the targeted growth rate and the growth rate

that would occur without foreign aid. Emphasis was placed on aid augmenting domestic savings, and the growth model became:

$$g = \tilde{s}/v - n \Leftrightarrow \frac{(s + fa)}{v} - n, \quad \text{----- (2)}$$

Where “ \tilde{s} ” refers to the total fund (domestic savings plus foreign aid) that’s available for investment and “ fa ” refers to a foreign aid as a proportion of income. Note that each dollar of foreign aid is assumed to increase these funds, and hence investment, by an equal amount. Furthermore, savings induced by foreign aid is assumed to contribute to investment and growth, which is observed through a constant incremental capital-output ratio and this implies that foreign aid was not used for consumption.

Griffin (1970) presented an early criticism of this approach. Griffin assumes that foreign aid should be treated as augmenting income. An increase in income of “ fa ” would increase consumption by $(1 - s)$ and increase the funds available for investment by sfa . Consequently, \tilde{s} would increase from $\tilde{s} = s$, in equation (1) to

$$\tilde{s} = s + sfa, \quad \text{----- (3)}$$

Consequently, domestic savings would be crowded out by the foreign aid and this decline in savings would equal $(s - 1)fa$. Hence, Griffin argues that foreign aid would partially crowd out domestic saving and investment because part of this aid would go to consumption. A more general version of equation (3) is that aid may reduce domestic savings, leave it unchanged or increase domestic savings and it can be rewritten as:

$$\tilde{s} = s + \beta fa, \quad \text{----- (4)}$$

If $\beta = 1$, then all aid goes to investment leaving domestic savings unchanged. This was the situation in equation (2). Next there is the possibility that $0 > \beta < 1$. Here it boosts the growth but part of its positive impact is crowded out by reduction in domestic savings. This was the case in equation (3). There are two more extreme possibilities. One is that foreign aid will reduce investment and growth. This would be the case if $\beta < 0$. The other is that foreign aid will increase domestic savings. This would be the case if $\beta > 1$.

The two Gap Model

Chenery and Strout (1966) design a two-gap analysis of foreign assistance that provides a theoretical justification for delivery development assistance to developing countries. The saving investment (S-I) and foreign exchange (X-M) gaps are the two separate and independent constraints that hinder the economic development process of least developed countries. Chenery and Bruno (1962) and Chenery and Adelman (1966), saving gap occurs when the required domestic saving rate is less than the investment required to achieve the targeted growth rate and if the export earnings fall short of foreign exchange requirements, a foreign exchange gap appears.

$$I - S = FA, \quad \text{----- (5)}$$

$$I = S + FA, \quad \text{----- (6)}$$

“I” stand for the required level of investment, “S” is the required level of domestic saving, “FA” is the amount of foreign aid inflow, $(S - I)$ is a saving gap and this gap indicate the required level of foreign resource inflow in order to fill the gap.

The gap model also assumes that the least developed countries are relatively less endowed with capital resources and that almost all of them were imported from abroad. Beside this, their export earnings highly depend on the trading of primary or agricultural products, which have a low price in the international market. And such shortages in foreign currency are compensated by foreign aid inflows.

$$X - M = FA, \quad \text{----- (7)}$$

$$M = X + FA, \quad \text{----- (8)}$$

Where X stand for export earnings and M size of import

Structurally, the two gaps are represented in terms of the national income accounting identities as follow using the aggregate expenditure equals aggregate output approach.

$$E - Y \equiv I - S \equiv M - X \equiv F \quad \text{----- (9)}$$

Where, E stands for national expenditure, Y is national output and income, I is investment, S is saving, M represents imports, X is exports and F represents net capital inflow.

When aggregate expenditure (E) is greater than aggregate output (Y), the economy requires foreign assistance or aid (F) in order to meet the shortfall in income. The shortfall would be from the savings gap ($S - I$) and foreign exchange gap ($X - M$). If the savings gap is larger than the foreign exchange gap, the economy is said to be in a savings constraint. On the other hand, if the foreign exchange gap is larger than the savings gap, the economy is in a foreign exchange constraint, and in addition, the required level of foreign aid for each gap is necessarily different.

The three Gap Model

The three-gap model is an extension of the two-gap model, adding the fiscal gap (Bacha, 1990; Taylor, 1990). The fiscal gap refers to a gap between government revenues and expenditures, and it is also a subset of the savings gap. A higher amount of debt service will increase government expenditure, limit the import capacity of the government, and diminish the government resource that's available for private investment. And also, it reduces government investment, particularly in infrastructure, education, and health facilities. As a result, program aid supports the budget, filling the fiscal gap and increasing economic productivity in recipient countries. Furthermore, it increases the capacity of the government to meet its development and recurrent expenditures.

In general, gap models assert that foreign aid can supplement savings, foreign exchange, and domestic revenues. However, despite the existence of three gaps that aid can potentially fill, the majority of aid effectiveness studies focused on the relationship between foreign aid and savings.

The above views can be expressed based on the expenditure approach that's used in order to calculate the gross domestic product (GDP) of a country, and they are expressed as follows:

$$Y = C + I + G + NX, \quad \text{----- (10)}$$

Where Y refers to Nominal GDP, C refers to consumption, I stand for investment, G refers total government expenditures and NX refers the net export (a country's total export less total import). When we subtract tax from both sides form equation (10),

$$Y - T = C + I + G - T + NX, \quad \text{----- (11)}$$

Where $Y - T = yd$ (disposable income)

$$yd = C + I + G - T + NX, \quad \text{----- (12)}$$

Interchange the position and expressed equation 12 in terms of NX

$$yd - C + I - G + T = NX, \quad \text{----- (13)}$$

Where $yd - C = S$ (Saving) and equation 13 can be rewritten as

$$S - I + T - G = X - M, \quad \text{----- (14)}$$

In developing countries, I, G, and M are very high due to the fact that (S-I), (T-G), and (X-M) become negative and create a savings gap, a fiscal gap, and a foreign exchange gap, which become a true justification for the inflow of foreign aid in the developing countries. However, the effectiveness of foreign aid depends on the reason for the low level of investment. If the causes of low levels of investment in recipient countries are due to a liquidity problem but the motives to invest are satisfactory, it has a positive effect. If, however, the reason for low levels of investment comes from poor incentives to invest, the inflow of foreign aid will not increase investment but rather finance consumption (White, 1992).

Empirical Literature Review

There are a number of empirical studies, both at country-specific and cross-country levels that analyze the relationship between foreign aid and domestic savings. A number of studies have found that foreign aid crowds out domestic savings. On the other side, some other scholars have also found that foreign aid complements domestic savings. And that’s why the existing empirical evidence about the impacts of foreign aid on domestic savings is ambiguous and complex (Feldstein, 2000).

Early scholars focus on the relationship between foreign aid, savings, and growth. Those studies assume that foreign aid can augment growth through increases in savings and investment. Two of the early studies underlying the above growth process are the work by Harrod-Domar and the two-gap analysis of Channery and Strout (1966), which held the view that foreign aid enhances growth

through savings and investment. The underlying idea of the Harrod-Domar growth model is that savings are the binding constraint on economic growth. Savings induced by foreign aid, and this implies that foreign aid was not used for consumption. That is, the likelihood of foreign aid being consumed or invested in unproductive activities was completely overlooked in those early studies. Such views of foreign aid on savings were challenged by Griffin (1970) and Griffin and Enos (1970) based on the displacement of savings and fundability of foreign aid arguments. The authors contend that foreign aid displaces domestic savings because a greater portion of it is increasingly utilized for consumption rather than investment in developing economies.

To justify the above arguments, Griffin (1970) empirically examined the above relationship using cross-sectional data for 32 developing countries (over the period 1962–1964) and, using the OLS estimation technique, found a negative and significant association between foreign aid and savings. The foreign aid variable revealed a negative coefficient of (-0.73), which suggests that foreign aid displaces domestic savings in developing economies. To check the robustness of his result, Griffin (1970) also used a sub-sample (of which 13 were from Asia and the Middle East countries) to calculate the savings function. A negative and significant association also emerged between foreign aid and savings, with a negative coefficient of -0.82, which is an indication of the inverse relationship between foreign aid and savings in such economies.

They also show the pitfalls of the Harrod-Domar model in capturing the expected positive relationship between foreign aid and savings, and he argues that unless an aid recipient's marginal propensity to save is equal to one, a part of foreign aid will be allocated to consumption rather than savings due to the fact that there is a negative relationship between savings and foreign capital. And also suggest that aid can be a substitute rather than a complement to domestic savings. He contends that aid has a depressive effect on the rate of domestic savings because the recipient governments will be induced to increase expenses on consumption and become less energetic in their saving efforts.

Griffin and Eno (1970) carried out a study on the relation between foreign savings as a percentage of GNP and domestic savings as a percentage of GNP with the data for 32 countries for the period 1962–64 by using OLS estimation. Their findings show a more striking inverse relationship

between these two variables of interest. Their estimate suggests that an extra dollar of aid, on average, increases consumption by about seventy-five cents, indicating an increase in investment of only twenty-five cents.

Bowels (1987), using time series data for 20 less developed countries from 1960 to 1981, analyzes the relationship between foreign aid and domestic saving in less developed countries. And he uses ODA as a measure of foreign aid; he tests for Granger causality between savings and aid; and he rejects the argument that foreign capital inflows displace domestic saving. He also argued that the negative correlation between external capital flows and national savings cannot guarantee the existence of causality between these variables. In the first half of the sample countries, there is no causal relationship between foreign aid and domestic savings. On the other hand, in the remaining sample countries, causal relationships can be inferred, but the direction of causality is mixed. His finding is consistent with the hypothesis that, across countries, aid does not systematically influence savings.

Mosley et al. (1987) also highlighted an opposing view to aid effectiveness when they explored foreign aid and the behavior of the government (public sector) and the market with a sample size of 82 developing countries over the period 1960–1983. To investigate this relationship, they used OLS analysis and 3SLS as estimation techniques. They concluded that the relationship between foreign aid and growth was insignificant, and that this could be due to foreign aid not being spent for the intended purpose (i.e. spent on non-productive expenses, resulting in fungibility) and to unfavorable price fluctuations, which affect private investments. Furthermore, from the outcomes of their study, they concluded that the varying impact of foreign aid at the cross-country level is a result of the behavior of the public sector on tax management in aid recipient economies. Moreover, these authors argue in their analysis that foreign aid could affect growth either directly or indirectly. For instance, a direct association between foreign aid and growth is possible through aid allocated to specific projects, while the indirect influence is through government expenditure (which leads to fungibility) and relative price changes, which in turn have an effect on private investments.

Edwards (1996), using panel data for 36 countries for a period covered from 1970 to 1992, analyzes the reason that Latin America's savings rates are so low. He differentiated domestic saving into

private and government savings and found that a one percent increase in foreign saving had depressed domestic savings to the extent of 0.5 percent. In addition to that, per capita income growth is a significant determining factor of private and public saving. However, a higher government saving crowds out private saving, but less than proportionately, and also higher foreign saving is associated with lower domestic saving. Finally, he concludes that the level of financial development is a key determining factor of private saving.

Elbadawi and Mwega (1999) studied saving behavior in SSA countries using cross-sectional data. The findings show that foreign aid is a major cause of reductions in both savings and investments. Similarly, investments are also major causes of the increase in foreign aid, and we conclude that rising investment in African countries is a reason for receiving more aid. The fixed-effects results for the region also show that the foreign aid ratio significantly causes a reduction in the savings rate. Similar to what the Solow model predicts, the authors of this study conclude that there is no significant bivariate relationship between aid and growth in the long run.

Data and Methodology

The supply of goods in the slow growth model is based on the familiar production function, which states that output depends on the capital stock and the labor force and there is a constant return to scale (Mankiw, 2001):

$$Y = f (K, L), \quad \text{-----(15)}$$

Where, the inputs are grouped in to two categories i.e. capital (K) and labor (L) and the output is represented by Y. Subtract both sides by L

$$Y/L = f(K/L, 1), \quad \text{-----(16)}$$

$$y = f(k), \quad \text{----- (17)}$$

Where $y = \frac{Y}{L}$ shows output per worker and $k = \frac{K}{L}$ represent capital per worker

The production function shows the production of goods and services. After that, we have to see the demand for goods and services, and the model assumes the demand for goods contains consumption plus investment.

$$y = c + i \text{ ----- (18)}$$

Where output per worker (y) = Y/L, consumption per worker © = C/L and investment per worker (i) = I/L

And the consumption function in this model is

$$c = (1 - s)y, \text{ ----- (19)}$$

Where s is the saving rate and it ranges between 0 and 1

Substitute equation (19) in to equation (18)

$$y = (1 - s)y + i, \text{ ----- (20)}$$

$$y = y - sy + iso, \quad y - y + sy = i, \text{ ----- (21)}$$

This result $sy = i$ (saving per worker is equal to investment per worker) and shows that investment is created through saving. Investment (I) is defined as the change in the capital stock, K, and can be represented by ΔK such that

$$I = \Delta K = sY, \text{ ----- (22)or}$$

$$i = sy = sf(k), \text{ ----- (23)}$$

Traditional economic theory assumes that physical capital accumulation is the most robust source of economic growth. However, this problem is solved by endogenous growth models developed by Romer (1986), Becker (1993), and Lucas (1988). This model places emphasis on human capital accumulation. i.e., individuals and society derive economic benefits from investments in people. Furthermore, in that model, the ‘engine’ of growth is human capital, as its accumulation raises the productivity of both labor and physical capital.

This study applies the Romer-Mankiw-Weil growth model, which is an extension of the Solow growth model by adding human capital. The general model depends on the physical capital, human capital stock, and the labor force.

$$Y_t = K_t^\alpha H_t^\beta (A_t L_t)^{1-\alpha-\beta}, \text{-----} (24)$$

Because of H, there is no convergence & an increase in H cancels the decreasing MP in capital.

$$\log(dY) = \alpha \log(dK) + \beta \log(dH) + \theta \log(dL). \text{ Where } \theta = 1 - \alpha - \beta$$

Empirical model Specification

However, different empirical literature shows that in most developing countries, investment is not equal to saving due to that, and due to poor export performance and high government expenditure, there is a foreign exchange and fiscal gap. Accordingly, Chenery and Strout (1966) argued that foreign aid becomes an important resource in order to enhance domestic savings and fill those gaps. Therefore, investment can be expressed as savings plus foreign aid.

$$I = S + FA(ODA) \text{-----} (25)$$

Also saving can be expressed as:

$$S = sY + FA(ODA) \text{-----} (26)$$

Where, S refers to total domestic saving, Y is aggregate domestic product, FA(ODA) is foreign aid and s refers to marginal propensity to save form income (0 < s < 1)

Therefore, the production function expressed as:

$$Y = f(K, L, HC), \text{-----} (27)$$

Furthermore, it can be expresses as:

$$Y = f(S, ODA, L, HC), \text{-----} (28)$$

Beside this, since the objective of this paper is to assess the impact of disaggregated foreign aid on domestic saving in Ethiopia, it includes aid variables in the form of disaggregated foreign aid through types of funds (bilateral official development loan, bilateral official development grant, multilateral official development loan, and multilateral official development grant). In addition, education is one of the main components of human capital. In order that educational expenditure, be held as a proxy for human capital, the function is expressed as:

$$Y = f(S, BL, BG, ML, MG, Ed, L), \text{ --- (29)}$$

Replaces Y by GDP and S by GDS and the saving function become

$$GDS = f(GDP, BL, BG, ML, MG, Ed, L), \text{ --- (30)}$$

Thus, the domestic saving function is given by:

$$GDS_t = \alpha + \beta_1GDP + \beta_2BL_t + \beta_3ML_t + \beta_4BG_t + \beta_5MG_t + \beta_6Ed_t + U_t, \text{ --- (31)}$$

Where α is a constant term $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5,$ and β_6 are coefficients and U_t is the white noise error term, Gross domestic savings (GDS), Gross Domestic Product (GDP), Bilateral and Multilateral Grants (BG and MG), Bilateral and Multilateral Loans (BL and ML), Education (Edc) and Labor force (L). Additionally, the study used time series secondary data from the National Bank of Ethiopia (NBE), Organization for Economic Cooperation and Development (OECD), and World Bank development indicator database for the years 1975 through 2017 G.C.

Several past studies have used the Johansen co-integration and Engle-Granger causality techniques to determine the long-term relationships between variables of interest. In fact, this remains the technique of choice for many researchers, who argue that this is the most accurate method to apply for I (1) variables. Recently, however, a series of studies by Pasaran (1999; 2001) and Narayan (2004) have introduced an alternative co-integration technique known as the autoregressive distributed lag (ARDL) bound test. There are a number of advantages to using the ARDL model, also called the "bound testing approach," instead of the conventional Engle-Granger two-step procedure (1987) or maximum likelihood methods of cointegration (Johansen, 1988, and Johansen and Juselius, 1990).

Analysis and Discussion

In order to evaluate the model for the existence of a long-run relationship among the variables, it is necessary to determine the appropriate lag length and check the stability of the model. The lag length is selected according to Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC), Hannan-Quinn Information Criterion (HQIC), and Final Prediction Error (FPE). The more lags we include, the more initial values we lose. If we include too few lags, the size of the test will be incorrect (Wooldridge, 2000).

Table 1

ADF lag order selection criteria

Lag	LL	LR	Df	P	FPE	AIC	HQIC	SBIC
0	-222.887				.000019	11.8403	11.9628	12.1816
1	112.455	670.68	64	0.000	1.9e-11	-2.07461	-9.72694	.99658*
2	206.287	187.66	64	0.000	6.2e-12	-3.60445	-1.52305	2.19669
3	341.611	270.65*	64	0.000	6.5e-13	-7.26212*	-4.20124*	1.26896
4	.	.	64	.	-3.2e-47*	.	.	.

Source: Author's computation of using Stata 14

LR, AIC, and HQIC chose three lag lengths to be the optimal lag length, and FPE chose an optimal lag length of four lags. The smaller the value of the information criteria, the better the model. The lag exclusion test confirms the first lag to be the appropriate lag. Hence, this study implements the optimal lag length for estimation techniques, which is chosen by SBIC.

Stationarity test or Unit root test

Empirical analysis using non-stationary time series may lead to spurious regression or non-sense regression. To avoid such a problem, the non-stationary time series has to be transformed to make it stationary. Thus, before using any variable for regression, it is important to check whether a series is stationary or not. The unit root test is the formal method to test the stationarity of the series. Accordingly, the study applies the commonly used Augmented Dickey Fuller (ADF) (1981)

unit root test with different assumptions. The null hypothesis under this approach is that the variables contain a unit root or are non-stationary, and the alternative is that the variable was generated by a stationary process. The ADF test result with drift, with trend, and without trend and drift both at level and at the first difference of the variables is presented in the table below.

Table 2

Results of Augmented Dickey Fuller Test

	ADF t-statistic at level I(0)			ADF t-statistic at first difference I(1)	
	None	Drift	Trend	None	Trend
lnGDS	1.526	1.526*	-1.296	-4.607***	-5.156***
lnGDP	2.486	2.486***	-0.236	-2.095	-3.130
lnBL	-4.797***	-4.797***	-5.193***	-7.269***	-7.197***
lnML	-3.037**	-3.037***	-4.026**	-7.053***	-6.969***
lnBG	-0.648	-0.648	-3.326*	-4.803***	-4.749***
lnMG	-1.212	-1.212	-2.086	-5.684***	-5.833***
lnEd	2.481	2.481***	-0.673	-2.962**	-3.780**
lnL	-0.180	-0.180	-5.386***	-3.105**	-2.565
Mackinnon (1996) Critical Values					
		None	Trend	Significance	
Mackinnon Critical Values	1%	-3.648	-4.242	***	
	5%	-2.958	-3.540	**	
	10%	-2.612	-3.204	*	

*Source: Author's computation of using STATA 14 output. *, ** and *** imply statistical significance at 10%, 5% and 1% level of significance, respectively.*

If the ADF test statistics are less than the critical value, the decision rule fails to reject the null hypothesis of unit root or non-stationarity, and the time series variables are non-stationary or have unit root. Conversely, in cases where the ADF test statistics are greater than the critical value, it indicates rejection of the null hypothesis and implies the stationarity of the time series variable. The results of the stationarity tests reported in the above table confirm that all the variables are not integrated in the same order; this confirmation implies that the ARDL approach to cointegration can be applied. And also, they become stationary, either with trend or without trend, once they are first differentiated. This indicates that none of the above variables are integrated in order two (I (2)), which is a precondition for using the ARDL model.

Bounds test for long run relationship

In the ARDL approach to co-integration, the first step is to test the presence of co-integration or a long-run relationship among the variables. This test for the long-run relationship is done using the F-statistic. Given the annual nature of the data, however, Pesaran and Smith (1998) argue that the Schwartz-Bayesian Criteria (SBC) is preferable to other model specification criteria because it often has more parsimonious specifications, and it is recommended that the optimal lag length for the ARDL model be a maximum of two lags. Accordingly, the Schwarz-Bayesian criterion (SBC) is used to determine the optimal number of lags to be included in the conditional ARDL model. So, a Schwarz-Bayesian criterion was taken as a guide, and a maximum appropriate lag order of two was chosen in determining the conditional ARDL model.

In the stage that follows, the calculated F-statistic is compared with the critical values provided by Pesaran et al. (2001). If the calculated F-statistic is above the upper bound level, the null hypothesis of no co-integration is rejected and it is concluded that the variables are co-integrated and that there is long run relationship among the variables. In the event that the calculated F-statistic is below the lower bound level, the null hypothesis of no co-integration is accepted and it follows that the variables are not co-integrated and there is no long run relationship among the variables under consideration. However, if the calculated F-statistic falls between the upper and the lower bound levels, the results are inconclusive and it is difficult to arrive at a conclusion on either the existence or absence of long run relationship. In this situation, it is must to look at the sign and

significance of the error correction model to come up with concrete conclusion. The results of the bounds F-test for co-integration are displayed in Table 3.

Table 3

Bound test and Critical value

	[I_0] L_1	[I_1] L_1	[I_0] L_05	[I_1] L_05	[I_0] L_025	[I_1] L_025	[I_0] L_01	[I_1] L_01
K_7	2.03	3.13	2.32	3.50	2.60	3.84	2.96	4.26

Source: Author's computation of Stata result

Accept if $F < \text{critical value for } I(0) \text{ regressors}$

Reject if $F > \text{critical value for } I(1) \text{ regressors}$

Accordingly, the calculated F statistic (6.348) is higher than the Pasaran *et al.* (2001) upper bound critical value both at the 1 percent and 5 percent level of significance, i.e., 4.26 and 3.50, respectively. As a result, it is possible to reject the null hypothesis of no co-integration. In other words, the result implies that the variables are co-integrated in the long run. Furthermore, there is evidence for a long-run relationship among domestic saving and variables in the model.

Diagnostic and Stability Tests

The most significant stage in any empirical study is testing the soundness of the model. In this study, the researcher conducted diagnostic and model stability tests such as the heteroskedasticity test, the Brush and Godfray LM test for serial correlation, Ramsey's RESET test for functional misspecification, and the Jaque-Bera test for normality. And, all tests are satisfied.

Long run ARDL model

Based on the F statistic result, which indicated the existence of long run co-integration among the variables, it is now possible to proceed to the estimation of the long run coefficients of the model. The following table presents the results found after running the appropriate ARDL model to find out the long run coefficients.

Table 4*Estimated Long Run Coefficients using ARDL Approach*

lnGDS	Ceff.	Sd	t	P> (t)	[95% Conf. Interval]	
lnGDP	.6351185	.3127963	2.03	0.050	-.0020267	1.272264
lnBL	.0197022	0.157705	1.25	0.221	-.0124213	.0518258
lnML	.0008299	0.2551116	0.03	0.974	-.0503207	.0519805
lnBG	.1780119	.2273988	0.78	0.439	-.2851842	.641208
lnMG	-.3025437	.1400577	-2.16	0.038	-.5878318	-.0172555
lnEd	.7272937	.3452877	2.11	0.043	.0239657	1.430622
lnL	-1.085602	1.315621	-0.83	0.415	-3.765134	1.594229
_cons	.8825019	2.936575	0.30	0.766	-5.099106	6.86411

Source: Author's computation of Stata result

The estimated coefficient of the long-run relationship shows that multilateral grants, one of the central variables of this study, have a negative and statistically significant impact on domestic saving in the long run at a 5% statistically significant level. And it indicated that in the long run, holding other things constant, a percentage increase in lnMG was associated with an approximately 0.303 percent decrease in lnGDS. This result is consistent with different theoretical arguments and empirical studies. Griffin (1970), Griffin & Enos (1970), Shields (2007), and Mohammed et al. (2016) found displacement of savings and fungibility of foreign aid arguments; Gounder (2001) also found multilateral aid having a negative effect on the economic growth of Fiji through adversity affecting savings. Jean (2015) suggested that increased foreign aid has been more damaging to the Haitian economy than facilitative in generating productive activities and that foreign aid, particularly in the form of grants, has been a causal factor in negative savings and disinvestment. Tolessa (2001) also found that foreign grants have a negative effect on domestic saving.

In addition to that Friedman (1957) argued that from the permanent income hypothesis approach, if this foreign aid was viewed by consumers as being a temporary increasing in income, the decline in domestic savings would almost exactly match foreign aid.

A multilateral grant has a precondition and one of the preconditions is devaluation (decline in the home currency) and such devaluation makes the country's export more competitive and the import more expensive. As a result, such scenario leads to inflationary pressure because of higher import price and a rising demand for exports. Moreover, the devaluation increases the price of imported goods. And also considering the country's import intensive economy and significance to the CPI (customer price index), the devaluation contributes towards cost push inflation.

Hussien and Thirlwall (1999) argues that inflation that arise due to condition of aid (devaluation) affect saving in to ways First, it rises the cost of living and individuals need to allocate a significant portion of their income for current consumption which reduce the share of income to be saved. Second, inflation discourage saving since depositor's real rate of return will decline unless there's a proportional escalation on the nominal saving rate offered by financial institutions (banks). Accordingly, in the long run multilateral grant has a negative effect on the domestic saving of the country through inflation.

On the other hand, lnBG, lnBL, and lnML have a positive sign, but they have a statistically insignificant impact on domestic savings in the long run at a 5% level of statistical significance. And it indicates that in the long run, holding other things constant, a percentage increase in lnBG, lnBL, and lnML is associated with a 0.178, 0.0197, and 0.00082 percentage rise in lnGDS. This result is consistent with different theoretical arguments and empirical studies by Chanery and Strout (1966), which argued that foreign assistance has a positive relationship with domestic saving. Furthermore, Angmortey and Offin (2014) have found that foreign aid and grants and foreign commercial borrowing have a positive and significant effect on real domestic savings in Ghana but are nevertheless not steady but volatile. And also, it is consistent with Gounder's (2001) findings that disaggregated aid (bilateral aid, grant aid, and technical assistance) showed a positive association with growth through improving domestic saving. Furthermore, Tolessa (2001) also finds that the inflow of foreign loans has a positive impact on domestic saving and investment at

steady state levels in Ethiopia. Gupta (1987) found a positive coefficient of foreign borrowing that is significant for Latin American countries but negative for Asian countries.

The long-run results reported in Table 4 show that the gross domestic product is the key determinant of gross domestic saving. The coefficient of $\ln\text{GDP}$ is found to be 0.635 and statistically significant at the 5 percent statistically significant level. This result revealed that in the long run, an increase in gross domestic product leads to an increase in gross domestic savings for the country. The coefficient of 0.635 indicates that, holding other things constant, a percentage change in GDP brought a 0.635 percent enhancement in GDS. This result is consistent with different theoretical arguments and empirical studies. The life-cycle hypothesis (LCH) proposed by Modigliani (1966) advocated that saving is a positive function of income growth measured by GDP per capita. A higher rate of income growth means that the aggregate income of active workers will rise, which in turn raises the lifetime resources of individuals, on which consumption and saving depend. As a result, income growth will result in an increase in aggregate saving. Tedla (2016), Kudaisi (2013), and Masson et al. (1998) found that the growth of the GDP has a positive impact on gross domestic saving in West African countries.

Educational expenditure (as a proxy to measure human capital) is the other influential variable in this study that's found statistically significant at a five percent probability level and with a positive impact on domestic saving. Holding other things constant, a percentage increase in education expenditure has resulted in a 0.0727 percent change in gross domestic saving. The result of this study is also similar to Jacques and Cesar's (1995) findings, which are that in the long run, each percentage point increase in the stock of education positively influences savings. This positive relationship has been empirically confirmed by several cross-country studies, such as Barro (1990) and Benhabib & Spiegel (1994), or household surveys. Carroll (1994) and Schultz (1988) have also emphasized the positive relationship between education and labor income because qualified people have greater wage bargaining power than less educated people. Educated people have a greater value for the future than less educated people due to the fact that they will save more of their income. Investment in human capital like education will increase labor productivity and affect future growth, and such progress will increase domestic saving (Chenery et al., 1974).

The total labor force coefficient has a negative sign, although it is statistically insignificant at the five percent probability level, and it indicates that holding other things constant, a percentage change in labor is associated with a 1.085 percent reduction in GDS. In line with the magnitude and sign of the regressors, the total labor force (population ages 15–64) was presumed to be positively correlated with the gross domestic saving ratio. This presumption has been made based on the theoretical postulation of Modigliani (1966). According to him, the working age and/or middle age groups are the ones who save an amplified portion of their incomes, taking the elderly's consumption through dissaving into account. However, in this study, the labor force has a statistically insignificant negative impact on the gross domestic savings of the country, which is an unexpected sign. The sign may contradict theories, and it's difficult to justify the exact reason with this research, but in my opinion, this could be due to the rising unemployment rate and age dependency ratio. Besides, Monicah (2015) found that the age dependency ratio has a negative impact on Kenya's gross domestic savings. However, Shields (2007) argued that for a few countries, the labor force as a proportion of the population decreased savings. Furthermore, detailed research should be done in order to identify the reason behind such a result (the unexpected negative sign of $\ln L$).

Short Run Error Correction Model

The above representation shows the short-run dynamics of the model along with the equilibrium of the model. The most important thing in the short-term results is the speed of adjustment. Theoretically, the ECM term indicates the speed of adjustment to restore equilibrium in the dynamic model, and the coefficient of the ECM should be both negative and statistically significant; it shows how much time would be taken by the variable to reach a long-run equilibrium. The coefficient of the lagged error-correction term is significant at the 5% significant level with the expected sign (i.e., negative), which confirms the result of the bounds test for cointegration. Its value is -0.977, which implies that the speed of adjustment to equilibrium after a shock is very high and approximately 97.7% of the disequilibria from the previous year's shock converge back to the long-run equilibrium in the current year. Such a highly significant error correction term is another proof for the existence of a stable long-run relationship among the variables (Banerjee et al., 1993).

Table 5

Error Correction Representation for the Selected ARDL Model

<i>.lnGDS</i>	<i>Cef.</i>	<i>Std.Err</i>	<i>T</i>	<i>P> (t)</i>	<i>[95% Conf. Interval]</i>	
$\Delta \ln GDS$	.0134942	.1639441	0.08	0.935	-.320872	.3478605
$\Delta \ln GDP$	.6522743	.3281534	1.99	0.056	-.0169989	1.321548
$\Delta \ln BL$	.0190192	.0164306	1.16	0.256	-.0144913	.0525298
$\Delta \ln ML$	.0011617	.0246461	0.05	0.963	-.0491044	.0514278
$\Delta \ln BG$	-.4557383	.2003427	2.27	0.030	-.8638229	-.0476536
$\Delta \ln BGI$	-.266361	.2453348	-1.09	0.286	-.7667246	.2340025
$\Delta \ln MG$	-.2890233	.1504476	-1.92	0.064	-.5958632	.0178166
$\Delta \ln Ed$	.6793288	.3451041	1.97	0.058	-.0245157	1.383173
$\Delta \ln L$	-1.108771	1.235713	-0.90	0.376	-3.629024	1.411482
<i>ECM (-1)</i>	-.9774246	.1628254	-6.00	0.000	-1.309089	-.6457602
Sample: 1976 – 2017		R-squared = 0.6189		Root MSE = 0.2898		
Number of obs = 42		Adj R-squared = 0.5117		Log Likelihood = - 1.8601969		

Source: Author's computation of Stata result

Holding other things constant in terms of percentage change in the first lagged period of domestic saving is associated with a 0.013 percent increase in domestic saving at a 5% statistically significant level. Unlike the long-run model, in the short run, bilateral grants have a significant and negative effect on domestic saving for the period under consideration. In the short run, holding other things constant, a percentage change in bilateral grants leads to a 0.4557 percent reduction in domestic savings for the country. Even its one-period lagged value has a negative impact, but it is insignificant on domestic savings. While, in the short run, multilateral grants also have a negative effect on domestic saving, which is consistent with the long-run result except that it is statistically insignificant at the 5% statistically significant level. However, the elasticity in this case is 0.289, which indicates that a percentage increase in multilateral grants in the short run reduced domestic savings of the country by an average of 0.289 percent compared to about 0.3025 percent in the

long run. Accordingly, the negative impact of bilateral grants and loans on domestic saving is interesting, indicating that bilateral grants are countercyclical flows in the short run, and the general figure shows that both bilateral and multilateral grants are mainly used for consumption smoothing in the short run. This result is similar to the study by Workneh (2013), who found that in the short run, both bilateral and multilateral foreign aid have a negative impact on saving.

Furthermore, as table 5 reveals, the short run model results $\ln GDP$, $\ln BL$, $\ln ML$, $\ln Ed$ and $\ln L$ are consistent with the long run estimates except the result for $\ln GDP$ and $\ln Ed$ are statistically insignificant at 5% level of significant level. Accordingly, like in the long run, gross domestic product has an expected positive impact on domestic saving at a five percent significance level in the short run. This shows that, holding other things constant, a percentage increase in gross domestic product has a 0.652 percent increase in domestic saving of a country, and holding other things constant, a percentage increase in educational expenditure (current and capital) has a 0.679 percent increase in domestic saving. Furthermore, like the long-run result, the short-run result of labor is negative and statistically insignificant.

Granger Causality Test

In order to examine whether one variable is causally related to another, Granger (1969) introduced a concept of causality, which is commonly known as Granger causality. There has been a long debate about whether low levels of domestic saving are a cause of massive foreign aid or whether foreign aid causes low levels of domestic saving in recipient countries. Accordingly, in order to examine this very important causal relationship in the Ethiopian context, the Granger causality test is conducted between the variables $\ln GDS$, $\ln GDP$, $\ln BL$, $\ln M$, $\ln BG$, $\ln MG$ and $\ln I$. A lag length of 2 has been chosen for the above models and their respective the Granger causality test results are given in Table 6.

Table 6

Granger causality Wald tests

		F-Statistics						
Variables	<i>lnGDS</i>	<i>lnGDP</i>	<i>lnBL</i>	<i>lnML</i>	<i>lnBG</i>	<i>lnMG</i>	<i>lnEd</i>	<i>lnL</i>
<i>lnGDS</i>	-	15.165*	1.4021	6.6463*	10.088*	5.352*	4.6818*	11.745*
<i>lnGDP</i>	.55605	✚ <i>lnGDP</i> , <i>lnML</i> , <i>lnBG</i> , <i>lnMG</i> , <i>lnEd</i> and <i>lnL</i> → <i>lnGDS</i>						
<i>lnBL</i>	6.4632*							
<i>lnML</i>	6.6431*	✚ <i>lnGDS</i> → <i>lnBL</i> , <i>lnML</i> , <i>lnBG</i> , <i>lnMG</i> and <i>lnEd</i> ✚ <i>lnGDS</i> ↔						
<i>lnBG</i>	8.5601*	<i>lnML</i> , <i>lnBG</i> , <i>lnMG</i> and <i>lnEd</i> (Bi-directional causality) ✚ <i>lnGDS</i> →						
<i>lnMG</i>	6.1809*	<i>lnBL</i> (Uni-directional causality) ✚ <i>lnGDP</i> and <i>lnL</i> → <i>lnGDS</i> (Uni-						
<i>lnEd</i>	2.2576*	directional causality)						
<i>lnL</i>	.02207							

Source: Author's computation of Stata result

The first row indicates reject of the null hypothesis for variables *lnGDP*, *lnML*, *lnBG*, *lnMG*, *lnEd* and *lnL*. However, accept the null hypothesis for variables *lnBL*. Accordingly, gross domestic product, multilateral loan, bilateral grants, multilateral grants, educational expenditure and labor force are a granger cause of gross domestic saving.

The first column indicates that reject of the null hypothesis for variables *lnBL*, *lnML*, *lnBG*, *lnMG* and *lnEd*. However, accept the null hypothesis for *lnGDP* and *lnL*. Accordingly, gross domestic savings is a major cause of all disaggregated foreign aid, including bilateral loans, bilateral grants, multilateral loans, multilateral grants, and educational expenditure. There is unidirectional causality that runs from gross domestic product to domestic savings but not from domestic savings to gross domestic product. This implies that a higher gross domestic product led to a higher level of gross domestic saving but not vice versa during the sample period. There is unidirectional causality that runs from domestic savings to bilateral loans but not vice versa. This implies that a lower gross domestic saving is a cause for the inflow of bilateral loans in Ethiopia but not vice versa during the sample period.

There is a bidirectional causality that runs from domestic saving to multilateral loans and grants and from multilateral loans and grants to domestic saving. This implies that multilateral loan improves the level of domestic saving and that a lower level of saving results in a higher level of multilateral loan inflow during the sample period. Besides, a lower gross domestic saving is a cause for the inflow of multilateral grants in Ethiopia, but an inflow of multilateral grants is also a cause for the reduction of domestic saving in Ethiopia. There is bidirectional causality that runs from domestic savings to bilateral grants and from bilateral grants to domestic savings. This implies that bilateral grants improve the level of saving and that a lower level of saving results in a higher inflow of bilateral grants during the sample period. There is a bidirectional causality that runs from domestic saving to educational expenditure and from educational expenditure to domestic saving. This implies that increases in educational expenditure improve the level of domestic saving, and also that a higher level of domestic saving results in a growth in educational expenditure during the sample period. Finally, the number of labor force members is a causal variable for the reduction of domestic saving but not vice versa.

Conclusion and Policy Implications

The impact of foreign aid on domestic savings in aid recipient countries is theoretically and empirically ambiguous, and is influenced by a variety of factors. Ouattara (2003) argued that various aid modalities and measurements have different effects on the recipient economy, in addition to influencing macroeconomic variables positively or negatively. Accordingly, this study analyzes the impact of official development assistance on domestic saving by disaggregating aid both by its sources and type. The study used time series data ranging from 1975 to 2017, which were collected from the WDI, NBE, and OECD databases.

The econometric part of this study employed an autoregressive distributed lag model or bound test approach. The mixed orders of integration of the variables under study are the justifications for applying this model. This paper examined the long-run, short-run, and causality analysis of the relationship between disaggregated foreign aid and gross domestic saving in Ethiopia. The study used the autoregressive distributed lag (ARDL) bounds testing procedure to examine the presence of long-run and short-run relationships among the variables and to investigate the association between disaggregated foreign aid and gross domestic saving further to assess the direction of

causality between disaggregated foreign aid and gross domestic saving. A Granger causality test has been conducted.

Empirical results showed that both bilateral and multilateral aid determined domestic savings in Ethiopia. In the long run, multilateral grants significantly and negatively affect domestic saving (which is 0.303), while bilateral grants have a positive effect (which is 0.178) on domestic saving but are statistically insignificant. In addition to that, both bilateral and multilateral loans have a positive effect, but their coefficients are very small and statistically insignificant. Accordingly, in the long run, multilateral grants have a dominant role in determining domestic savings in Ethiopia as compared with other foreign aid variables. Multilateral grants are found to have a significant negative association with savings, implying that an increase in the flow of grants from multilateral donors worsens saving and makes the country more dependent on aid in the long run, and the negative effect is consistent with the view that aid crowds out domestic savings.

Furthermore, in the long run, gross domestic product and educational expenditure, as proxies for human capital, are the key determinants of gross domestic savings in Ethiopia. Their separate coefficient is positive and statistically significant at the 5 percent level of significance. This result revealed that an increase in gross domestic product and educational expenditures leads to an increase in the gross domestic savings of the country in the long run. However, total labor force is found to be a negative sign, but it is statistically insignificant at the five percent probability level, and it revealed that an increase in labor force leads to a reduction in the gross domestic savings of the country in the long run. In order that further detailed research be done to identify the reason behind such a result (the unexpected sign of $\ln L$), There is consistency between short and long run values, except that in the short run, bilateral grants have a negative and statistically significant effect (0.456) on domestic saving and multilateral grants have a negative but statistically insignificant effect (0.296) on domestic saving. Accordingly, in the short run, bilateral grants have a dominant role in determining domestic savings in Ethiopia as compared with other foreign aid.

The error correction model (ECM) had been used for the analysis of short-run dynamics. The negative value of the speed of adjustment coefficient, which is -0.977, indicated a very quick speed of convergence towards equilibrium. Furthermore, GDP and educational expenditure, as proxies

for human capital, have a positive effect both in the short and long run, while the labor force's coefficient has an unexpectedly negative sign.

The empirical result found that there is a crowding-out effect of aid. Thus, what is required is not to cut aid but rather to find out an alternative mechanism that makes aid more effective, and unless aid is supported by policies, the aid-saving-investment-growth linkage does not work properly. Accordingly, aid may not make the difference; what makes the difference in the process of enhancing foreign aid linkages is good macroeconomic policies, and the study has the following important policy implications: Multilateral foreign aid has a condition for disbursement like adjusting the exchange rate or devaluation of the aid recipient's currency. As a result, such conditions are inducing inflationary pressure on the country and affecting the marginal propensity to save of corporate and household savings. Following that domestic resource mobilization of capital from domestic financial markets will be tough. In order that policymakers should address proper and necessary fiscal and monetary policy adjustments regarding the preconditions of multilateral foreign aid, the government needs to improve the gross domestic product of the country through promoting innovations and entrepreneurship, establishing a financially and politically stable environment for investments, and promoting accountability in public management.

The study's findings imply that educational expenditures positively influence domestic savings. In order to do so, the government needs to increase educational expenditures both in terms of current operating expenditures in education, including wages and salaries, and capital investments in buildings and equipment. Furthermore, saving does not depend only on income. The opportunities for profitable investment also matter highly. Without such opportunities, increasing incomes through foreign loans and grants are mostly spent on unproductive and conspicuous consumption. Moreover, aid also should be used for building up capital projects, but it should not be entirely used to finance recurrent unproductive expenditures. In order to do so, the government should strictly follow and control the end use of multilateral grants, and investment opportunities should be raised. Accordingly, policymakers are required to establish good macroeconomic policies for privatization, property rights protection, and entrepreneurship.

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