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Impact of Bilateral and Multilateral Aid on Economic Growth in Sub-Saharan Africa and the Mediating Role of Institutional Quality

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Abstract: Since the 1960s, Sub Sahara African (SSA) countries have been the largest net recipients of aid relative to other aid recipient countries partly for promoting growth. In spite of this, SSA countries continue to underperform in terms of economic growth relative to other aid-recipient regions. While research on the impact of foreign aid on economic growth of SSA countries is abound, it is characterized by mixed results. This may be attributed to use of aggregate forms of aid in estimation models, which do not specify which form of aid impacts economic growth of recipient countries. In addition, while development theory presupposes that institutional quality determines aid effectiveness, research on whether the effectiveness of disaggregated aid depends on institutional quality remains limited in SSA countries. Thus, this study seeks to examine the impact of bilateral and multilateral aid on economic growth of Sub Sahara African countries, and determines whether the impact depends on institutional quality. The study uses a balanced panel data set of 28 SSA countries from 1996 – 2015, and a dynamic model is specified and estimated using the technique of system GMM. The findings indicate that only bilateral aid has a significant impact of economic growth of SSA countries generally. However, after interacting the disaggregated aid components with institutional quality, only multilateral aid has a positive and significant impact on economic growth in these countries. The results further show that the impact of multilateral aid on economic growth in SSA countries depends on the quality of institutions existing in those countries. Even after accounting for differences in levels of economic development, only multilateral aid has a positive and significant impact on economic growth in both low and middle-income countries, and the impact in both categories of countries depends on the existence of good quality institutions. The study concludes that multilateral aid has a positive and significant impact on the economic growth of SSA countries, and the impact depends on existence of good quality institutions in those countries. In order to enhance economic growth, the study recommends increasing foreign aid inflows particularly from multilateral sources, and in order to enhance effectiveness of multilateral aid, the study recommends that SSA should strengthen existing institutions through ensuring proper control of corruption, rule of law, regulatory quality, government effectiveness, political stability, and voice and accountability.

Keywords: Bilateral Aid, Multilateral Aid, Economic Growth, Sub-Saharan Africa

1. Introduction

Foreign aid has long been recognized as a vital ingredient of economic growth particularly in recipient countries [1, 2]. Accordingly, many less developed countries have received significant amounts of aid from more developed countries since the 1960s, with Sub Sahara African (SSA) countries being the largest net recipients when compared to other aid recipient regions such as Latin America and Caribbean, East Asia and Pacific, Europe and Central Asia, and South Asia. In spite of this, SSA countries' growth rates have been lower than other aid recipient regions. For instance, the Organization for

Economic Co-operation and Development (OECD) Database shows that East Asia and Pacific received a total of USD 8 billion while SSA countries received a total of USD 60 billion in 1996, and by 2015, aid received by East Asia and Pacific had increased to USD 8.5 billion while that flowing to SSA countries had increased to USD 152 billion. However, data from OECD also indicates that economic growth of East Asia and Pacific economies averaged 7.62 from 1996 – 2015, while economic growth of SSA countries averaged 5.14 within the same time period.

Various researchers have previously studied the relationship between aid and economic growth of SSA countries and the results are largely mixed. Some scholars show that aid positively and significantly impacts economic growth in SSA [3-6]. Other researchers show that aid negatively and significantly impacts in SSA [7, 8], while others find no significant connection between aid and growth in SSA [6, 9]. The inconclusive findings may be attributed to use of aggregate forms of aid in estimation models, which do not highlight the relative impact of specific forms of aid. In addition, economic development theory presupposes aid effectiveness depends on institutional quality of recipient countries [10-12]. However, this notion has not received sufficient empirical attention with regard to disaggregated aid in SSA countries. Thus, the purpose of this is to examine the impact of bilateral and multilateral aid of economic growth of SSA countries, and to determine whether the impact depends on institutional quality.

The disaggregation of aid into bilateral and multilateral aid is important because over the years, attention and interest has been growing among donors on which aid channels—whether bilateral or multilateral—are more effective in enabling them achieve their objectives related to development [13]. This is important given the growing body of empirical evidence indicating that bilateral aid is highly prone to political capture with severe consequences on recipient countries' growth and development outcomes [14, 15]. In addition, bilateral donors have a tendency of skewing aid allocation decisions in favors of strategic and political considerations as opposed to multilateral donors who tend to focus supporting initiatives that foster tangible transformation of recipient countries [16, 17].

2. Methods

2.1. Theoretical Framework

To estimate the impact of bilateral and multilateral aid on economic growth of SSA countries, and assess whether the impact depends on institutional quality, the study adopted Solow's model [18] but modified to cater for bilateral and multilateral aid. The model was chosen because it caters for Keynesian rigidities, and it has been widely applied by researchers studying how aid impacts growth [19-21]. The theoretical framework is derived from the neoclassical aggregate production function based on the constant return to scale assumption. Solow (1956) contends that output depends on labor (L) and capital stock (K) as specified below.

$$Y = f(K, L) \tag{1}$$

Where Y is aggregate output, K is capital stock, and L is stock of labor force. It is assumed that Equation (1) possesses the desirable properties of being continuous and twice differentiable, with positive but diminishing marginal products. That is,

$$\frac{\partial Y}{\partial K} > 0, \frac{\partial^2 Y}{\partial K^2} < 0, \text{ and } \frac{\partial Y}{\partial L} > 0, \frac{\partial^2 Y}{\partial L^2} < 0$$

The properties about the shape of the production function that guarantee the stability of an economic growth path in a neoclassical growth model are assumed to be satisfied [22], that is:

$$lim_{K\to 0}\frac{\partial Y}{\partial K} = \infty,\ lim_{K\to\infty}\frac{\partial Y}{\partial K} = 0 \text{ and } lim_{L\to 0}\frac{\partial Y}{\partial L} = \infty,$$
$$lim_{L\to\infty}\frac{\partial Y}{\partial L} = 0$$

Like it has been done previously [5], the study arguments the above production function by introducing foreign aid as an input. That is,

$$Y = f(K, L, A) \tag{2}$$

Where A is the stock of foreign aid, while K and L are as defined above.

By adopting a Cobb Douglas production function, equation (2) becomes:

$$Y = K^{\propto}, L^{\theta}, A^{\beta} \tag{3}$$

Taking logs of equation (3) yields equation (4) as follows:

$$InY = \alpha InK + \theta InL + \beta InA \tag{4}$$

Differentiating equation (4) with respect to time yields equation (5) as follows:

$$\frac{1}{Y}\frac{dY}{dL} = \frac{\alpha}{K}\frac{dK}{dt} + \frac{\theta}{L}\frac{dL}{dt} + \frac{\beta}{A}\frac{dA}{dt} \tag{5}$$

Where $\frac{1}{Y}\frac{dY}{dL}$ is the growth rate of output; $\frac{\alpha}{K}\frac{dK}{dt}$ is the growth rate of capital stock, and $\frac{\beta}{A}\frac{dA}{dt}$ is the growth rate of foreign aid. $\propto, \theta, \beta$ are elasticities with respect to capital stock, stock of labor force, and foreign aid respectively. Equation (5) means that growth rate of output depends on growth rates in capital stock, labor force and foreign aid respectively. That is:

$$g_Y = f(g_K, g_L, g_A) \tag{6}$$

Where $g_Y = \frac{1}{Y}\frac{dY}{dL}$, $g_K = \frac{\alpha}{K}\frac{dK}{dt}$, $g_L = \frac{\theta}{L}\frac{dL}{dt}$ and $g_A = \frac{\beta}{A}\frac{dA}{dt}$

Following previous studies [23-25], foreign aid as a percentage of GDP is used for estimation purposes instead of growth of foreign aid. Furthermore, as an innovation, aid is divided into two--bilateral and multilateral aid. Accordingly, equation (6) becomes:

$$g_Y = f[g_K, g_L, (BA), (MA) \tag{7}$$

Where BA is bilateral aid and MA is multilateral aid.

2.2. Empirical Model

The empirical model is generated through modifying

equation (7) to provide for control variables that have been empirically established as predictors of economic growth including inflation rate, trade openness, financial sector development (M2/GDP) and institutional quality. Institutional quality is included in the model for the purpose of determining whether the impact of bilateral and multilateral aid depends on the quality of institutions. This is achieved by interacting the two aid components (bilateral and multilateral aid) with an index of institutional quality that encompasses indicators such as: regulatory quality, voice and accountability, government effectiveness, rule of law, control of corruption, and political stability, and as espoused by the World Bank. Accordingly, equation 8 represents the specification of the empirical model:

$$Y_{it} = \propto + \beta' Z_{it} + \varphi BA_{it} + \delta MA_{it} + \mu_i + v_{it} \quad (8)$$

Where Z is a vector of other explanatory variables including: growth in capital stock (GK), growth in labor force (GL), inflation (INF), trade openness (OPEN), financial sector development (M2/GDP), and institutional quality (INST). α, β, φ and δ are parameters, μ_i is the individual specific effect, and v_{it} is an idiosyncratic error term which varies between and among countries as well as over time. The error term is believed to be independently distributed with $E(v_{it}) = 0$.

By letting $X' = (Z', BA, MA)$, equation (8) is reduced to:

$$Y_{it} = \theta' X_{it} + \mu_i + v_{it} \quad (9)$$

Where $\theta' = (Z', BA, MA)$, is a vector of coefficients to be estimated.

Economic theory presumes that growth is a dynamic process, meaning that previous years' growth can have a significant bearing on the current year's growth. Accordingly, estimating a dynamic panel data model becomes imperative as shown by equation (10) as follows:

$$Y_{it} = \alpha + \varphi Y_{it-1} + \theta' X_{it} + \mu_{it} \quad (10)$$

Where $\mu_{it} = \mu_i + v_{it}$ represents the overall error term.

2.3. Definition, Measurement and Expected Signs of Variables

Aid: It is the transfer of capital, goods or services from one country to another, or from international organizations to recipient countries [1]. It is measured in terms of official aid from Development Assistance Countries (DAC). Net official aid is aid flows from official donors to countries on the DAC list of recipients (WDI Meta data, 2017). To disaggregate aid into bilateral and multilateral aid, data on net bilateral aid inflows from DAC donors was obtained, and this was subtracted from total aid to obtain multilateral aid. Bilateral aid is assistance that one country offers to the government of another country, while multilateral aid is assistance advanced by many governments to a government of another country through organizations such as the International Monetary Fund (IMF) and World Bank. In the model specification, bilateral and multilateral aid are expressed as a percentage of GDP.

Capital stock: It is the sum of both private and government fixed assets. Growth rate of gross capital formation is used as a proxy of capital stock following previous empirical studies [26, 27]. Its coefficient is expected to be positive because a larger capital stock increases the overall productive capacity, leading to increased economic growth [28].

Labor force: It is the number of people who are employed plus unemployed people in search of work [29]. Population growth rate is used as a proxy of labor force following previous research [30]. Its coefficient is expected to be positive because the higher the population growth, the higher the labor supply and the higher the demand for goods and services, which increases investment and growth.

Inflation: It is a measure of the annual rate of change of consumer price index following previous research [30]. The coefficient of inflation is expected to be negative because its existence leads to increase in production costs, which in turn, stifles economic growth.

Financial sector development: It is a measure of the ratio of liquid assets (M2) to GDP (M2/GDP). While previous research has employed the ratio of commercial bank credit to GDP and private sector domestic credit [31], the study employs the ratio of M2 to GDP as a proxy for financial sector development. The coefficient of this variable is expected to be either positive or negative because on the one hand, high liquidity in the economy may stimulate consumption, thereby enhancing investment and growth. On the other hand, high liquidity in the economy may encourage consumption at the expense of savings, thereby compromising investment and growth.

Trade openness: It is the extent to which a country is engaged in the global trading system. It is measured as a ratio of the sum of imports and exports to GDP following previous research. The coefficient of trade openness is expected to be positive because trade enhances economies of specialization, leading to expansion of economies [32, 33].

Institutional quality: It is a measure of the quality of a country's governance systems [34]. The study adopts the World Bank measure of institutional quality, which comprises of six indicators including: control of corruption (COC), rule of law (ROL), regulatory quality (RQ), government effectiveness (GE), political stability (PS), and voice and accountability (VAC). The above indicators are measured using an index which ranges from -2.5 to 2.5, where the movement from -2.5 towards 2.5 represents improvement in ranking. Overall, its coefficient is expected to be positive because good institutional quality creates an environment that that promotes economic activity, inventiveness, growth and development [35].

2.4. Data Type and Sources

The study employed panel data comprised of 28 SSA countries[1] for the duration ranging from 1996 – 2015. The choice of the countries was determined by availability of data on the selected study variables. Panel data was used

1 Benin, Burkina Faso, Cameroon, Chad, Congo, Cote d'Ivoire, Gabon, Gambia, Ghana, Guinea, Kenya, Madagascar, Malawi, Mali, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, South Africa, Sudan, Swaziland, Tanzania, Togo, and Uganda

because of the benefits it offers relative to pure time series or cross-sectional data including: taking into consideration the heterogeneous nature of individual countries; containing more information, more variability, and more efficiency. In addition, all the data were sourced from the World Bank's World Development Indicators (WDI) Database.

3. Results and Discussion

3.1. Descriptive Statistics

Economic growth was the outcome variable in the study. Its predictors included: foreign aid (bilateral and multilateral aid), population growth, gross fixed capital formation, inflation, trade openness, M2/GDP, and institutional quality indicators. Table 1 presents a summary of the descriptive statistics for the selected variables.

The results in Table 1 indicate a mean GDP value of 4.769 with a corresponding stand deviation value of 3.824. Growth rate of capital formation shows a mean value of 13.31 and a corresponding standard deviation of 14.38. Population growth shows a mean value of 2.618 and a corresponding standard deviation of 0.775. The mean value attributed to bilateral aid is higher than that multilateral aid at 5.336 and 2.532 respectively, with a standard deviations of 4.428 and 2.339 respectively. Trade openness has a mean value of 0.710 and corresponding standard deviation of 0.305, while the mean and standard deviation scores attributed to inflation are 7.064 and 8.976 respectively. Financial sector development (M2/GDP) has a mean value of 0.130 and a corresponding standard deviation of 0.154. The institutional quality indicators all have negative mean values, implying existence of poor governance in the countries under consideration on average.

Table 1. *Descriptive statistics of selected economic growth determinants.*

Variable	Obs	Mean	Std.Dev.	Min	Max
GDP growth rate	560	4.769	3.824	-12.67	33.74
GFCF	560	13.31	14.38	0	112.0
Population growth	560	2.618	0.775	0.132	7.989
Multilateral aid	560	2.532	2.339	-3.408	11.41
Bilateral aid	560	5.336	4.428	-0.307	35.77
Trade openness	560	0.710	0.305	0.158	2.094
inflation	560	7.064	8.976	-8.975	132.8
M2/GDP	560	0.130	0.154	0.00479	1.478
COC	560	-0.595	0.506	-1.523	0.809
GE	560	-0.592	0.514	-1.626	1.049
PS	560	-0.457	0.823	-2.665	1.200
RQ	560	-0.454	0.477	-1.490	1.127
ROL	560	-0.588	0.562	-1.709	1.077
VAC	560	-0.522	0.675	-1.859	1.007

3.2. Correlational Analysis

The study employed correlation analysis to check for possible existence of multi-collinearity between the outcome and predictor variables. Table 2 presents a correlation matrix of the selected variables.

Table 2. *Correlation matrix for selected economic growth determinants.*

	GDPG	GFCF	POPG	M AID	B AID	OPEN	INF	M2/GDP	COC	GE	PS	RQ	ROL	VOC
GDPG	1													
GFCF	.187*	1												
POPG	.187*	.178*	1											
M AID	.1716*	.104*	.473*	1										
B AID	.2178*	.120*	.445*	.693*	1									
OPEN	-.110*	.072	-.391*	-.292*	-.284*	1								
INF	.067	.126*	-.027	.093*	.086*	-.143*	1							
M2/GDP	-.084*	-.133*	-.541*	-.252*	-.304*	.253*	-.028	1						
COC	-.013	-.070	-.405*	.039	.026	.161*	-.058	.462*	1					
GE	.002	-.083*	-.429*	-.025	-.032	.052	-.010	.544*	.837*	1				
PS	-.066	-.088*	-.249*	.096*	.078	.301*	-.190*	.316*	.626*	.587*	1			
RQ	-.058	-.097*	-.422*	-.044	-.069	.080	-.138*	.539*	.792*	.884*	.615*	1		
ROL	-.040	-.111*	-.390*	.009	-.029	.147*	-.085*	.539*	.818*	.850*	.752*	.851*	1	
VAC	.013	-.088*	-.264*	-.061	.013	.005	-.070	.471*	.651*	.760*	.612*	.758*	.038*	1

The results in Table 2 indicate a correlation between bilateral aid and growth, multilateral aid and growth, capital stock and growth, population growth and aid, M2/GDP and growth are all positive and less than 30%. The correlation between trade openness and growth is negative and also less than 30%. Inflation and institutional quality indicators

however, do not show any significant relationship with growth. Inflation and institutional quality are not significantly related to growth. The table further shows that the correlation between some institutional quality indicators such as control of corruption and government effectiveness, rule of law and control of corruption are high and exceed 0.8. Such high correlations are likely to generate multi-collinearity during estimation, and estimation theory discourages including them simultaneously in regression models [36]. Accordingly, an index that averages all the institutional quality indicators was generated and used in regression analysis. Besides, aid and its two components (bilateral and multilateral aid) cannot appear in the same regression model simultaneously since their correlation coefficient exceeds 0.8. For this reason, the study presents regression results in two tables corresponding to each component of aid (bilateral and multilateral).

3.3. Panel Unit Roots

A panel unit root test was conducted to determine if trending data should be first differenced or regressed on deterministic functions of time to render data stationary. Table 3 presents of the panel unit roots tests.

Table 3. *Panel unit roots tests results.*

Variable	IPS		LLC	
	Coefficient	P-Value	Coefficient	P-Value
GDS	-3.4494***	0.0003	-1.0890	.1381
GDPG	-9.4804***	0.0000	-7.2632***	.0000
POPG	-0.5834	0.3787	-16.3379***	.0000
AID	-5.8382***	0.0000	-3.9010***	.0000
M_AID	-7.2364***	0.0000	-3.2361***	.0000
B_AID	-4.9924***	0.0000	-3.7379***	.0000
INF	-10.5786***	0.0000	-7.0422***	.0000
OPEN	-1.4072*	0.0797	-2.5704***	.0005
M2/GDP	1.7384	0.9589	-4.6660***	.0000
INST	0.0408	0.5163	-1.6494**	.0000
GFCF	-9.7136***	0.0000	-8.0901***	.0495

*P<0.1, **P<0.05, ***P<0.01.

From Table 3, all coefficients values of the selected variables are statistically significant since the probability values are less than 0.05. This suggests existence of stationarity in the panel data.

3.4. Panel Estimates

The objective of the study was to examine the impact of bilateral and multilateral aid on economic growth of SSA countries, and to determine whether the impact depends on institutional quality. In order to assess whether the impact depends on the quality of institutions, bilateral and multilateral aid were each interacted with institutional quality index. For comparison purposes, the results of difference GMM and Systems GMM were reported. Table 4 presents a summary of results of panel estimation concerning the impact bilateral and multilateral aid without the interaction terms.

Table 4. *Impact of bilateral and multilateral aid on economic growth (without interaction).*

VARIABLES	Systems GMM		
	Model1	Model2	Model3
L.GDPG	0.072***	0.071***	0.074***
	(0.021)	(0.022)	(0.019)
GFCF	0.018***	0.018***	0.019***
	(0.006)	(0.006)	(0.006)
POPG	1.226***	1.259***	1.220***
	(0.090)	(0.082)	(0.118)
B_AID		0.031**	
		(0.013)	
M_AID			0.076
			(0.082)
OPEN	1.192***	1.166***	1.169***
	(0.265)	(0.265)	(0.267)
INF	0.006	0.006	0.010
	(0.013)	(0.013)	(0.011)
M2/GDP	1.002*	1.031*	0.898
	(0.568)	(0.557)	(0.548)
INST	0.713**	0.737**	0.681**
	(0.335)	(0.345)	(0.313)
Observations	532	532	532
Number of pid	28	28	28
No. of instruments	26	26	26
AR1 P-value	0.000	0.000	0.000
AR2 P-value	0.631	0.628	0.661
Sargan p-value	0.734	0.732	0.719
hansen p-value	0.262	0.267	0.264

Standard errors in parentheses; *** p<0.01; ** p<0.05; * p<0.1.

The results in Table 4 indicate the Systems GMM passes the diagnostic tests as it shows that the instruments chosen are valid since there is no second order serial correlation (see p-value of AR2 test). Also, the p-values for the Sargan test and Hansen test suggest rejection any possibility of over-identification since they are greater than 0.05. However, as indicated earlier, the instruments of the difference GMM may be weak particularly for variables that are close to a random walk, in which case systems GMM is more efficient since it introduces first difference instruments. Accordingly, the analysis technique of systems GMM was employed.

From the table, the results of systems GMM indicate that the coefficient of bilateral aid (Model2) is significant at the 5% level of significance. This means that keeping other factors constant, a unit increase in bilateral aid leads to an increase in GDP growth by 0.031 percentage points. The coefficients of other variables in the model such as trade openness, institutional quality, gross fixed capital formation, financial sector development, and population growth are equally found to be statistically significant predictors of economic growth. The coefficient of multilateral aid (Model3) is statistically insignificant at the 5% level of significance. However, the coefficients of other growth determinants in model3 such as trade openness, institutional quality, gross fixed capital formation, financial sector development, and population growth found to be statistically significant predictors. In order to determine whether the impact of bilateral and multilateral aid depends on the quality of institutions, interaction terms corresponding to the two forms of aid are introduced in respective regression models

and Table 5 presents a summary of the results.

Table 5. *Impact of bilateral and multilateral aid on economic growth (with interaction).*

VARIABLES	Systems GMM		
	Model1	Model2	Model3
L.GDPG	0.047	0.051*	0.080***
	(0.030)	(0.029)	(0.023)
GFCF	0.021***	0.017***	0.026***
	(0.005)	(0.006)	(0.005)
POPG	0.965***	1.409***	0.681***
	(0.311)	(0.335)	(0.233)
B_AID		-0.076	
		(0.169)	
B_AID*INST		-0.202	
		(0.211)	
M_AID			0.760***
			(0.238)
M_AID*INST			0.661**
			(0.364)
OPEN	1.450***	1.420***	1.165***
	(0.349)	(0.323)	(0.366)
INF	0.001	0.015	-0.017
	(0.021)	(0.019)	(0.021)
M2/GDP	1.347	0.505	2.089
	(1.221)	(0.918)	(1.398)
INST	0.625	1.608	-0.328
	(1.073)	(1.177)	(0.826)
Observations	532	532	532
Number of pid	28	28	28
No. of instruments	26	26	26
AR1 P-value	0.000604	0.000643	0.000569
AR2 P-value	0.629	0.735	0.512
Sargan p-value	0.736	0.691	0.811
hansen p-value	0.258	0.258	0.265

Standard errors in parentheses; *** p<0.01; ** p<0.05; * p<0.1.

The findings in Table 5 indicate that the coefficient of multilateral aid which was insignificant before interaction with institutional quality (see Table 4) is now significant in Model3, while that of bilateral aid in Model2 becomes insignificant after the interaction with institutional quality. Both the individual terms and the interaction term corresponding to multilateral aid are significant. The results of systems GMM therefore suggest that a unit increase in multilateral aid coupled with improvement in institutional quality by a unit, increases economic growth by 0.661 percentage points. This implies that multilateral aid enhances economic growth, but only in countries with good quality institutions characterized by proper control of corruption, rule of law, regulatory quality, government effectiveness, political stability, and voice and accountability.

Among the control variables in the model, the coefficients of the lagged value of GDP, growth rate of capital stock, population growth rate and trade openness are statistically significant; therefore, they are important predictors of economic growth in the selected SSA countries. For instance, keeping other factors constant, a unit change in growth of capital stock leads to a change in GDP growth rate by 0.02 percentage points, and this is true for all the three models under systems GMM. The finding is consistent with neoclassical growth models and is also consistent with previous research [37, 38]. The population growth rate, keeping other factors constant, a unit change in this variable leads a change in economic growth rate by a range of 0.681 to 1.409 percentage points depending on the model specification. This finding supports the theoretical notion that an increase in population growth increases labor supply as well as aggregate demand all of which, support production. Similar findings have been observed in previous research [7, 37]. Also, across the three model systems GMM models, the coefficient of trade openness is statistically significant, implying that a percentage change in in this variable, leads to a change in GDP growth by a range of 1.166 to 1.450 percentage points. This is expected since trade allows for economies to expand, increasing returns to scale, and economies of specialization [32, 33], and it is also consistent with previous empirical research [38]. The coefficients of inflation and financial sector development do not show any significant impact on economic growth irrespective of the model specification, implying the findings cannot be meaningfully interpreted.

It has been observed that the impact and effectiveness of aid may vary depending on the level of development in recipient countries [13]. Accordingly, the study further expands the discussion on the impact of bilateral and multilateral aid on economic growth in SSA countries by grouping countries according to levels of development. Using the World Bank 2017 classification, the selected SSA countries are grouped into two categories, that is, low-income and middle-income countries. The former category includes: Benin, Burkina Faso, Chad, Gambia, Guinea, Madagascar, Malawi, Mali, Mozambique, Niger, Rwanda, Senegal, Tanzania, Togo, and Uganda; while the latter category includes: Cameroon, Congo, Ivory coast, Gabon, Ghana, Kenya, Mauritius, Mauritania, Namibia, Nigeria, South Africa, Sudan, Swaziland. Based on this classification, the study re-estimated the impact of bilateral and multilateral aid on economic growth and determined whether the impact depends on institutional quality using both difference GMM and systems GMM, and Tables 6 and 7 present the summarized findings.

The results in Table 6 indicate that the coefficients of bilateral aid and bilateral aid interacted with institutional quality are insignificant, suggesting they are not important factors of economic growth in the selected middle-income SSA countries. However, the coefficients of multilateral aid and the multilateral aid interacted with institutional quality are significant, implying that they are important factors of economic growth in the selected middle-income SSA countries. This means increasing multilateral aid by one unit would increase economic growth by 7.203 percentage points, and its effectiveness would be enhanced by 8.977 percentage points if institutional quality is improved by a single unit. Other economic growth predictors particularly in Model3

such as lagged GDP growth, gross fixed capital formation, inflation and trade openness are all significant and bear the expected theoretical signs. However, the coefficient of institutional quality bears an unexpected negative sign in the case of middle-income SSA countries.

Table 6. *Impact of bilateral and multilateral aid on economic growth in middle-income countries.*

VARIABLES	Systems GMM		
	Model1	Model2	Model3
L.GDPG	0.173***	0.156	0.131*
	(0.040)	(0.258)	(0.071)
GFCF	-0.002	0.004	0.046*
	(0.028)	(0.048)	(0.025)
POPG	-3.987	1.253	-5.422
	(5.085)	(3.126)	(3.925)
OPPEN	11.575	1.516	8.515
	(12.323)	(6.082)	(7.065)
INF	-0.042	-0.009	-0.176*
	(0.039)	(0.072)	(0.088)
M2/GDP	14.351***	11.936*	11.101**
	(4.346)	(5.577)	(4.967)
INST	-0.203	3.006	-10.035*
	(5.260)	(12.195)	(5.308)
B_AID		-0.462	
		(1.635)	
B_AID_INST		-0.613	
		(1.876)	
M_AID			7.203*
			(3.663)
M_AID_INST			8.977*
			(4.416)
Observations	247	247	247
Number of pid	13	13	13
No. of instruments	26	26	26
AR1 P-value	0.00526	0.0621	0.00698
AR2 P-value	0.00979	0.663	0.466
Sargan p-value	0.506	0.427	0.795
hansen p-value	0.991	0.985	0.993

Standard errors in parentheses; *** p<0.01; ** p<0.05; * p<0.1.

After analyzing the impact of bilateral and multilateral aid on economic growth of middle-income SSA countries, and assessing whether the impact depends on institutional quality, the same approach is employed for the case of low-income SSA countries and Table 7 presents a summary of the findings.

The results in Table 7 indicate that only the coefficients of multilateral aid and multilateral aid interacted with institutional quality are significant predictors of economic growth in low-income SSA countries. This implies that increasing multilateral aid by one unit, would increase economic growth by 1.451 percentage points, and this impact would further increase by 1.459 percentage points if there is an improvement in institutional quality by a single unit. Overall, the results in Tables 6 and 7 show that multilateral aid is an important positive factor in the economic growth of both low and middle-income SSA countries, and the impact depends on the quality of institutions existing in those countries.

Table 7. *Impact of bilateral and multilateral aid on economic growth of low-income SSA countries.*

VARIABLES	Systems GMM		
	Model1	Model2	Model3
L.GDPG	0.063	0.042	0.055
	(0.063)	(0.063)	(0.053)
GFCF	0.004	0.028*	0.019
	(0.018)	(0.013)	(0.022)
POPG	0.672	-0.831	1.217
	(0.853)	(0.757)	(1.041)
OPPEN	5.042	5.682	-2.971
	(3.914)	(4.179)	(6.850)
INF	-0.105**	-0.111**	-0.106
	(0.046)	(0.046)	(0.066)
M2/GDP	-5.629	-12.106	-10.388
	(7.173)	(9.055)	(17.303)
INST	2.148	-6.408	-3.341
	(3.010)	(5.665)	(8.562)
B_AID		0.581	
		(0.388)	
B_AID_INST		0.559	
		(0.704)	
M_AID			1.451**
			(1.084)
M_AID_INST			1.459**
			(0.951)
Observations	285	285	285
Number of pid	15	15	15
No. of instruments	26	26	26
AR1 P-value	0.00315	0.00150	0.00323
AR2 P-value	0.540	0.346	0.318
Sargan p-value	0.811	0.739	0.852
hansen p-value	0.924	0.986	0.984

Standard errors in parentheses; *** p<0.01; ** p<0.05; * p<0.1.

4. Conclusion and Recommendation

The debate among scholars on whether foreign aid impacts economic growth in recipient countries remains unresolved. Some researchers conclude that a positive relationship exists between the variables, other conclude that a negative relationship exists between these variable, and still others conclude that no significant relationship exists between these variables. The author partially attributes these inconclusive findings to estimation models that use of foreign aid as a total without specifying which form of aid has a bearing on countries' economic growth. In addition, it has been observed that the impact of foreign aid on economic growth of recipient countries depends on the quality of institutions existing in those countries; however, empirical studies testing this notion are limited. Accordingly, the study disaggregated aid into bilateral and multilateral aid and examined its impact of economic growth of SSA countries, and assessed whether the impact depends on the quality of institutions existing in those countries. The study uses a balanced panel data set of 28 SSA

countries from 1996 – 2015, and an empirical model is specified and estimated using the technique of system GMM. Due to the high level of multi-collinearity among institutional quality indicators, the study employed an institutional quality index in the estimation instead of the individual indicators.

The findings indicate that only bilateral aid has a significant impact of economic growth of SSA countries generally. However, after interacting with the institutional quality index, multilateral aid has a positive and significant impact on economic growth while bilateral aid has an insignificant impact on economic growth in these countries. Moreover, the impact of multilateral aid on economic growth in SSA countries depends on the quality of institutions existing in those countries. Even after accounting for differences in levels of economic development, only multilateral aid has a positive and significant impact on economic growth of both low and middle-income countries, and the impact in both categories of countries depends on the existence of good quality institutions. Based on these findings, the study recommends increase in foreign aid inflows particularly from multilateral sources as well as strengthening the existing institutions on the part of SSA countries if their economies are to reap growth benefits. Institutional strength can be achieved through ensuring proper control of corruption, rule of law, regulatory quality, government effectiveness, political stability, and voice and accountability.

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