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Examining the Interactive Growth Effect of Development Aid and Institutional Quality in Sub-Saharan Africa

Mehmet Balcilar [a,b,c,*], **Berkan Tokar** [a], **Godwin Olasehinde-Williams** [a]

[a] Eastern Mediterranean University, Northern Cyprus, via Mersin 10, Turkey
[b] Montpelier Business School, Montpelier, France
[c] University of Pretoria, Pretoria, South Africa

Abstract

This study analyses the interconnectivity of growth, aid and institutions in Sub-Saharan Africa. The study employs annual data on a panel of 39 countries for the period 1996-2017. The hypothesis that the growth impact of aid and institutions could be interactive was examined. The hypothesis was tested using panel data for official development assistance, aggregate and individual measures of institutional quality, and economic growth, while controlling for sub-regional differences in Southern Africa, Eastern Africa, Western Africa and Central Africa. The results indicate the following: Aid has a direct positive, and an indirect negative growth impact through its interaction with domestic institutions. The synergistic growth impact of aid and institutions is substitutive rather than complementary. The substitutive effect is most pronounced in Western Africa, followed by Eastern Africa, and then Southern Africa but lowest in Central Africa. Good quality institutions are positively correlated with growth, and the institutions that reduce rent-seeking and protect property rights are the types of institutions with the biggest growth effects.

Key words: Economic Growth, Official Development Assistance, Institutions, Sub-Saharan Africa, Panel GMM

JEL Codes: F35, F50, O43, O55

1. Introduction

In general, Sub-Saharan African (SSA) economies are resource-starved. The level of savings required to substantially increase capital investment—human and physical—for economic growth is difficult to achieve. This gap can be filled through foreign capital. However, since

* Corresponding author. E-mail: mehmet@mbalcilar.net

most SSA countries lack the kind of social, economic and political environment needed to attract foreign direct investment, the alternative source of foreign capital that can be accessible is foreign aid.

Foreign aid, also called official development assistance (ODA), refers to the transfer of resources in the form of grants and loans from three major types of donors (rich governments, private foundations and non-governmental agencies) to developing nations. ODA is often further classified into different modalities such as project-based lending, sector-wide approaches and general budget support.

Historically, the supply of foreign aid to SSA has been dominated by the Organisation of Economic Cooperation and Development (OECD) countries mainly through the Development Assistance Committee (DAC). The entry of new, non-traditional donor countries labelled 'emerging donors' such as Brazil, China, India, Korea, Malaysia, South Africa, Thailand, Turkey, some Middle Eastern countries and the Commonwealth of Independent States (CIS) have occurred over the past three decades (Chaponnière, 2009). Among these emerging donors, China stands out as the largest foreign aid provider to Africa (Woods, 2008). The creation of the Forum on China-Africa Cooperation (FOCAC) in the year 2000 firmly established China as a major aid giver to SSA. In 2018 China, through FOCAC, promised to provide as much as $60 billion in financial support to Africa.

Unsurprisingly, the increasing importance of emerging donor countries, especially China, has reopened the debate on the relevance of foreign aid. China's economic presence in Africa in recent years has renewed the debate about the nature and effects of Chinese foreign aid to Africa in particular, and the usefulness of development assistance in general. The renewed interest in the aid effectiveness literature is also tied to pressure imposed on donor countries to increase foreign aid by the founding of the Millennium Development Goals (MDGs) in 2000 (Maruta & Cavoli, 2017). More importantly, the fact that the 2030 agenda and the sustainable development goals (SDGs) are currently being proposed as an opportunity to revitalise the aid effectiveness agenda calls for further studies into the aid-growth nexus.

An examination of existing research on aid effectiveness initially shows that findings differ according to the approach used; however, micro-level studies based on cost-benefit analysis unanimously agree on the effectiveness of foreign aid (Moreira, 2005). Macro-level studies on the other hand produce ambiguous results (Moreira, 2005). This contradiction is commonly referred to as the micro-macro paradox (Mosley, 1986). At the macro-level, in

spite of the large body of literature on aid and growth, the debate is yet to be settled. Many researchers question the effectiveness of foreign aid, arguing against increasing it and clamouring for better alternatives. This group argues that aid is growth-neutral (Rajan & Subramanian, 2005; Oya, 2006; Easterly, 2007; Doucouliagos & Paldam, 2009; Dreher & Langlotz, 2017). Some have even argued that foreign aid is not only ineffective, but also growth-depressing; they claim that aid is detrimental to the institutions of the recipient countries as it strengthens corruption and dependence in recipient countries (Knack, 2001; Bobba & Powell, 2007; Djankov et al., 2008). Some researchers, however, conclude that foreign aid unconditionally causes economic growth (Clemens et al., 2012; Arndt et al., 2015). A more conservative intermediate literature position is that foreign aid spurs economic growth under some specific conditions (Burnside & Dollar, 2000).

Concerning the conditions required for foreign aid effectiveness, the quality of institutions in recipient countries has been put forward as crucial. According to Degnbol-Martinussen and Engberg-Pedersen (2003), the good quality of institutions and the efficient administrative and judicial structures of European countries significantly contributed to the success of the post-World War II Marshall Plan. However, available evidence also suggests that foreign aid is detrimental to the quality of institutions in recipient countries (Knack, 2001; Rajan & Subramanian, 2005; Djankov et al., 2008). This raises some concerns. The first is that foreign aid may harm the very institutions with the capability to make it thrive. The second is that if foreign aid is truly detrimental to institutional quality, then it may indirectly lower the growth impact of institutional quality since institutional quality is a determinant of economic growth. Thus, on the one hand, the synergistic growth impact of aid and institutional quality may be a negative one, indicating a substitutive growth impact. On the other hand, the synergistic growth impact of these two variables may be positive, indicating a complimentary growth impact.

This paper investigates the macro-level, aid-growth relationship, institutions-growth relationship and the synergistic growth effect of aid and institutions in SSA. The main objective is to determine whether the synergistic impact of ODA and institutions in SSA is complimentary or substitutive.

The key contributions of this paper are as follows; (i) Foreign aid has a direct, positive growth impact and an indirect negative growth impact through its interaction with domestic institutions. (ii) The synergistic growth impact of aid and institutions in SSA is substitutive

rather than complimentary. (iii) The substitutive effect is most pronounced in Western Africa, followed by Eastern Africa, and then Southern Africa but lowest in Central Africa. (iv) Good quality institutions are positively correlated with growth and the institutions that reduce rent seeking and protect property rights are the types of institutions with the biggest growth effects. (v) Sustained net inflow of aid can weaken domestic institutions and lower their growth impacts and the relevance of foreign aid to economic growth wanes as the quality of domestic institutions improve in the region.

The rest of this study is organised in the following manner; section 2 gives an overview of official development assistance to SSA, section 3 provides a review of relevant literature, section 4 describes the methodology adopted, section 5 outlines the results obtained and their interpretations, and section 6 presents the main conclusions.

2. Official Development Assistance in SSA

Due to the concentration of extreme poverty in SSA, the region has been the largest beneficiary of foreign aid over the years. As shown in figure 1, foreign aid to SSA has increased over the years. According to the World Development Indicators (WDI) statistics provided by the World Bank, net ODA inflow to SSA stood at $5.3 billion in 1960.

Aid inflow rose by 38% from $5.3 billion to $7.3 billion between 1960 and 1970. Over this same period, SSA rose from being the third largest aid recipient behind East Asia and Pacific, and Middle East and North Africa to become the second largest aid recipient behind only East Asia and Pacific. This era coincides with the introduction of country classification into developed and developing countries as most of SSA emerged from colonisation. During this period, the idea of tackling poverty in SSA became a major concern in the United Nations (UN) and the Bretton Woods institutions. In this era, foreign aid policies were strongly influenced by the Harrod-Domar model and the unlimited supplies of labour model by W. Arthur Lewis.

Between 1970 and 1980, net ODA inflow to SSA increased by 126% to reach $16.4 billion. SSA remained the second largest recipient of foreign aid in this era, behind Middle East and North Africa which overtook East Asia and Pacific as the biggest aid recipient worldwide. During this period, there was a major shift in the approach towards development assistance.

The focus shifted from macroeconomic growth to more social considerations such as life expectancy, infant mortality, disease control, education and income and gender equality. In this period, the UN and associated organisations argued that while the old model of development assistance resulted in significant economic growth, it had a very limited effect on social indicators. Foreign aid policies were mainly influenced by the Solow neoclassical growth model and the basic needs approach during this era.

Foreign aid to SSA rose by another 50% to $25 billion between 1980 and 1990. SSA thus became the foremost aid recipient. The works of Bhagwati (1978) and Krueger (1978) were particularly influential in conditioning foreign aid upon economic liberalisation in recipient countries.

Net ODA inflow, however, declined by 26% from $25 billion to $18 billion between 1990 and 2000, although SSA still retained its spot as the largest aid recipient. The decline in foreign aid to SSA during this period has been associated with the end of the Cold War. Bearce and Tirone (2010) argue that with the fall of the Soviet Union in 1991, the strategic motivation of donor countries to use foreign aid as a tool for containing the spread of Soviet influence was no longer strong. Donor countries had no reason to continue using aid as enticement to reject communism and thus could demand more effective use of aid (Milner & Tingley, 2013). The post-Cold War reassessment of aid brought about a close examination of foreign aid by the donor community. According to the United Nations Human Development Report (UNDP 1996: 1), 100 countries or 1.6 billion persons in the world experienced economic decline in the 1980s despite the enormous amount of foreign aid given to them. It was suggested that foreign aid might in fact be producing distorting effects on recipient economies. For example, the largest share of the United States' foreign aid went to countries that ended up as collapsed states, such as Liberia, Rwanda, Sierra-Leone, Somalia, Sudan and Zaire. Foreign aid policy during this period was strongly influenced by two lines of research. The first s the incentive compatibility and strategic ownership approach (programme ownership) which encouraged the inclusion of recipient countries in the process of foreign aid progamme design and implementation. The second is the capital mobility and the international transmission of crises approach which strongly affected the application of capital controls.

ODA inflow again surged by 130% from $18 billion to $42 billion between 2000 and 2010. SSA remained the foremost aid recipient and received approximately 53% of total aid given

worldwide. This era witnessed the advent of the Millennium Development Goals (MDGs) as a response to the failure of growth-focused poverty alleviation strategies. An international action plan to increase aid provision for tackling poverty in eight areas was formulated. The 2005-10 Paris declaration on aid effectiveness by over one hundred partner countries was also launched during this period.

Between 2010 and 2016, net ODA flow again increased by 7% from $42 billion USD to $45 billion. The largest regional share of ODA again went to SSA during this period. This era corresponds with the full emergence of China as one of the most influential aid givers in SSA.

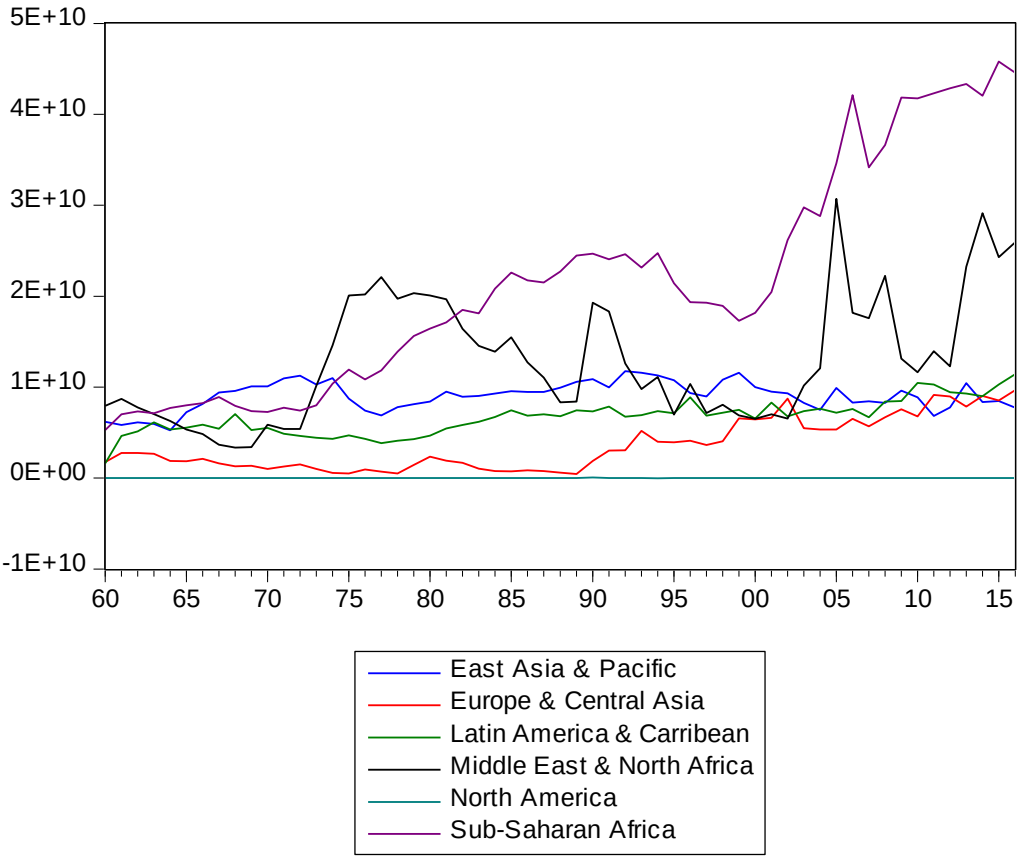

Figure 1. ODA time-series trend for different regions

3. Literature

Historically, the aid effectiveness literature has passed through various stages that are classified into first, second and third generations. Aid effectiveness research in each

generation was mainly dictated by the underlying theory, objectives, development models, data and equipment available at that historical moment (Thorbecke, 2000).

The first generation aid-growth literature of the 1960s and early 1970s revolved around the savings-investment gap. Focus was on the role of savings in economic growth. It was argued that poor countries lacked the capability to hit the level of savings required to achieve the investment rate that can spur growth (Easterly, 1999; Hjertholm et al., 2000). The theoretical basis for this savings-investment relation was the Harrod-Domar growth model. According to Hanson and Tarp (2000), the belief at the time was that aid flows increased capital stock in a one-to-one ratio, with no part of it going to consumption. Up to a point, there was a consensus that foreign aid positively impacts growth. However, it was eventually pointed out that aid might actually be displacing domestic savings (Haavelmo, 1965; Griffin & Enos, 1970).

The second generation aid-growth literature focused on the study of the direct linkage between aid and growth. Studies in this generation share common characteristics with the first generation studies with regards to the growth models used and the importance attached to capital accumulation as a source of economic growth (Vathis, 2013). Again, studies in this generation reached no consensus on the growth impacts of aid. For example, while Hanson and Tarp (2000) claim that aid drives investment, Mosley et al. (1992) argue the opposite.

The third generation aid-growth literature is characterised by the use of new data and methodologies, the augmentation of the traditional growth models with factors such as policies and institutions, and the introduction of new approaches to modelling endogeneity and non-linearity in aid analysis (Hanson & Tarp, 2000; Vathis, 2013). Like in the preceding generations, studies in this generation provide no clear-cut answer to whether aid has been effective in causing economic growth.

The aid-growth empirical literature can be classified into four groups based on findings. The first strand of literature finds that foreign aid has no significant effect on growth. It claims that aid is growth-neutral. For example, Boone (1996) concludes that aid does not significantly increase investment, neither does it benefit the poor. Rajan and Subramanian (2005) find no evidence of either a positive or a negative relationship between aid and growth. Doucouliagos and Paldam (2009) find no significant effect of aid on economic growth and conclude that aid has not been effective. Dreher and Langlotz (2017) likewise find no significant relationship between aid and economic growth.

The second strand of literature holds a more pessimistic view on aid effectiveness; it argues that aid is not only ineffective but also growth-depressing. It suggests that aid aggravates corruption, civil conflicts and dependency, and lowers domestic production in recipient countries. For example, Knack (2001) suggests that aid dependence undermines institutional quality in recipient countries by reducing accountability and encouraging corruption and rent-seeking behaviour. Djankov et al. (2008), whose findings show that aid provides a windfall of resources that induces rent-seeking behaviour similar to what is popularly known as the natural resource course, reached the same conclusion. Oya (2006) argues that donor-recipient relationships have left scarce policy space to recipient governments to formulate innovative trade, agricultural and industrial policies. Moyo (2009) argues that African countries are poor precisely because of all the aid they receive.

The third strand of literature finds that aid is unconditionally growth-enhancing. For example, Clemens et al. (2012) point out that increases in aid have been followed by increases in investment and growth, and conclude that this means that aid causes some degree of economic growth in recipient countries. Arndt et al. (2015) widen the scope of aid effectiveness literature to include proximate sources of growth, social welfare indicators and economic transformation measures. They find that the long-run cumulative effect of aid is a positive one. Galiani et al. (2016) find that aid has a positive, statistically significant and economically sizable effect on economic growth. Mekasha and Tarp (2013, 2018), using a combination of meta-analysis, funnel plots and regression-based tests, confirm the positive impact of aid on economic growth.

The final strand of literature includes those who hold the intermediate position that aid is only effective under certain conditions. Many of the studies in this category identify the quality of institutions and policies emanating from them as key to aid effectiveness. Burnside and Dollar (2000, 2004) find that aid positively affects growth in good policy environments. Collier and Dehn (2001) and Collier and Dollar (2004) reach the same conclusion. According to Durbarry, Gemmell and Greenaway (1998), Burnside and Dollar (2000), Whitaker (2006), and Abuzeid (2009), the quality of institutions is crucial in aid performance; this therefore implies that aid becomes more effective in high-quality public institutions.

4. Methodology

4.1 Data

We examined 39 Sub-Saharan African countries for the period 1996-2017 by constructing a yearly panel data set. The countries included are listed in Appendix A. Djibouti, Eritrea, Ethiopia, Mauritania, Sao-Tome and Principe, Somalia and Zimbabwe were excluded from the data set due to a lack of sufficient historical data.

Real GDP growth serves as the dependent variable. The first regressor of interest is foreign aid, which is measured through the total net official development aid given to the selected countries. The second regressor of interest is institutional quality. The six dimensions of institutional quality provided in the World Bank's Worldwide Governance Indicators (WGI) serve as our measures of institutional quality. They are: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. Furthermore, to aggregate all the six dimensions into a single index we created a composite index for institutional quality via Principal Component Analysis (PCA). This way, we were able to ensure that the individual dimensions were converted into linear combinations that account for relatively large proportions of their variance. We also introduced additional control variables suggested by neoclassical growth theory and widely used in empirical growth literature; they are initial GDP, total investment as share of GDP, population growth rate, inflation and trade openness. Data on total net official development assistance, GDP growth, initial GDP, population growth rate and trade openness comes from the World Development Indicator (http://data.worldbank.org while data on total investment as share of GDP is from the world economic outlook database (https://www.imf.org).

4.2 Model

The basic empirical model is specified as follows:

$$\Delta y_{it} = \alpha y_{it-1} + \beta' x_{it} + v_{it} \qquad (1)$$

where i denotes country, t denotes time, y_{it} is the natural logarithms of real GDP country i at time t, $\Delta y_{it} = y_{it-}y_{it-1}$ is real GDP growth, β stands for the vector of coefficients, and x_{it}

stands for the vector independent variables for each country i at time t and includes the following; (i) measures of foreign aid (ODA) and institutional quality (IQ) and their interactions. (ii) control variables; total investment as share of GDP, population growth rate, inflation and trade openness. v_{it} is the error term.

4.3 Estimation techniques

4.3.1 Panel GMM

While foreign aid may affect economic growth, it is also highly likely that the extent to which aid is extended to a country is dependent on its level of economic growth. Countries with poor growth often receive more aid either on humanitarian grounds or as a means of supplementing their meagre resources (Minoiu & Reddy, 2010). It has also been established that growth models contain endogenously determined variables. According to Glaeser et al. (2004), the variables of institutions are not exogenous, as they are highly correlated with economic development. Siddiqui and Ahmed (2013) also argue that while more investment prompts economic growth, improved economic growth may in turn spur investment. These feedback causations may lead to an endogeneity bias that can result in invalid estimates. To deal with possible endogeneity bias arising from simultaneous causality, we adopted the panel-GMM estimation technique. The GMM estimation approach is superior to conventional instrumental variable estimators in several ways. Unlike the conventional instrumental variable estimators, it is efficient in the presence of heteroskedasticity. Conventional instrumental variable estimators are prone to autocorrelation issues because of the introduction of the lagged dependent variable as a regressor. The GMM technique adequately deals with this problem. The GMM approach also provides robust outcomes for data series with time dimensions smaller than the number of cross sections (N>T), like in our case where time is equal to 22 years and the cross sections are 39.

We employed the system-GMM estimator (Arellano & Bover, 1995; Blundell & Bond, 1998) which transforms data by subtracting the mean of all future observations from the current observation (forward orthogonal deviations). It is given as:

$$W_{it+1} \equiv C_{it}\left[W_{it} - \frac{1}{T_{it}}\sum_{S>t} W_{is}\right] \quad (2)$$

The choice of the system-GMM estimator is as a result of its recorded improved efficiency gains over the first-difference estimator (Baltagi, 2008). We also adopted the more efficient two-step variant of the GMM-estimator. The lagged values of dependent and independent variables in level form serve as the instruments. The overall validity of the instruments is tested through the Sargan test of over-identifying restrictions and the Arellano-Bond AR(2) statistics are calculated to test for the presence of autocorrelation in the error terms.

4.3.2 Panel Granger causality

The Dumitrescu-Hurlin (2012) Granger causality test is employed to further detect the existence and direction of causal relationships among the variables of interest (growth, aid and institutions). This approach tests for non-causality in heterogeneous panel data models by averaging individual Granger non-causality Wald tests across cross-sections. The underlying regression equation for the test is given as:

$$y_{it} = \alpha_i + \sum_{k=1}^{K} \beta_{ik} y_{it-k} + \sum_{k=1}^{K} \gamma_{ik} x_{it-k} + \varepsilon_{it} \quad (3)$$

Where y_{it} and x_{it} are stationary series. It is assumed that x Granger causes (is a significant predictor) y if its past values affect the current value of y significantly. Differenced data for the non-stationary variables are used in the bivariate causality tests.

5. Empirical results

Table 1 presents the panel GMM regression results. The system contains 7 regression models that are variants of equation 1, with GDP growth as the dependent variable. The first column (M1) reports the regression results from model 1, when the institutional measures are aggregated into a single index (IQ), and interacted with aid (ODA). Columns 2-7 report the regression results for cases where the individual measures of institutional quality (political stability, government effectiveness, regulatory quality, rule of law, control of corruption, and voice and accountability) are interacted with aid.

All the 7 models indicate that aid by itself exerts a positive and significant impact on economic growth in SSA. The conditional marginal effect of ODA on economic growth (when IQ is zero) ranges between 0.006% and 0.036%. All the models unanimously agree

that aid on its own spurs prompt economic growth in SSA. This agrees with the findings of Clemens et al. (2012), Mekasha and Tarp (2013, 2018), Arndt et al. (2015), and Galiani et al. (2016).

With respect to institutional quality, the results show that the aggregate institutional quality index has a relatively large positive and significant conditional marginal impact on economic growth in SSA. A percentage increase in IQ results in 0.157% increase in growth (when ODA is zero). This aligns with the positions of Acemoglu et al. (2001), Rodrik et al. (2004), Acemoglu et al. (2005), and Rodrik (2005).

Furthermore, to specifically detect the individual impacts of different types of institutions on economic growth, we disaggregated the IQ variable into its sub-indices. The results show that all the 6 sub-indices (political stability, government effectiveness, regulatory quality, rule of law, control of corruption, and voice and accountability) have positive and significant conditional marginal effects on economic growth in SSA. The coefficients range between 0.054% and 0.160%. Regulatory quality, rule of law and corruption control particularly stand out as having the biggest conditional marginal impacts on growth. This indicates that these three factors are the most important institutional determinants of economic growth in SSA and suggests that institutions that reduce rent-seeking and protect property rights are the most vital to growth in SSA.

Concerning the interaction terms, the coefficients on the interaction between ODA and the overall institutional quality index and between ODA and the institutional quality sub-indices turned out to be significantly negative. The coefficients range between -0.008% and -0.002%. This is an indication that the interactive growth effect of aid and institutions is substitutive rather than complimentary. This suggests that on one hand, increased inflow of ODA lowers the efficiency of institutions, and on the other hand, aid plays an increasingly limited role in the economic growth of countries with good quality institutions.

The results from the control variables are also in line with economic theory and intuition. Initial GDP carries the expected negative sign. The coefficients range between -0.016% and -0.019%, and are all highly significant. This confirms the convergence of income across SSA as established in growth theories. The coefficients on trade openness are all positive and statistically significant; an indication that trade liberalisation stimulates growth. All the coefficients for inflation are negative and statistically significant, a confirmation that high inflation rates inhibit growth. All the coefficients for population growth are positive and

statistically significant, thus confirming that in developing regions like SSA, additional people provide the labour force required to produce goods and services. This supports the findings of Sethy and Sahoo (2015) and Tumwebaze and Ijjo (2015). All coefficients on investment are positive and highly significant, confirming the fact that capital accumulation is instrumental to economic growth in SSA. The Sargan test results indicate that the validity of the instruments used in our estimations cannot be rejected and all the estimations pass the second order autocorrelation test.

Table 1. Panel GMM estimations (Full sample)

	M1	M2	M3	M4	M5	M6	M7
Initial income	-0.019***	-0.016***	-0.018***	-0.018***	-0.019***	0.018***	-0.017***
Trade openness	0.052***	0.054***	0.049***	0.051***	0.055***	0.041***	0.041***
Inflation	-0.007**	-0.001**	-0.009**	-0.008**	-0.007**	-0.001**	-0.006*
Population growth	0.188***	0.178***	0.189***	0.176***	0.206***	0.239***	0.161***
Investment	0.021**	0.023**	0.026***	0.027***	0.020**	0.019**	0.021**
ODA	0.028**	0.018**	0.020***	0.036***	0.024***	0.006*	0.016*
IQ	0.157*						
ODA*IQ	-0.006**						
PS		0.054**					
ODA*PS		-0.002*					
GE			0.069**				
ODA*GE			-0.003**				
RQ				0.160*			
ODA*RQ				-0.008**			
RL					0.142**		
ODA*RL					-0.006*		
CC						0.109*	
ODA*CC						-0.006*	
VA							0.097*
ODA*VA							-0.003*
P-value of AR(1) test stat	0.0137	0.157	0.527	0.558	0.664	0.195	0.257
P-value of AR(2) test stat	0.0003	0.104	0.111	0.539	0.407	0.106	0.103

Notes; (1) *** Significant at the 1% level; ** Significant at the 5% level. (2) PS = political stability; GE= government effectiveness; RQ = regulatory quality; RL =rule of law; CC= corruption control; VA = voice and accountability.

The main Regression model (M1) is re-estimated for each of the 4 sub-regions that make up Sub-Saharan Africa based on the United Nations geo-scheme for Africa (Southern Africa,

Eastern Africa, Western Africa and Central Africa). Table 2 presents the regression estimates for sub-regional comparison in SSA. The conditional marginal effects of both ODA and IQ again turn out as positive and significant across the sub-regions. The interaction terms are likewise negative and significant across sub-regions. The results show that the conditional marginal impact of ODA is biggest in Eastern Africa, followed by Western Africa, then Southern Africa and lowest in Central Africa. Institutional quality has the biggest conditional marginal impact in Southern Africa, followed by Western Africa, and then Eastern Africa. The impact is again lowest in Central Africa. The interaction coefficients indicate that the substitutive effect between ODA and institutional quality is greatest in Western Africa, second largest in Eastern Africa, third largest in Southern Africa and lowest in Central Africa. The size and signs of the control variable coefficients mirror those reported in table 1. The Sargan test results again confirm the validity of the instruments while all the estimations again pass the second order autocorrelation test.

Table 2. Panel GMM estimations (SSA sub-regions)

	Southern Africa	Eastern Africa	Western Africa	Central Africa
Initial income	-0.021***	-0.024***	-0.020***	-0.021***
Trade openness	0.011*	0.029**	0.024**	0.010*
Inflation	-0.007**	-0.001**	0.008**	-0.0004*
Population growth	0.012*	0.030***	0.107***	0.213***
Investment	0.053***	0.013*	0.042***	0.021**
ODA	0.041*	0.051*	0.046**	0.011*
IQ	0.296*	0.280**	0.288**	0.052*
ODA*IQ	-0.008*	-0.012**	-0.013**	-0.0005*
P-value of AR(1) test stat	0.365	0.484	0.312	0.214
P-value of AR(2) test stat	0.346	0.224	0.313	0.310

Notes; (1) *** Significant at the 1% level; ** Significant at the 5% level. (2) PS = political stability; GE= government effectiveness; RQ = regulatory quality; RL =rule of law; CC= corruption control; VA = voice and accountability.

The Dumitrescu-Hurlin panel causality test results are reported in table 3. Significant feedback causal relations are detected between GDP growth and foreign aid, implying that GDP growth granger causes foreign aid and foreign aid granger causes GDP growth in SSA.

As for GDP growth and aggregate institutional quality index, we also find causal effects running in both directions. The same pattern of causality is retained when the individual sub-indices of institutional quality are used instead. Finally, feedback causality also exists between ODA and institutional quality (aggregate index and the sub-indices). This indicates that ODA inflow (institutional quality) is a significant predictor of institutional quality (ODA inflow) in SSA.

Table 3. Results from Panel Granger causality tests

Hypothesis	Statistic	Conclusion
Bivariate causality between GDP growth and aid		
ΔGDP→ODA	16.445***	Two-way causality between ODA and GDP
ODA→ΔGDP	7.623***	
Bivariate causality between GDP growth and institutional quality (aggregate index and sub-indices)		
ΔGDP→IQ	5.490***	Two-way causality between IQ and GDP
IQ→ΔGDP	2.219**	
ΔGDP→PS	2.602***	Two-way causality between PS and GDP
PS→ΔGDP	10.250***	
ΔGDP→GE	9.861***	Two-way causality between GE and GDP
RQ→ΔGDP	1.591**	
ΔGDP→RQ	5.376***	Two-way causality between RQ and GDP
RQ→ΔGDP	5.785***	
ΔGDP→RL	9.637***	Two-way causality between RL and GDP
RL→ΔGDP	2.681***	
ΔGDP→CC	5.248***	Two-way causality between CC and GDP
CC→ΔGDP	4.189***	
ΔGDP→VA	7.803***	Two-way causality between VA and GDP
VA→ΔGDP	4.023***	
Bivariate causality between ODA and institutional quality (aggregate index and sub-indices)		
ODA→IQ	5.227***	Two-way causality between IQ and ODA
IQ→ODA	8.379***	
ODA→PS	4.438***	Two-way causality between PS and ODA
PS→ODA	6.224***	
ODA→GE	6.046***	Two-way causality between GE and ODA
GE→ODA	6.256***	

ODA→RQ	2.425**	Two-way causality between RQ and ODA
RQ→ODA	5.547***	
ODA→RL	4.515***	Two-way causality between RL and ODA
RL→ODA	8.242***	
ODA→CC	1.210**	Two-way causality between CC and ODA
CC→ODA	6.254***	
ODA→VA	2.014**	Two-way causality between VA and ODA
VA→ODA	4.638***	

Notes; (1) *** Significant at the 1% level; ** Significant at the 5% level. (2) ΔGDP = GDP growth; PS = political stability; GE = government effectiveness; RQ = regulatory quality; RL = rule of law; CC = corruption control; VA = voice and accountability.

6. Conclusion

Numerous studies emphasize the importance of foreign aid to economic growth. While some of these studies claim that aid unconditionally prompts growth, others argue that the presence of good institutions is a prerequisite for aid effectiveness. Several other studies, however, suggest that foreign aid can be growth-neutral or even growth-depressing through its detrimental effect on the same institutions with the capability to make it effective. Our study addresses the interconnectivity of growth, aid and institutions in SSA.

The highlights of our findings are the following; (i) Foreign aid in fact has a direct positive, growth impact and an indirect negative growth impact on economic growth through its interaction with domestic institutions. (ii) The synergistic growth impact of aid and institutions in SSA is substitutive rather than complimentary. (iii) The substitutive effect is most pronounced in Western Africa, followed by Eastern Africa, and then Southern Africa but lowest in Central Africa. (iv) Good quality institutions are positively correlated with growth, and the institutions that reduce rent-seeking and protect property rights are the types of institutions with the biggest growth effects.

The major implication of our findings is that sustained net inflow of aid can weaken domestic institutions and lower their growth impacts, and that the relevance of foreign aid to economic growth wanes as the quality of domestic institutions improves in the region.

In conclusion, aid dependence is clearly a problem in the region. The resultant trade-off between aid and institutions means that it is in the interest of the recipient SSA countries to

view and treat aid programmes as temporary (short to medium term) development options. Well-defined exit strategies should be prepared well ahead of time, as failure to do so will see the recipient countries stuck in the twin challenge of aid dependence and inefficient institutions.

For long-term development, recipient SSA countries should target alternative sources of financing such as foreign direct investment through increased openness and development of well-functioning domestic financial systems with the capacity to generate resources required for long-term development. Emphasis should be placed on creating the social, economic and political environment needed to attract foreign direct investment and enhance the domestic financial systems.

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Appendix A

Country
Angola
Benin
Botswana
Burkina Faso
Burundi
Cameroon
Cabo Verde
Central African Republic
Chad
Comoros
Congo, Rep.
Congo, Dem. Rep.
Cote d'Ivoire
Equatorial Guinea
Gabon
Gambia, The
Ghana
Guinea
Guinea-Bissau
Kenya
Lesotho
Liberia
Madagascar
Malawi
Mali
Mauritius
Mozambique
Namibia
Niger
Nigeria
Rwanda
Senegal
Seychelles
Sierra Leone
South Africa
Tanzania
Togo
Uganda
Zambia