DBN Development Bank of Nigeria
...Financing Sustainable Growth

DBN JOURNAL OF ECONOMICS & SUSTAINABLE GROWTH
VOLUME 1, ISSUE 2, 2018

Foreign Aid and Sustainable Inclusive Human Development in Africa

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Abstract

Motivated by evidence that extreme poverty has been decreasing in all regions of the world with the exception of Africa, the study contributes to the literature on reinventing foreign aid by assessing if development assistance can sustain inclusive human development.

The empirical evidence is based on 53 African countries with data for the period 2005-2012 and Generalised Method of Moments. The adopted foreign aid variables include: aid for social infrastructure, aid for economic infrastructure, aid to the productive sector, aid to the multi sector, programme assistance, action on debt and humanitarian assistance.

The results reveal that whereas foreign aid improves inclusive human development in the short-run, it decreases it in the long term. Policy implications are discussed with particular emphasis on reinventing foreign aid for sustainable development in the post-2015 development agenda.

***JEL Classification*:** B20; F35; F50; O10; O55
***Keywords*:** Foreign Aid; Sustainable Development; Africa

1. Introduction

This study investigates the role of foreign aid in sustaining inclusive human development in Africa. Three main reasons motive the inquiry, notably: (i) increasing extreme poverty levels in Africa; (ii) the policy relevance of sustainable development in the post-2015 development agenda and the (iii) gaps in the foreign aid literature.

First, on the growing extreme poverty levels in Africa, a World Bank report on the Millennium Development Goals (MDGs) has shown that extreme poverty has been decreasing in all regions of the world with the exception of Africa, where about 45% of countries in Sub-Saharan Africa (SSA) were substantially off-track from achieving the MDG extreme poverty target (World Bank, 2015). This worrisome statistics comes against the backdrop of SSA experiencing more than two decades of growth resurgence that began in the mid 1990s (Fosu, 2015). The corresponding slow rate of poverty reduction and increasing inequality in Africa have motivated a rising stream of literature devoted to, among others: eliciting paradigm shifts that are essential to comprehending the poverty tragedy of Africa (see Kuada, 2015) and investigating how foreign aid can be reinvented to address the underlying issues (see Jones & Tarp, 2015; Simpasa et al., 2015; Jones et al., 2015).

Second, the policy relevance of the inquiry is consistent with the post-2015 agenda on sustainable development, which clearly articulates the need to maintain current inclusive development trends while reversing non-inclusive development tendencies. The situation of SSA falls within the latter framework.

Third, the inquiry addresses an important gap in the literature: the absence of a study that assesses if foreign aid can sustain inclusive human development. In essence, by focusing on the incidence of development assistance on sustainable inclusive human development, the study steers clear of existing literature that has focused on the effect of foreign aid on development

outcomes. The main strands of the highlighted literature are worth articulating.

On the one hand, there has been a stream of both qualitative and quantitative literature on the need to reinvent foreign aid for more effective development outcomes (Easterly, 2008). This branch of the literature includes, *inter alia*: the experiment to rooting-out poverty by Sachs; the cost effectiveness the International Monetary Fund (IMF) and World Bank Poverty Reduction Strategy interventions' (see Banerjee & He, 2008); Randomised Control Trials (Duflo & Kremer, 2008); the need for evaluations that are more rigorous (Pritchett, 2008); enhanced articulation on 'searching for solutions' as opposed to 'planning for solutions' (Easterly, 2006); intensification, amputation and 'policy change'-oriented reforms (see Pritchett & Woolcook, 2008); new global initiatives (see Radelet & Levine, 2008); Advanced Purchase Commitment (Kremer, 2008) and 'aid vouchers' for incentives in competitive/better aid service delivery (Easterly, 2002, 2008).

On the other hand, the debate on the role of foreign aid has remained intense in recent African development literature. There are optimistic positions that development assistance can be effective, contingent on the policy environment and channels of transmission (see Asiedu, 2014; Kargbo & Sen, 2014; Gyimah-Brempong & Racine, 2014). Conversely, there are also growing pessimistic stances on the effectiveness of foreign aid (Titumir & Kamal, 2013; Monni & Spaventa, 2013; Wamboye et al., 2013; Marglin, 2013; Obeng-Odoom, 2013; Ghosh, 2013; Krause, 2013; Banuri, 2013).

This paper reconciles the conflicting strands of the debate by positioning its inquiry on the concern of whether foreign aid can sustain inclusive human development. The findings reveal that whereas foreign aid improves inclusive human development in the short-run, it decreases it in the long term. The rest of the study is organised as follows. We briefly discuss the theoretical

underpinnings and motivation for reinventing foreign aid in Section 2. The data and methodology are covered in Section 3. Section 4 presents and discusses the results while Section 5 concludes.

2. Theoretical underpinnings and reinvention of foreign aid

The theoretical basis connecting development assistance mechanisms to inclusive development in developing nations is founded on two principal theoretical perspectives which have been established to: elucidate the poverty tragedy of Africa on the one hand and on the other hand, the effectiveness of development assistance (see Asongu & Nwachukwu, 2016a).

First, according to Kuada (2015), there is need for a paradigm overhaul in order to understand why extreme poverty is persisting in Africa. Kuada has proposed a fundamental shift to 'soft economics' (or human capability development) from strong economics (or structural adjustment policies) in order to understand extreme poverty trends in Africa. The suggested paradigm shift is broadly in line with a recent theoretical foreign aid proposition by Asongu and Jellal (2016), which argues that, in order to enhance economic growth and inclusive development, development assistance should be channelled via private investment mechanisms so as to reduce the taxation burden on the private sector of African countries. Furthermore, the paradigm shift of Kuada (2015) for understanding exclusive growth, poverty trends and low employment in Africa is in accordance with a recent strand of African development literature that has reacted to the failure of many countries on the continent to achieve the MDG extreme poverty target. The corresponding literature has documented channels by which development assistance can be tailored in order to enhance poverty alleviation, inclusive growth and employment (see Simpasa et al., 2015; Jones & Tarp, 2015; Jones et al., 2015; Page & Shimeles, 2015; Page & Söderbom, 2015).

Second, it is relevant to engage why a reinvention of development assistance for inclusive development is important in contemporary development literature. In essence, calls for the overhaul of development assistance for inclusive human development are consistent with a recent stream of literature on the need to use foreign aid to chart the course of development in poor countries in perspective of Piketty, and not in the view of Kuznets. Accordingly, about 200 recently published papers have been surveyed by Asongu (2016) to present a case for reinventing foreign aid for inclusive and sustainable development. The main emphasis of the survey is articulated on the argument that foreign aid should not chart developing countries towards industrialisation in the perspective of Kuznets but in the view of Piketty. The author argues that Kuznets' perspective is no longer adapted to 21st century development because, over the past decades, many countries have not achieved inclusive development with growing industrialisation. Moreover, proposals of the author are deeply rooted in inclusive development concerns surrounding the post-2015 sustainable development agenda.

3. Data and Methodology

3. 1 Data

The study assesses a panel of 53 African countries with data from three main sources, namely, the: (i) World Bank Development Indicators, (ii) United Nations Development Program (UNDP) and (iii) Organisation of Economic Co-operation and Development (OECD). The sample is for the period 2005-2012 because of the need to limit over-identification and instrument proliferation that are associated with the Generalised Method of Moments (GMM). The same concerns have been used to justify the choice of the periodicity in recent literature on the nexus between foreign aid and inclusive development (see Asongu & Nwachukwu, 2016a). To put this point into perspective: (i) a preliminary assessment with a higher value of T (number of

years in a cross section) biases estimated results due to instrument proliferation and (ii) a T that of at most 8 enables us to have post-estimation instruments that are equal to or less than the number of cross sections (see Section 4).

The adopted dependent variable is the inequality adjusted human development index (IHDI). This variable has been employed in recent inclusive African human development literature (Asongu et al., 2015). The Human Development Index (HDI) accounts for the national mean of achievements in three principal categories, namely: (i) health and long life, (ii) knowledge and (iii) decent living standards. Apart from controlling for gains in areas of health, education and income, the IHDI goes a step further to account for the distribution of these achievements among the population by controlling for the average value of each dimension with respect to inequality.

As disclosed in Table 1, several aid independent variables are considered in order to control for heterogeneity in foreign aid. In essence, recent foreign aid literature has articulated the need to account for differences in types and sectors of development assistance in order to have a more comprehensive perspective of the role of foreign aid in development outcomes (Asiedu & Nandwa, 2007; Quartey & Afful-Mensah, 2014). The adopted foreign aid variables include: aid for social infrastructure, aid for economic infrastructure, aid to the productive sector, aid to the multi sector, programme assistance, action on debt and humanitarian assistance. Given that we have many aid variables, they are also used complementarily as control variables. To these, we add two more control variables that are likely to influence the outcome variable[1]. On the one hand, GDP per capita is a natural control variable because it is part of the HDI. On the other hand, globalisation within the

[1] It important to note that in order to avoid instrument proliferation and limit over-identification, some recent studies based on GMM have not included control variables (see Osabuohien & Efobi, 2013, p. 303).

framework of trade openness has been documented to affect inclusive development (see Stiglitz, 2007; Chang, 2008; Mshomba, 2011; Asongu, 2013).

The summary statistics disclosed in Table 1 indicates that the variables are comparable from the perspective of means. Moreover, from corresponding variations, we can expect that reasonable nexuses would emerge. Accordingly, the development assistance variables are presented in logarithms in order to ensure the comparability of standard deviations and means. The foreign aid indicators represent disbursements of multilateral aid from the Development Assistance Committee (DAC) countries.

Table 1: Definition of variables, sources and Summary statistics

	Definitions/ Sources	Mean	S.D	Min	Max	Obs
Inclusive development	Inequality Adjusted Human Development Index /UNDP, World Bank WDI.	0.486	0.130	0.129	0.809	351
Aid to Social Infrastructure	Foreign aid directed at human development purposes such as education, water supply and sanitation (log)/OECD.	2.012	0.622	0.113	3.077	424
Aid to Economic Infrastructure	Foreign aid directed at infrastructures like transport, communication and energy (log)/OECD.	0.812	1.201	-2.000	3.067	415
Aid to Productive sector	Foreign aid directed at the productive sector like agriculture, industry, mining, construction, trade and tourism(log)/OECD.	1.017	0.830	-1.699	2.741	424
Aid to Multi Sector	Foreign aid directed at other sectorial development like rural development (log)/OECD.	1.023	0.682	-1.699	2.541	424
Programme Assistance	Foreign aid directed towards program related assistance like food aid, disaster and war (log)/OECD.	1.116	0.924	-2.000	3.103	350
Action on debt	Aid directed towards debt relief (log)/OECD.	0.535	1.310	-2.000	4.045	321
Humanitarian Assistance	Aid allocated for Humanitarian Assistance (log)/OECD	0.894	1.004	-2.000	3.038	400
GDP per capita	Gross Domestic Product Per Capita (Log)/WBDI	2.949	0.501	2.157	4.142	416
Trade	Imports plus Exports as a percentage of GDP (Log)/WBDI.	4.298	0.413	3.111	5.368	396

S.D: Standard Deviation. Min: Minimum. Max: Maximum. Obs: Observations. Log: logarithm. OECD : Organisation for Economic Co-operation & Development. UNDP: United Nations Development Program. WDI: World Bank Development Indicators.

3.2 Methodology

3.2.1Estimation technique

The choice of the GMM estimation approach is motivated by five main factors: whereas the first-two are basic conditions for the use of the GMM technique, the last-three are corresponding advantages. (1) The estimation technique enables us to account for persistence in inclusive human development. In essence, the correlation between inclusive human development and its corresponding first lag is 0.9876, which is higher than the 0.800 threshold required to ascertain that an outcome variable is persistent. (2) The N>T (or 53>8) criterion that is required for the GMM strategy is met because the number of cross sections is higher than the number of time series in each cross section. (3) The estimation approach controls for the potential endogeneity by accounting for: (i) simultaneity in all regressors using instrumented regressors and (ii) the unobserved heterogeneity with time invariant omitted variables. (4) Cross-country differences are taken into account in the regressions. (5) As shown by Bond et al.(2001), biases corresponding to the *difference* GMM estimation strategy (Arellano & Bond, 1991) are corrected with the *system* GMM approach (Arellano & Bond, 1995; Blundell & Bond, 1998).

Within the framework of this study, the Roodman (2009ab) extension of Arelllano and Bover (1995) is adopted. The estimation approach that employs forward orthogonal deviations instead of first differences has been documented to restrict over-identification and/or limit instrument proliferation (see Love & Zicchino, 2006; Baltagi, 2008; Asongu & De Moor, 2016). In the specification, a *two-step* procedure is adopted in place of a *one-step* process because it accounts for heteroscedasticity.

The following equations in levels (1) and first difference (2) summarize the standard *system* GMM estimation procedure, where the independent variables of interest are specified to be one lag non-contemporary.

$$IHD_{i,t} = \sigma_0 + \sigma_1 IHD_{i,t-\tau} + \sigma_2 Aid_{i,t-1} + \sigma_3 IHDAid_{i,t-1} + \sum_{h=1}^{k} \delta_h W_{h,i,t-\tau} + \eta_i + \xi_t + \varepsilon_{i,t}$$

(1)

$$IHD_{i,t} - IHD_{i,t-\tau} = \sigma_1 (IHD_{i,t-\tau} - IHD_{i,t-2\tau}) + \sigma_2 (Aid_{i,t-\tau} - Aid_{i,t-2\tau}) + \sigma_3 (IHDAid_{i,t-\tau} - IHDAid_{i,t-2\tau}) + \sum_{h=1}^{k} \delta_h (W_{h,i,t-\tau} - W_{h,i,t-2\tau}) + (\xi_t - \xi_{t-\tau}) + \varepsilon_{i,t-\tau}$$

(2)

Where: $IHD_{i,t}$ is inclusive human development in country i at period t; $IHD_{i,t-1}$ is inclusive human development in country i at period $t-1$; $Aid_{i,t-1}$ is foreign aid (which includes 'aid for social infrastructure', 'aid for economic infrastructure', 'aid to the productive sector', 'aid to the multi sector', 'programme assistance', 'action on debt' and 'humanitarian assistance') of country i at period $t-1$; σ_0 is a constant; τ represents the coefficient of auto-regression; W is the vector of control variables , η_i is the country-specific effect, ξ_t is the time-specific constant and $\varepsilon_{i,t}$ the error term.

3.2.2 Identification, simultaneity and exclusion restrictions

In a GMM specification, it is important to discuss issues surrounding exclusion restrictions, simultaneity and identification. In accordance with recent studies (see Dewan & Ramaprasad, 2014; Asongu & Nwachukwu, 2016c), all independent variables are acknowledged as suspected endogenous or predetermined whereas only time-invariant omitted indicators are acknowledged to exhibit strict exogeneity. Accordingly, it is not feasible for time-invariant omitted indicators to become endogenous in first-difference (see Roodman, 2009b). Hence, the approach for treating *ivstyle* (time invariant omitted variables) is 'iv(years, eq(diff))' while the *gmmstyle* is used for suspected endogenous or predetermined variables.

The concern about simultaneity is addressed with lagged regressors that are employed as instruments for forward differenced variables. In essence, Helmet transformations are employed to eliminate fixed impacts that are probable to be linked to error terms and potentially bias estimated

relationships (Arellano & Bover, 1995; Love & Zicchino, 2006). The underlying transformations entail the use of forward mean-differences of indicators. This is contrary to the process of subtracting previous observations from contemporary ones (see Roodman, 2009b, p.104). Accordingly, the average of future observations is deducted from previous observations. This transformation enables orthogonal and parallel conditions between lagged values and forward-differenced variables. Irrespective of the number of lags, we avoid data loss by computing the underlying transformations for all observations, except for the last for each cross section: "*And because lagged observations do not enter the formula, they are valid as instruments*" (Roodman (2009b, p. 104).

In the light of the above clarifications, inclusive human development is affected by the time invariant omitted indicators exclusively via suspected endogenous or predetermined variables. Moreover, the statistical validity of the exclusion restriction is investigated with the Difference in Hansen Test (DHT) for the validity of instruments. In essence, for time invariant omitted variables to elucidate inclusive human development exclusively through the endogenous explaining indicators, the null hypothesis of the test should not be rejected. Accordingly, while with an instrumental variable (IV) estimation technique, the failure to accept the alternative hypothesis of the Sargan Overidentifying Restrictions (OIR) test implies that the instruments elucidate the dependent variable exclusively through the suspected endogenous variables (see Beck et al., 2013; Asongu & Nwachukwu, 2016d), with the current GMM technique that employs forward orthogonal deviations, the information criterion used to examine if time invariant omitted variables exhibit strict exogeneity is the DHT. Therefore, based on these clarifications, the hypothesis of exclusive restriction is confirmed if the null hypothesis of the DHT linked with IV(year, eq(diff)) is not rejected.

4. Empirical Results

4.1 Presentation of Results

Table 2 and Table 3 respectively present the empirical results. Whereas Table 2 discloses findings related to four aid indicators, Table 3 provides findings connected to three aid variables. Each foreign aid variable is connected to two specifications that are contingent on varying conditioning information sets in order to address the issue of instrument proliferation. In essence, in the first specifications, the numbers of instruments are lower than the number of countries whereas in the second specifications, the numbers of instruments are equal to the number of cross sections. It follows that increasing the number of control variables also increases the corresponding number of post-estimation instruments. Not all alternative foreign aid variables are included as control variables because of concerns about high degrees of substitution that are highlighted in bold in the correlation matrix in the Appendix.

Four principal information criteria are employed to examine the validity of the GMM model with forward orthogonal deviations[2]. The findings are discussed in terms of marginal and net effects of foreign aid. For example in the second column of Table 2, the conditional impact of 'aid to social infrastructure' is -0.141 whereas the net effect from the role of 'aid to social infrastructure' in the persistence of inclusive development is 0.981 (1.265 + [-0.141×2.012]), where 2.012 is the mean value of 'aid to social infrastructure' and 1.265 corresponds to the estimated lagged value of inclusive human development. Whereas a positive marginal effect reflects increasing returns from foreign aid, a positive net effect from the association between 'aid to social

[2] "*First, the null hypothesis of the second-order Arellano and Bond autocorrelation test (AR(2)) in difference for the absence of autocorrelation in the residuals should not be rejected. Second the Sargan and Hansen overidentification restrictions (OIR) tests should not be significant because their null hypotheses are the positions that instruments are valid or not correlated with the error terms. In essence, while the Sargan OIR test is not robust but not weakened by instruments, the Hansen OIR is robust but weakened by instruments. In order to restrict identification or limit the proliferation of instruments, we have ensured that instruments are lower than the number of cross-sections in most specifications. Third, the Difference in Hansen Test (DHT) for exogeneity of instruments is also employed to assess the validity of results from the Hansen OIR test. Fourth, a Fischer test for the joint validity of estimated coefficients is also provided*" (Asongu & De Moor, 2016, p.9)

infrastructure' and the lagged inclusive development variable implies that foreign aid enhances the persistence (or sustainability) of inclusive human development. Furthermore, given the negative marginal effects, in the long term, the threshold at which 'aid to social infrastructure' interacts with the lagged inclusive human development to have an overall negative effect on inclusive human development is 8.971(1.265/0.141).

The followings can be established from Tables 2-3. First, while there are negative marginal effects from five of the seven sets of specifications, corresponding net effects are positive. This implies that whereas foreign aid can be used to sustain inclusive human development, such sustainability can be limited at certain thresholds of foreign aid in the long term. A direct implication is that while foreign aid is important in consolidating inclusive human development in the post-2015 development agenda, recipient nations must concurrently works towards less dependence on development assistance. The foreign aid variables which have significant net effects when complemented with persisting inclusive human development are: 'aid for social infrastructure', 'aid for economic infrastructure', 'aid to the productive sector', 'aid to the multi sector' and 'humanitarian assistance'. Conversely, the interactions of 'programme assistance' and 'action on debt' with the lagged inclusive human development do not lead to significant net effects (see Table 3).

Most of the significant control variables have the expected signs. For instance the alternative aid indicators used as control variables have a positive effect on inclusive human development (see Asongu & Nwachukwu, 2016a). The negative effect of GDP per capita on the outcome variable is traceable to the fact that GDP per capita is not adjusted for inequality. Accordingly, had we adjusted the variable for inequality, the effect on the outcome variable would have been positive because the dependent variable is also adjusted for inequality. It is also interesting note that the negative sign from GDP per

capita is consistent with stylized facts in the perspective that despite over two decades of growth resurgence in Africa (Fosu, 2015a), inequality (Blas, 2014) and extreme poverty (World Bank, 2015) have been increasing in the continent.

Table 2: Social Infrastructure, Economic Infrastructure, Productive Sector and Multi Sector

	Dependent Variable: Inequality Adjusted Inclusive Human Development							
	Social Infrastructure (SocInfra)		Economic Infrastructure (EcoInfra)		Productive Sector (ProdSect)		Multi Sector (MultiSect)	
IHDI (-1)	**1.265*** (0.000)**	**1.177*** (0.000)**	**1.021*** (0.000)**	**1.075*** (0.000)**	**1.157*** (0.000)**	**1.183*** (0.000)**	**1.015*** (0.000)**	**1.109*** (0.000)**
Constant	**-0.137** (0.042)**	-0.056 (0.173)	**-0.004 (0.585)**	**-0.040*** (0.006)**	**-0.066*** (0.006)**	**-0.066*** (0.002)**	-0.001 (0.829)	-0.016 (0.215)
SocInfra(Ln)	**0.071** (0.014)**	**0.035** (0.032)**	**---**	---	---	---	---	---
EconInfra(Ln)	---	---	**0.007** (0.014)**	**0.016*** (0.000)**	---	---	---	---
ProdSect(Ln)	---	---	---	---	**0.041*** (0.000)**	**0.038*** (0.000)**	---	---
MultiSect(Ln)	---	---	---	---	---	---	0.009 (0.157)	**0.020*** (0.000)**
SocInfra(Ln) ×IHDI(-1)	**-0.141** (0.015)**	**-0.073* (0.055)**	---	---	---	---	---	---
EconInfra(Ln) ×IHDI(-1)	---	---	**-0.015** (0.028)**	**-0.035*** (0.000)**	---	---	---	---
ProdSect(Ln) ×IHDI(-1)	---	---	---	---	**-0.092*** (0.001)**	**-0.085*** (0.000)**	---	---
MultiSect(Ln) ×IHDI(-1)	---	---	---	---	---	---	-0.020 (0.134)	**-0.046*** (0.000)**
Program Assistance(Ln)	-0.001 (0.610)	-0.0005 (0.431)	**0.0007** (0.023)**	-0.00004 (0.933)	**-0.092*** (0.001)**	0.0008 (0.174)	**0.001** (0.011)**	0.0001 (0.654)
Action on Debt(Ln)	**0.003* (0.052)**	**0.002*** (0.000)**	**0.0007* (0.053)**	**0.0009*** (0.009)**	0.0003 (0.459)	**0.0009** (0.047)**	**0.0006** (0.011)**	**0.001*** (0.005)**
Humanitarian Assistance(Ln)	0.003 (0.149)	**0.003*** (0.007)**	-0.0008 (0.435)	**0.003*** (0.006)**	0.00004 (0.972)	**0.003*** (0.000)**	-0.001 (0.100)	**0.003*** (0.000)**
GDP per capita (Ln)	---	**-0.012*** (0.009)**	---	-0.001 (0.508)	---	**-0.010* (0.071)**	---	**-0.017*** (0.000)**
Trade(Ln)	---	0.002 (0.500)	---	0.003 (0.226)	---	0.003 (0.118)	---	**0.004** (0.024)**
Net Effects	0.981	1.030	1.008	1.046	1.198	1.063	na	1.061
AR(1)	**(0.108)**	**(0.125)**	**(0.113)**	**(0.130)**	(0.043)	(0.064)	**(0.123)**	**(0.137)**
AR(2)	**(0.449)**	**(0.348)**	**(0.374)**	**(0.327)**	**(0.289)**	**(0.269)**	**(0.230)**	**(0.518)**
Sargan OIR	(0.007)	(0.003)	**(0.229)**	(0.003)	**(0.577)**	(0.017)	**(0.255)**	(0.001)
Hansen OIR	**(0.825)**	**(0.951)**	**(0.663)**	**(0.666)**	**(0.763)**	**(0.857)**	**(0.542)**	**(0.417)**
DHT for instruments								
(a)Instruments in levels								
H excluding group	**(0.593)**	**(0.782)**	**(0.477)**	**(0.551)**	**(0.449)**	**(0.628)**	**(0.777)**	**(0.335)**
Dif(null, H=exogenous)	**(0.795)**	**(0.911)**	**(0.658)**	**(0.620)**	**(0.800)**	**(0.828)**	**(0.344)**	**(0.469)**
(b) IV (years, eq (diff))								
H excluding group	**(0.900)**	**(0.811)**	**(0.878)**	**(0.538)**	**(0.855)**	**(0.722)**	**(0.798)**	**(0.642)**
Dif(null, H=exogenous)	**(0.437)**	**(0.970)**	**(0.242)**	**(0.696)**	**(0.400)**	**(0.832)**	**(0.200)**	**(0.157)**
Fisher	**1217.43***	**381245***	**27369***	**52792***	**1133.49***	**228894***	**12646***	**50732***
Instruments	29	37	29	37	29	37	29	37
Countries	38	37	38	37	38	37	38	37
Observations	187	176	187	176	187	176	187	176

***,**,*: significance levels at 1%, 5% and 10% respectively. Econ: Economic. Prog: Programme. Hum: Humanitarian. DHT: Difference in Hansen Test for Exogeneity of Instruments Subsets. Dif: Difference. OIR: Over-identifying Restrictions Test. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Wald statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(1) & AR(2) tests and; b) the validity of the instruments in the Sargan OIR test.

Table 3: Program Assistance, Action on Debt and Humanitarian Assistance

	Dependent Variable: Inequality Adjusted Inclusive Human Development					
	Program Assistance (ProgAssis)		Action on Debt (ActionDebt)		Humanitarian Assistance (HumanAssis)	
IHDI (-1)	**0.997*** **	**1.042*** **	**0.979*** **	**1.051*** **	**0.993*** **	**1.074*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Constant	0.002	-0.018	0.006	-0.009	-0.003	**-0.020***
	(0.708)	(0.214)	(0.183)	(0.642)	(0.819)	**(0.085)**
ProgAssis(Ln)	0.001	-0.003	**0.0007***	0.0002	**0.001*** **	**0.001*** **
	(0.737)	(0.439)	**(0.064)**	(0.651)	**(0.006)**	**(0.008)**
ActionDebt(Ln)	**0.0007** **	**0.002*** **	0.002	0.006	**0.001** **	**0.001*** **
	(0.036)	**(0.000)**	(0.317)	(0.124)	**(0.011)**	**(0.002)**
HumanAssis(Ln)	-0.0009	**0.003*** **	**-0.002** **	**0.001** **	0.005	**0.016*** **
	(0.391)	**(0.000)**	**(0.011)**	**(0.028)**	(0.372)	**(0.000)**
ProgAssis(Ln) ×IHDI(-1)	-0.001	0.006	---	---	---	---
	(0.895)	(0.430)				
ActionDebt(Ln) ×IHDI(-1)	---	---	-0.003	-0.012	---	---
			(0.497)	(0.200)		
HumanAssis(Ln) ×IHDI(-1)	---	---	---	---	-0.014	**-0.036*** **
					(0.286)	**(0.000)**
SocInfra(Ln)	0.001	**0.005*** **	**0.003***	**0.003***	**0.004** **	**0.005*** **
	(0.240)	**(0.002)**	**(0.064)**	**(0.064)**	**(0.040)**	**(0.000)**
GDP per capita (Ln)	---	**-0.012** **	---	**-0.016** **	---	**-0.009*** **
		(0.015)		**(0.018)**		**(0.001)**
Trade(Ln)	---	**0.005*** **	---	**0.006*** **	---	0.0004
		(0.002)		**(0.001)**		(0.799)
Net Effects	na	na	na	na	na	1.041
AR(1)	**(0.117)**	**(0.130)**	**(0.116)**	**(0.130)**	**(0.112)**	**(0.118)**
AR(2)	**(0.413)**	**(0.200)**	**(0.571)**	**(0.274)**	**(0.446)**	**(0.406)**
Sargan OIR	**(0.221)**	(0.001)	**(0.235)**	(0.001)	**(0.160)**	(0.000)
Hansen OIR	**(0.619)**	**(0.499)**	**(0.405)**	**(0.370)**	**(0.393)**	**(0.565)**
DHT for instruments						
(a)Instruments in levels						
H excluding group	**(0.719)**	**(0.912)**	**(0.171)**	**(0.801)**	**(0.567)**	**(0.766)**
Dif(null, H=exogenous)	**(0.456)**	**(0.229)**	**(0.626)**	**(0.182)**	**(0.293)**	**(0.371)**
(b) IV (years, eq (diff))						
H excluding group	**(0.607)**	**(0.605)**	**(0.548)**	**(0.650)**	**(0.555)**	**(0.772)**
Dif(null, H=exogenous)	**(0.481)**	**(0.283)**	**(0.248)**	**(0.114)**	**(0.229)**	**(0.191)**
Fisher	**3911.26*** **	**466589*** **	**3065.90*** **	**43683.24*** **	**2796.05*** **	**254509.89*** **
Instruments	29	37	29	37	29	37
Countries	38	37	38	37	38	37
Observations	187	176	187	176	187	176

***,**,*: significance levels at 1%, 5% and 10% respectively. Econ: Economic. Prog: Programme. Hum: Humanitarian. DHT: Difference in Hansen Test for Exogeneity of Instruments Subsets. Dif: Difference. OIR: Over-identifying Restrictions Test. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Wald statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(1) & AR(2) tests and; b) the validity of the instruments in the Sargan OIR test.

4.2 Robustness checks: computation of short term and long term effects

In order to ascertain the findings established in Tables 2-3, we engage robustness checks by computing short- and long-term effects. Hence we replicate the analysis without interactive regressions and compute short-term as well as long-run impacts. Whereas the short term impact corresponds to the estimated foreign aid coefficient (say, β), the related long term impact is $\frac{\beta}{(1-\delta)}$, where δ corresponds to the estimated lagged coefficient of the human development index. The specifications are tailored to avoid concerns

of multicollineaity identified in the correlation matrix (see the appendix). From the findings, with the exceptions of 'aid for economic infrastructure' and 'aid to the production sector' for which long term effects are not apparent, the long run impacts from the other aid indicators are negative (for the most part), while their corresponding short-term effects are positive. These findings confirm previous results from Tables 2-3 that foreign aid can only sustain inclusive human development in the short term.

Table 4: Direct assessment of short- and long-effect without interactions

	Dependent Variable: Inequality Adjusted Inclusive Human Development							
	Panel A: Short term effects							
IHDI (-1)	**0.986*** (0.000)**	**1.038*** (0.000)**	**0.999*** (0.000)**	**1.052*** (0.000)**	**0.989*** (0.000)**	**1.046*** (0.000)**	**0.993*** (0.000)**	**1.058*** (0.000)**
Constant	0.004 (0.400)	-0.029 (0.109)	0.008 (0.283)	-0.018 (0.257)	0.007 (0.389)	-0.021 (0.166)	0.009 (0.180)	-0.023 (0.126)
SocInfra(Ln)	0.002 (0.195)	**0.005** (0.016)**	---	---	---	---	---	---
EconInfra(Ln)	---	---	0.0008 (0.301)	0.0005 (0.387)	---	---	---	---
ProdSect(Ln)	---	---	---	---	**0.002*** (0.008)**	0.0009 (0.364)	---	---
MultiSect(Ln)	---	---	---	---	---	---	-0.0003 (0.757)	0.001 (0.296)
Program Assistance(Ln)	**0.0008* (0.058)**	0.0007 (0.237)	0.0005 (0.244)	0.0007 (0.178)	0.0009 (0.100)	**0.001*** (0.003)**	0.0006 (0.103)	0.0006 (0.178)
Action on Debt(Ln)	**0.0007* (0.073)**	**0.002*** (0.000)**	0.0004 (0.323)	**0.001*** (0.004)**	**0.0008** (0.041)**	**0.002*** (0.000)**	0.0004 (0.343)	**0.001** (0.031)**
Humanitarian Assistance(Ln)	-0.001 (0.210)	**0.003*** (0.000)**	-0.001 (0.222)	**0.004*** (0.000)**	-0.001 (0.306)	**0.004*** (0.000)**	-0.001 (0.103)	**0.003*** (0.000)**
GDP per capita (Ln)	---	-0.004 (0.350)	---	**-0.008** (0.046)**	---	-0.006 (0.269)	---	**-0.009* (0.087)**
Trade(Ln)	---	0.003 (0.103)	---	**0.004** (0.042)**	---	0.003 (0.101)	---	**0.005*** (0.000)**
	Panel B: Long term effects							
SocInfra(Ln)	na	-0.131	---	---	---	---	---	---
EconInfra(Ln)	---	---	na	na	---	---	---	---
ProdSect(Ln)	---	---	---	---	0.181	na	---	---
MultiSect(Ln)	---	---	---	---	---	---	na	na
Program Assistance(Ln)	0.0571	na	na	na	---	-0.021	na	na
Action on Debt(Ln)	0.0500	-0.052	na	-0.019	0.072	-0.043	na	-0.017
Humanitarian Assistance(Ln)	na	-0.078	na	-0.076	---	-0.086	na	-0.051
AR(1)	**(0.117)**	**(0.129)**	**(0.114)**	**(0.128)**	(0.096)	**(0.101)**	**(0.119)**	**(0.133)**
AR(2)	**(0.784)**	**(0.261)**	**(0.516)**	**(0.296)**	**(0.569)**	**(0.316)**	**(0.918)**	**(0.303)**
Sargan OIR	**(0.232)**	(0.000)	**(0.143)**	(0.000)	(0.098)	(0.000)	**(0.243)**	(0.000)
Hansen OIR	**(0.441)**	**(0.669)**	**(0.497)**	**(0.674)**	**(0.279)**	**(0.410)**	**(0.364)**	**(0.469)**
DHT for instruments (a)Instruments in levels H excluding group	**(0.650)**	**(0.826)**	**(0.688)**	**(0.437)**	**(0.587)**	**(0.346)**	**(0.707)**	**(0.336)**
Dif(null, H=exogenous) (b) IV (years, eq (diff))	**(0.303)**	**(0.450)**	**(0.341)**	**(0.705)**	**(0.180)**	**(0.447)**	**(0.214)**	**(0.530)**

H excluding group	**(0.311)**	**(0.494)**	**(0.619)**	**(0.685)**	**(0.368)**	**(0.674)**	**(0.707)**	**(0.804)**
Dif(null, H=exogenous)	**(0.565)**	**(0.755)**	**(0.317)**	**(0.464)**	**(0.249)**	**(0.147)**	**(0.114)**	**(0.115)**
Fisher	**1835.8*** **	**10657*** **	**1611.0*** **	**7088.2*** **	**2033.4*** **	**6274.2*** **	**2312*** **	**9347*** **
Instruments	25	33	25	33	25	33	25	33
Countries	38	37	38	37	38	37	38	37
Observations	187	176	187	176	187	176	187	176

***,**,*: significance levels at 1%, 5% and 10% respectively. Econ: Economic. Prog: Programme. Hum: Humanitarian. DHT: Difference in Hansen Test for Exogeneity of Instruments Subsets. Dif: Difference. OIR: Over-identifying Restrictions Test. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Wald statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(1) & AR(2) tests and; b) the validity of the instruments in the Sargan OIR test.

4.3 Further discussion of results

From a general perspective, it can be established that in the short term, all investigated foreign aid indicators have positive effects on inclusive human development. This is essentially because the two aid indicators (program assistance and action on debt) that are insignificant in Table 3 have displayed significant effects in Table 4 whereas the only variable (or 'aid for economic infrastructure) with insignificant short term effects in Table 4 has a positive net in Table 2.

While, the positive role of foreign aid is consistent with a recent stream of optimistic literature (see Asiedu, 2014; Brempong & Racine, 2014; Kargbo & Sen, 2014), it contradicts a pessimistic strand of the literature, which maintains that foreign aid is broadly detrimental to economic development in Africa (see Titumir & Kamal, 2013; Monni & Spaventa, 2013; Wamboye et al., 2013; Marglin, 2013). In essence, based on the findings, the Fofack (2014) conjecture of self-reliance as a sustainable model for African development is only valid in the long run, not in the short term.

Whereas the use of development assistance as an instrument to promoting development in poor countries has been the subject of wide debate in the literature (see Arvin et al., 2002; Arvin & Barillas, 2002; Balde, 2011; Gibson et al., 2014), it has not been the purpose of this paper to engage the debate because of three main reasons. First, the Sustainable Development Goals (SDGs) require developed countries to contribute to the universal sustainable

development objectives by helping developing countries achieve some of the underlying universal goals. Second, whereas Donors could have some strategic goals, government of recipient countries are also responsible for the outcome of disbursed funds. Third, foreign aid can be construed as a policy whose outcome is also contingent on how it is implemented. Hence, foreign aid should not be judged in the light of whether it is good or bad but in the perspective of how the policy surrounding it can be improved, maintained or changed.

Given that the continent substantially relies on development assistance for her development, the results have implications for the main policy (or strategic focus) of multilateral development agencies like the African Development Bank that is currently focusing on infrastructural development as a means to improving inclusive growth and development in Africa. Hence, the continuous support from developed countries (at least in the short term) of policies underlying this strategic focus by multinational development agencies is a step in the right direction.

The unappealing long term effect of foreign aid is somewhat similar to the argument that developed countries should oriented developing towards industrialisation in the perspective of Piketty and not in the view of Kuznets. In essence, the conjecture of Kuznets, which rests on the assumption that inequality would decrease with industrialisation, is now statistically fragile and falsifiable. As suggested by Asongu (2016), inequality should be given greater emphasis as opposed to growth in order to address Africa's poverty tragedy. This concern has also been raised in an evolving stream of African development literature (see Mthuli et al., 2014; Brada & Bah, 2014; Anyanwu, 2011, 2014).

The underlying recommendation of laying more emphasis on inequality as opposed to growth rests on the assumption that the response of poverty to

growth is a decreasing function of inequality (see Fosu, 2008, 2009, 2010abc, 2011). We lift verbatim a few conclusions to support the policy recommendation: "*The study finds that the responsiveness of poverty to income is a decreasing function of inequality*" (Fosu, 2010c, p. 818); "*The responsiveness of poverty to income is a decreasing function of inequality, and the inequality elasticity of poverty is actually larger than the income elasticity of poverty*" (Fosu, 2010a, p. 1432); and "*In general, high initial levels of inequality limit the effectiveness of growth in reducing poverty while growing inequality increases poverty directly for a given level of growth*" (Fosu, 2011, p. 11).

In the light of the above, assuming industrialisation reflects economic growth within the framework of Kuznets, one can reasonable infer that it is important to leverage development assistance toward reducing inequality in the short term, compared to promoting economic growth. As we have noted from the Fosu conjectures, the inequality elasticity of poverty is higher than the growth elasticity of poverty since the response of poverty to growth is a decreasing function of inequality. Hence, by tailoring aid for inclusive development in the short run, it is very likely that such inclusiveness would engender greater poverty reduction externalities in the long run, when aid is no longer beneficial for inclusive development. This paradigm shift would go a short way to providing some healthy room for optimism in the transition from Millennium Development Goals to Sustainable Development Goals.

When the results are viewed within the framework of contemporary sustainable development policy challenges, development assistance can be instrumental in mitigating the drawbacks of the Kuznets' theory and help chart the development course of poor countries as well as clarify and/or debunk provocative titles like '*foreign aid follies*' (Rogoff, 2014) and/or sceptical conclusions from more substantive surveys on the outcomes of development assistance (Doucouliagos & Paldam, 2008, 2009).

5. Concluding implications and future research directions

Motivated by evidence that extreme poverty has been decreasing in all regions of the world with the exception of Africa, where 45% of countries in Sub-Saharan Africa were substantially off track from achieving the MDG extreme poverty target, the study has contributed to the literature on reinventing foreign aid by assessing if development assistance can sustain inclusive human development in Africa. The empirical evidence is based on 53 African countries with data for the period 2005-2012 and Generalised Method of Moments. The adopted foreign aid variables are: aid for social infrastructure, aid for economic infrastructure, aid to the productive sector, aid to the multi sector, programme assistance, action on debt and humanitarian assistance. The empirical evidence reveals that whereas foreign aid improves inclusive human development in the short-run, it decreases it in the long term.

More specifically, with interactive regressions, the following have been established. First, while there are negative marginal effects from five of the seven aid indicators, corresponding net effects are positive. This implies that whereas foreign aid can be used to sustain inclusive human development, such sustainability can be limited at certain thresholds of foreign aid. A direct implication is that while foreign aid is important in consolidating inclusive human development in the post-2015 development agenda, recipient nations must concurrently work towards less dependence on development assistance. The foreign aid variables with significant net effects when complemented with persisting inclusive human development are: 'aid for social infrastructure', 'aid for economic infrastructure', 'aid to the productive sector', 'aid to the multi sector' and 'humanitarian assistance'. Conversely, the interactions of 'programme assistance' and 'action on debt' with the lagged inclusive human development do not lead to significant net effects.

Second, from non-interactive regressions, short-run and long-term effects are computed and from the findings, with the exceptions of 'aid for economic infrastructure' and 'aid for the production sector' for which long term effects are not apparent, the long run impacts for the other aid indicators are negative, while their corresponding short-term effects are positive. These findings confirm previous interactive results that foreign aid can only sustain inclusive human development in the short term.

Policy implications have been discussed with particular emphasis on reinventing foreign aid for sustainable development in the post-2015 development agenda. Future studies can improve the extant literature by investigating how other external flows (e.g. remittances) can be used to sustain inclusive human development. Moreover, focusing on the following innovative financial instruments is worthwhile: mobile banking, Islamic finance, crowdfunding, the Diaspora Investment in Agriculture initiative and, Payment for Environmental Services.

Appendix

Appendix 1: Correlation matrix

SocInfra	EcoInfra	ProdSect	MultiSec	Prog. Assis	ActionDebt	HumanAssis	GDPpc	Trade	IHDI	
1.000	**0.756**	**0.760**	**0.784**	0.284	0.111	0.419	-0.108	-0.211	-0.184	SocioInfra
	1.000	**0.675**	**0.693**	0.203	0.155	0.150	0.086	-0.107	0.029	EcoInfra
		1.000	**0.733**	0.304	0.112	0.262	-0.149	-0.289	-0.139	ProdSec
			1.000	0.297	0.067	0.349	-0.072	-0.196	-0.189	MultiSec
				1.000	-0.022	0.351	-0.418	-0.216	-0.359	Prog. Assis
					1.000	0.006	0.063	0.021	-0.007	ActionDebt
						1.000	-0.399	-0.278	-0.553	HumaAssis
							1.000	0.366	0.740	GDPpc
								1.000	0.184	Trade
									1.000	IHDI

SocInfra: Aid to Social Infrastructure & Services. EcoInfra: Aid to Economic Infrastructure and Services. ProdSect: Aid to Production Services. MultiSect: Aid to Multi Sector Development. Prog. Assis: Programme Assistance. ActionDebt: Aid for debt relief. HumanAssis: Aid for Humanitarian Assistance. GDPpc: GDP per capita. Trade: Trade Openness. IHDI: Inequality adjusted Human Development Index.

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