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Abstract

Purpose – This paper examines whether initial levels in GDP growth, GDP per capita growth and inequality adjusted human development matter in the impact of aid on development. In substance its object is to assess if threshold development conditions are necessary for the effectiveness of foreign-aid in Africa.

Design/methodology/approach – The panel quantile regression technique enables us to investigate if the relationship between development dynamics and development assistance differs throughout the distributions of development dynamics.

Findings – Two main findings are established. (1) The effectiveness of aid in economic prosperity (at micro and macro levels) increases in positive magnitude across the distribution. This implies high-growth countries are more likely to benefit from development assistance (in terms of economic prosperity) than their low-growth counterparts. (2) Existing levels of human development do not affect the manner in which foreign-aid negatively affects human emancipation. Thus the negative incidence of aid on human emancipation is almost similar across the human development distribution.

Practical implications – Two policy implications result. (1) Blanket policies on the aid-economic prosperity nexus are unlikely to succeed in Africa; thus policy measures should be contingent on prevailing levels of economic growth and tailored differently across high and low growth countries. (2) Common policies could be applied within the framework of the aid-human development nexus regardless of country-specific (existing) human emancipation levels.

Originality/value – This paper contributes to existing literature on the effectiveness of foreign-aid by focusing on the distribution of the dependent variables (development dynamics). It is likely that high and low growth countries respond differently to development assistance.

JEL Classification: B20; F35; F50; O10; O55

Keywords: Foreign Aid; Political Economy; Development; Africa

1. Introduction

The concern over the effectiveness of foreign-aid has been widely debated since the institution of the Official Development Assistance (ODA) programs over five decades ago. A great chunk of the literature focusing on the macroeconomic impact of aid is mixed at best on the results and those that have revealed significant positive effects face heavy methodological criticisms (Masud & Yontcheva, 2005). Beside the antagonistic picture of the macroeconomic merits of development-assistance painted by mainstream research, there has been an almost exclusive focus on the effect of aid-flows on GDP growth and other macroeconomic variables (investment or public consumption), with the underlying assumption being the notion that aid is destined to bridge the saving-investment gap poor countries face (Rostow, 1960; Chenery & Strout, 1966; Easterly, 2005a). Surprisingly, there has been much less research conducted on the impact of foreign-aid on the evolution of human development(Masud & Yontcheva,2005), in spite of the shift in objectives announced by the donor community which have evolved from intensive industrialization programs advocated in the 1950s to more poverty reducing objectives such the Millennium Development Goals(MDGs).

The contribution of this paper to the literature is fourfold. Firstly, we deviate from the mainstream approach to the aid-development nexus and assess the effectiveness of foreign assistance from three dimensions (GDP growth, GDP per capita growth and human development). Secondly, a substantial body of work in the literature is based on data collected between 1960 and 1995. By using much recent data, the paper provides an updated account of the nexus with more focused policy implications. Another novelty worth pointing-out within this contribution is the use of an updated human development index (adjusted for inequality) first published in 2010 that corrects past works of the bulk of criticisms inherent in the first index.

Thirdly, owing to the debate on methodological issues in the assessment of foreign-aid effectiveness, this paper provides new dimensions to the debate by investigating the aid-development nexus when existing development levels matter. Thus there is a presumption here that certain development thresholds might be imperative for the effectiveness of foreign-aid and hence blanket aid policies might not be appropriate, unless they are contingent on the prevailing levels of development dynamics (GDP growth, GDP per capita growth and human development) and tailored differently across high and low growth developing countries. Fourthly, with the year 2015 approaching, it is high time to assess donors' objective of reaching the MDGs. In plainer terms, examining the effectiveness of development assistance on human development by virtue of the three points highlighted above (in the run-up to 2015) could provide crucial policy options to donor and multilateral agencies on their assistance (aid) impact.

The rest of the paper is organized as follows. Section 2 presents the literature on aid-effectiveness. Measurement and methodology issues are discussed in Section 3. Empirical analysis is covered in Section 4. We conclude with Section 5.

2. Literature review

2.1 Theoretical highlights

The imperative of aid in the improvement of GDP growth can be traced back to the two-gap model (Chenery & Strout, 1966), which remains the most influential theoretical underpinning of the aid effectiveness literature. In this model, developing countries face draw-backs in savings and export earnings that deter investment and economic growth. Though it has suffered from severe criticism since its inception, this model has provided the underlying principles both for early aid policies(Easterly, 1999) and regression specifications in the aid-growth(savings) empirical literature(Masud & Yontcheva,2005).

2.2 Conflicts in the literature

Literature pertaining to the effectiveness of aid has almost exclusively been focused on the macroeconomic impacts of aid, thus examining the effects of aid on economic savings, investment and growth. The absence of an analytical framework, heavy reliance on empirical evidence(which is often ambiguous for the most part) and inconclusive results with recently refined methodologies(Masud & Yontcheva,2005), leaves the subject matter widely open to debate. For organizational reasons, literature pertaining to the effectiveness of aid in growth (development) could be categorized into two strands as summarized in Table 1 below: one purporting the negative consequences of aid and the other acknowledging the positive rewards of development assistance.

The first panel entails a strand of authors presenting the case for the insignificant impact of aid on investment, savings or growth. Aid has been confirmed to improve unproductive public consumption (Mosley et al., 1992) and fails to increase investment at best. This later point has been supported by Reichel(1995) and Boone(1996). Ghura(1995) pointed-out the negative effect of aid on domestic savings whereas Pedersen(1996) asserted foreign-aid distorts development and leads to aid dependency. In the second strand, we find studies favoring the positive effects of aid on growth (development). It is interesting to highlight the Burnside & Dollar (2000) work that has received abundant comments from researchers (Guillaumont & Chauvet, 2001; Colier & Dehn, 2001; Easterly et al., 2003), whose results have been challenged as being "extremely data dependent"(Clemens et al.,2004).

Table 1: Summary of conflicts in the literature

Researchers	Main findings
First-strand: Aid does not lead to growth(development)	
Mosley et al. (1992)	Aid increases unproductive public consumption and fails to promote growth.
Reichel(1995)	Aid fails to promote savings owing to the substitution effect.
Ghura(1995)	Aid negatively impacts savings.
Boone(1996)	Aid is insignificant in improving economic development for two reasons: poverty is not caused by capital shortage and it is not optimal for politicians to adjust distortionary policies when they receive aid flows.
Pedersen (1996)	Foreign Aid distorts development and leads to aid dependency.
Asongu(2012a)	Development assistance is perilous to government quality dynamics
Asongu(2012b)	Development assistance is inhumane and leads to reversed economics
Second-strand : Aid improves growth(development)	
Burnside & Dollar(2000)	Aid can be effective when policies and economic management are good.
Ghura(1995)	Aids positively impacts savings for good adjusters.
Guillaumont & Chauvet (2001)	Aid effectiveness is contingent on environmental factors(shocks and hazards).
Collier & Dehn(2001)	Aid effectiveness depends on negative supply shocks. Targeting aid contingent on negative supply shocks is better than targeting based on good policies.
Collier & Dollar(2001)	The positive effect of aid on poverty depends on its impact on per-capita income growth and the impact of per-capita income growth on poverty reduction.
Feeny (2003)	The sectoral allocation of foreign aid to Papua New Guinea has been broadly in line with a strategy to effectively reduce poverty and increase human well-being.
Gomanee et al.(2003)	Aid has either a direct effect on welfare and indirect effect through public spending on social services.
Clement et al. (2004)	Aid has a short-term positive impact on growth.
Ishfaq (2004)	Foreign aid, in a limited way though, has helped in reducing the extent of poverty in Pakistan.
Mosley et al. (2004)	Foreign assistance has an indirect impact on poverty and the well-being of recipient countries.
Addison et al. (2005)	Aid increases pro-poor public expenditure and has a positive effect on growth. Aid broadly works to mitigate poverty, and poverty would be higher in the absence of aid.
Fielding et al. (2006)	There is a straight forward positive impact of aid on development outcomes.

Source(Author)

2.3 African perspective

2.3.1 Africa's needs and Western responses

In terms of international standard comparisons, a bulk of African countries lies quite low. In line with Easterly (2005a), they occupy most of the bottom places in per capita income, life expectancy, infant mortality, literacy, percent of population living in extreme poverty(less than a dollar a day), infant mortality, HIV prevalence and the HDI. By most objective standards of

assessment, the last four decades have been those of extreme growth disappointment in Africa. The West has responded to Africa's tragedy with intensive involvement of foreign-aid organizations and international agencies. In the mean, African countries receive much aid as a percentage of their GDPs than other developing countries.

In 2005, the West tried hardest to save Africa. The G8 in July of that year agreed to double foreign-aid to Africa from $25 billion a year to $50 billion in a bid to finance the 'Big push', as well as cancel African aid-loans contracted during previous attempts at a 'Big push'. Prior to this effort, Africa was already the most aid-intensive continent in the world. Two months up-the-hill (September 2005), world leaders gathered at the United Nations to further discuss progress on ending poverty in Africa. To put their concerns into perspective and match the facts with figures, as of 2005 sub-Saharan Africa contained 11% of the world's population and produced only 1% of global GDP. In the median African nation, 43% of the population lived on less than a dollar a day. On the World Food Program list, of the 23 countries with more than 35% of the population malnourished, 17 were in Africa. More so, human development has been greatly mitigated by the long and brutal civil wars in Angola, Chad, Somalia, Sierra Leon, Liberia…etc, not to mention Rwanda's genocide and recent carnages in Darfur-Sudan. The terrible destructiveness of war's weight saw the Democratic Republic of Congo register the world's highest war casualties since World War II. Indeed seven of the last eight recent cases of total societal breakdown into anarchy in the world known to literature have been in Africa: Angola, Burundi, Liberia, Sudan, Sierra Leone, Somalia and Congo Democratic Republic (beside Afghanistan).

2.3.2 Theories and empirics of Western assistance to Africa

a) The Big-Push models and foreign-aid

The 'Big-Push' models suggest that Africa is poor because it is stuck in a 'poverty trap' (Easterly, 2005a). Thus, to emerge from the poverty trap, it needs a large aid-financed investment increase: a 'Big-Push'. Both the Harrod-Domar and the Solow growth models have been used to discuss the mechanisms of the poverty trap.

The first mechanism is that, savings are quite low for people who are very close to subsistence (as is confirmed by a Stone-Geary utility function). In a closed economy savings equal investment, thus investment is thin. In the Harrod-Domar model with the capital constraint binding, growth in GDP per capita is simply a linear function of the investment (=saving) rate minus the demographic and depreciation rates. If the saving is too thin to compensate for population growth and the depreciation of per capita, then per capital growth will be zero or negative. In the 1950s and 1960s, early development economists postulated a desirable per capita growth rate and calculated the "investment need" to meet this target: the distance between the low domestic saving rate and the "investment need" was termed the "Financing Gap". The role of development assistance was therefore to cover the Financing Gap (Rostow, 1960; Chenery & Strout, 1966). This model predicted a strong growth effect for foreign-aid through its role in boosting domestic investment above what domestic savings would finance. Although this model soon went out of favor in the academic development literature, it remained interesting in international organizations like the World Bank. Current policies advocating for the promotion of foreign-aid to Africa have explicitly quoted this model (Devarajan et al., 2002 at the World Bank; Blair Commission on Africa, 2005; Sachs, 2005). Sach(2005) posits that *"success in ending the poverty trap will be much easier than it appears"*. He foretells, increase in foreign aid

and debt relief can end Africa's poverty in our time. In a closed economy, savings are contingent not only on the distance from subsistence but also on the incentive to save depending on the rate of return to savings and investment. In an open economy, investment is not only a function of domestic savings but also depends on the rate of return to investment. As demonstrated by Collier et al.,(2001), Africa's extensive capital flight is estimated at 39%. Thus, this large chunk of Africa's capital stock is held outside the continent because domestic investors compare the returns to domestic and foreign investments before making investment decisions. Also, bank lenders will invest in the economy if returns are attractive enough. In the Solow model, a strong relationship between income and saving-rates could generate multiple equilibria at low and high levels of capital stock, bringing to light the possibility of a poverty trap. Again, the low domestic savings would not be a palaver in an open economy in which investment responds to incentives. Kraay & Raddatz(2005) have shown that the relationship between initial capital and savings must follow an S-shaped curve to generate a poverty-trap; though they fail to find evidence for this shape in the data.

The second mechanism on poverty is a kind of nonconvexity of the production function in the Solow model. There could be strong external economies to investment or there maybe high fixed costs associated to investment projects such that a minimum threshold must be surpassed for investment to be productive. This notion was part of the inspiration for the original article that first suggested a 'Big Push' (Rosentein-Rodan, 1943). In comparison to the 'Financing Gap' model, this strand has had a longer shelf-life in the academic literature because theorists have a great zeal in models with multiple equilibira(Murphy et al., 1989). In emphasizing such nonconvexities, Sach(2005) has suggested that Africa is in a poverty trap. 'Big Push' models predict strong effects of aid on investment and growth (development). This

prediction has been subject to a substantial empirical literature which this paper has already detailed above (see Table 1).

b)Project interventions: education and health

Another perspective of Africa's poverty has been that, it originates from low human capital (poor health and education) and infrastructure. This emphasis which began in the 1960s is still a major theme in elucidating Africa's poverty. While enrollments have expanded rapidly, the quality of education is hampered by missing inputs like textbooks and other school material, weak incentives for teachers, corruption in educational circles, bureaucracies and disruption of schooling by political crisis (Filmer & Pritchett, 1997). In health, some of the initial progress has been stifled, possibly by corruption in the health system (studies in Cameroon, Guinea, Uganda and Tanzania estimated that 30 to 70% of government drugs disappeared before reaching patients). Also, there are more complicated health problems that are not solvable with routine methods (Filmer et al., 2000; Pritchett & Woolcock,2004).

c) Policies and growth models

Another view as to why Africa remains poor is the structural adjustment program. It gained prominence in the early 1980s with the advent of the "Washington consensus" and the 'pro-free market' arguments from respected intellectuals like the World Bank chief economist Anne Krueger. According to this strand, Africa is poor because its governments have chosen bad policies. Indeed, it is obvious that many African governments pursued policies very destructive of growth and economic development: artificially overvalued currencies, high black market premiums on foreign exchange, controls on interest rates that led to negative real interest rates for savers, drastic restrictions on international trade, absence of social justice, little political

morality and reliance on state companies with unsound prospects for freedom of economic enterprise. This 'bad policies' view of Africa's poverty gave birth to a different perception of the role of aid. The role of Western donors and international institutions within this framework was to induce changes in African macroeconomic policies by making aid contingent on such changes. Structural adjustment loans of the IMF and the World Bank were thus embodied in this framework: which had as objective an "adjustment with growth". How fruitful were these loans in facilitating "adjustment", that is to say: changing policy? How instrumental was development assistance in inducing better policies? The answer appears to be that Western donors and international institutions were not quite successful at changing policy (Alesina & Dollar, 2002; Burnside & Dollar, 2000; Van de Walle, 2001; Easterly, 2005b).

d)Aid, institutions and development

A substantial literature on institutions and development suggests that Africa is poor because it has poor institutions: dictatorships, lack of property rights, weak courts and contract enforcement, violence and political instability, hostile regulatory environment for private business and high inflation. In order to eradicate African poverty, according to this strand the West needs to promote good institutions. Svensson(2000) finds that aid increases corruption in ethnically fractionalized countries(which is common place in most African states). Knack (2001) discovers that higher aid worsens bureaucratic quality, leads to violating the law with more impunity and corruption (controlling for potential reverse causality). Similarly, Djankov et al.(2005) find that high aid caused substantial setbacks to democracy between 1960-1999. Indeed they found aid's effect on democracy to be far worse than that of the "natural resource curse".

e) Dysfunctional donors

In accordance with Easterly (2005a), while all the attention in the aid and development debate is focused on Africa, it is also interesting to assess how effective donors have been at delivering valuable services to Africa. There have been alarming cases of donor dysfunction. An eloquent example is the over 2 billion US dollars spent on roads in Tanzania over the last 20 years. Yet roads have not improved. Even by bureaucratic standards, foreign-aid bureaucracy is dire, why? Maybe it is because efforts and results in aid are largely unobservable and noticed only by the voiceless poor. Therefore, the absence of results visibility makes aid bureaucracies unaccountable. As opposed to private firms or democratic governments in rich countries, aid agencies do not face a "voter test" or "a market test". Africa's poor could sink into the category of political orphans; with no voice or feedback on if aid is helping them and nobody accountable to them as well.

2.4 The scope and positioning of the current paper

2.4.1 Scope of development assistance

In line with Clement et al.(2004), aggregate aid could be divided into three main strands: (1) emergency and humanitarian aid(likely to be negatively correlated with growth); (2) aid that affects growth only over the long-term(if at all); such as aid to support democracy, the environment, health or education; and (3) aid that plausibly could stimulate growth in the long term, including budget and balance of payments support, investments in infrastructure and aid for productive sectors such as agricultural and industrial. While aid effectiveness in studies implicitly define donors' objective as solely the promotion of economic growth or the reduction

of poverty in the recipient countries, a parallel strand of literature on aid allocation has shown that most donors are always after a different underlying agenda: allocating aid according to their own strategic interests. Masud & Yontcheva (2005) have emphasized that where a significant part of aid is allocated for strategic purposes, no positive impact in terms of growth or poverty alleviation should be expected. We partially refute this claim by positing that; foreign-aid irrespective of vested donor-interest should contribute to development or economic deterioration (even in marginal terms) either directly or indirectly.

2.4.2 Positioning of this paper in the literature

The contribution of this paper to the literature is fourfold. Firstly, we deviate from the mainstream approach to the aid-development nexus and assess the effectiveness of foreign assistance from three dimensions (GDP growth, GDP per capita growth and human development). Secondly, a substantial body of work in the literature is based on data collected between 1960 and 1995. By using much recent data, the paper provides an updated account of the nexus with more focused policy implications. Another novelty worth pointing-out within this contribution is the use of an updated human development index (adjusted for inequality) first published in 2010 that corrects past works of the bulk of criticisms inherent in the first index. Thirdly, owing to the debate on methodological issues in the assessment of the impact of foreign-aid, this paper provides new dimensions to the debate by investigating the aid-development nexus, when existing development dynamic levels matter. Thus there is the presumption here that certain development thresholds might be imperative for the effectiveness of foreign-aid and hence blanket aid policies might not be appropriate, unless they are contingent on the prevailing levels of development dynamics (GDP growth, GDP per capita growth and human development) and tailored differently across the least and most advanced developing

countries. Fourthly, with 2015 approaching it is high time to assess donors' objective of reaching the MDGs. In plainer terms, assessing the effectiveness of development assistance on human development in the light of the three points highlighted above in the run-up to 2015 could provide crucial policy options to donor and multilateral agencies on their assistance impact.

3. Data and Methodology

3.1 Data

We examine a sample of 22 countries for the period 1996-2009 with data from African Development Indicators (ADI) of the World Bank (WB). Development dependent variables include GDP growth, GDP per capita growth and the HDI (adjusted for inequality). The independent variable of interest is Net Official Development Assistance (NODA). For robustness purposes we use three different NODA indicators: Total NODA; NODA from the Development Assistance Committee (DAC) countries; and NODA from Multilateral Donors. While the first is used in the empirical section, the last two have been used for robustness checks. Borrowing from recent development threshold literature (Asongu, 2012c), we control for institutional quality (polity and democracy), openness (trade), inflation, investment (public, private and domestic) and population growth. Summary statistics with presentation of countries (Appendix 1), variable definitions (Appendix 2) and correlation analysis (Appendix 3) are detailed in the appendices.

3.2 Methodology

In line with Billger & Goel (2009) and recent development threshold literature (Asongu,2012c), to determine whether existing levels in development dynamics affect how development assistance comes into play, we use quantile regression. This approach permits us to

investigate if the relationship between development dynamics and foreign-aid differs throughout the distribution of the development dynamics (Koenker & Hallock, 2001).

Some studies on the determinants of development are based on estimation by Ordinary Least Squares (OLS), which report parameter estimates at the conditional mean of development. Whereas mean effects are certainly important, this study expands such findings using quantile regression. In addition, one of the underlying assumptions of OLS regression is that the error term and the dependent variable are normally distributed. However, in quantile regression the error term need not be normally distributed. Thus, based on this estimation technique we are able to carefully assess the impact of foreign-aid throughout the conditional distributions with particular emphasis on high and low growth countries. Quantile regression(hence QR) yields parameters estimated at multiple points in the conditional distribution of the dependent variable(Koenker & Bassett, 1978) and has been relevant in recent development literature(Billger & Goel, 2009; Okada & Samreth, 2012). Beyond these facts, the choice of this estimation technique is in line with the research goal. The θ th quantile estimator of the endogenous variable is obtained by solving for the following optimization problem.

$$\min_{\beta \in R^k}\left[\sum_{i\in\{i:y_i\geq x_i'\beta\}}\theta\left|y_i - x_i'\beta\right| + \sum_{i\in\{i:y_i\geq x_i'\beta\}}(1-\theta)\left|y_i - x_i'\beta\right|\right] \qquad (1)$$

Where $\theta \in (0,1)$. Contrary to OLS that is based on minimizing the sum of squared residuals, with QR we minimize the weighted sum of absolute deviations. For example the 50th or 75th quantiles (with θ =0.50 or 0.75 respectively) by approximately weighing the residuals. The conditional quantile of y_i given x_i is:

$$Q_y(\theta / x_i) = x_i'\beta_\theta \qquad (2)$$

where unique slope parameters are derived for each θ th quantile of interest. This formulation is analogous to $E(y/x) = x_i'\beta$ in the OLS slope though parameters are estimated only at the mean of the conditional distribution of the endogenous variable. For the model in Eq.(2) the dependent variable y_i is the development indicator(GDP growth, GDP per capita growth, HDI) while x_i contains a constant term, foreign-aid, population growth, democracy, polity, domestic investment, inflation, public investment, trade, and private investment. The quantile estimation approach is more robust than the OLS approach in the presence of outliers when the distribution of the dependent variable is a highly non-normal pattern (Okada & Samreth, 2012). We also report findings for Least Absolute Deviations (LAD) which should match those of the 0.5^{th} quantile.

4. Empirical analysis

4.1 Summary of results

The results presented in Tables 2-3 include OLS, LAD and QR estimates. OLS estimates provide a baseline of mean effects and we compare these to estimates of LAD and separate quantiles in the conditional distributions of the development variable. In the interpretation of estimated coefficients, it is worth noting that smaller values (in conditional distributions) of the dependent variable denote less development (economic, economic per capita and human). Table 2 shows results for development in overall economic (Panel A) and per capita economic (Panel B) perspectives. Table 3 reports findings for human development.

From the findings in Table 2 below, the following conclusions could be drawn. (1) The positive incidence of development assistance on general economic prosperity increases across the distribution. This implies the positive aid elasticities of prosperity increase; with higher magnitudes in top quantiles of the economic prosperity distribution. This finding is consistent

across specifications of Panel A. (2) With respect to Panel B on 'per capita income prosperity' regressions (with the 'thin exceptions' of the top and bottom quantiles in the second specification), the conclusion drawn from findings in Panel A still holds. It follows that, the positive effect of foreign-aid on per capita economic prosperity increases across the distribution (from countries with the least to those with the highest per capita income prosperity). (3) Most of the control variables are significant with the right signs: as inflation seriously inhibits economic prosperity (at macro and micro levels) and investment (domestic, private and public) generally improve economic prosperity.

Table 3 reports findings for human development regressions. Based on the aid elasticities of human development, the following conclusion could be drawn. The negative incidence of development assistance on human development is not significantly different across the distribution. This establishment is valid across specifications. It follows that existing levels of human development may not affect the manner in which foreign-aid negatively affects human development. Most control variables are significant with the right signs since: inflation and population growth seriously infringe on human development while investment (public, domestic and private) improve human development.

Table 2: Economic Prosperity; OLS, LAD and Quantile Regressions

Panel A: General Economic Prosperity

	OLS	LAD	Q 0.1	Q 0.25	Q 0.50	Q 0.75	Q 0.90
				Specification 1			
Constant	**1.665****	**1.664***	**-2.128****	-0.040	**1.880*****	**2.594*****	**4.960*****
	(0.046)	**(0.092)**	**(0.010)**	(0.959)	**(0.008)**	**(0.001)**	**(0.000)**
Development Assistance	**0.098*****	**0.122*****	**0.075*****	**0.100*****	**0.121*****	**0.134*****	**0.139*****
	(0.000)	**(0.001)**	**(0.002)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Polity	-0.061	-0.044	**0.078****	0.001	-0.040	-0.059	**-0.101****
	(0.108)	(0.265)	**(0.040)**	(0.966)	(0.215)	(0.112)	**(0.023)**
Trade	**-0.014****	**-0.013*****	0.0003	-0.007	**-0.013****	**-0.020*****	**-0.029*****
	(0.029)	**(0.008)**	(0.954)	(0.250)	**(0.016)**	**(0.001)**	**(0.000)**
Inflation	**-0.015*****	**-0.013****	**-0.009****	**-0.014*****	**-0.014*****	**-0.017*****	**-0.022*****
	(0.000)	**(0.038)**	**(0.029)**	**(0.000)**	**(0.000)**	**(0.001)**	**(0.000)**
Domestic Investment	**0.171*****	**0.159*****	**0.118*****	**0.139*****	**0.147*****	**0.224*****	**0.219*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Observations	308	308	308	308	308	308	308
				Specification 2			
Constant	**-1.593***	-0.669	**-3.879*****	**-2.838****	-0.669	-0.482	**2.273***
	(0.077)	(0.520)	**(0.004)**	**(0.024)**	(0.301)	(0.654)	**(0.054)**
Development Assistance	**0.064****	**0.064***	**0.096****	0.055	**0.064*****	**0.088*****	**0.099*****
	(0.013)	**(0.063)**	**(0.015)**	(0.126)	**(0.000)**	**(0.005)**	**(0.003)**
Democracy	0.005	0.019	**0.250*****	0.083	0.019	-0.003	**-0.132***
	(0.924)	(0.685)	**(0.003)**	(0.291)	(0.623)	(0.964)	**(0.075)**
Private Investment	**0.141*****	**0.110*****	**0.127****	**0.108****	**0.110*****	**0.166*****	**0.131*****
	(0.000)	**(0.009)**	**(0.021)**	**(0.031)**	**(0.000)**	**(0.000)**	**(0.005)**
Public Investment	**0.265*****	**0.228*****	0.102	**0.251*****	**0.228*****	**0.308*****	**0.307*****
	(0.000)	**(0.007)**	(0.286)	**(0.004)**	**(0.000)**	**(0.000)**	**(0.000)**
Population growth	**0.836*****	**0.672*****	0.315	**0.727****	**0.672*****	**0.748*****	**0.851*****
	(0.000)	**(0.005)**	(0.380)	**(0.027)**	**(0.000)**	**(0.008)**	**(0.006)**
Observations	308	308	308	308	308	308	308

Panel B: Per capita Economic Prosperity

	OLS	LAD	Q 0.1	Q 0.25	Q 0.50	Q 0.75	Q 0.90
				Specification 1			
Constant	-0.971	-1.067	**-3.903*****	**-2.054****	-1.067	0.210	**1.831****
	(0.226)	(0.234)	**(0.009)**	**(0.019)**	(0.132)	(0.835)	**(0.034)**
Development Assistance	**0.056****	**0.050***	0.037	0.035	**0.050****	**0.091*****	**0.106*****
	(0.016)	**(0.057)**	(0.384)	(0.164)	**(0.014)**	**(0.002)**	**(0.000)**
Polity	-0.043	-0.026	0.080	0.017	-0.026	-0.048	-0.051
	(0.235)	(0.444)	(0.242)	(0.658)	(0.413)	(0.294)	(0.192)
Trade	-0.004	-0.005	-0.003	0.0008	-0.005	-0.011	**-0.016****
	(0.475)	(0.247)	(0.755)	(0.895)	(0.322)	(0.163)	**(0.012)**
Inflation	**-0.016*****	**-0.015*****	-0.010	**-0.014*****	**-0.015*****	**-0.018*****	**-0.022*****
	(0.000)	**(0.006)**	(0.203)	**(0.001)**	**(0.000)**	**(0.000)**	**(0.000)**
Domestic Investment	**0.166*****	**0.172*****	**0.117***	**0.128*****	**0.172*****	**0.208*****	**0.231*****
	(0.000)	**(0.000)**	**(0.061)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Observations	308	308	308	308	308	308	308
				Specification 2			
Constant	**-1.488***	-0.704	**-3.760***	**-2.632****	-0.704	-0.636	**2.516*****
	(0.093)	(0.502)	**(0.051)**	**(0.029)**	(0.342)	(0.588)	**(0.008)**
Development Assistance	**0.061****	**0.063***	**0.093***	0.053	**0.063*****	**0.085****	**0.049***
	(0.017)	**(0.051)**	**(0.092)**	(0.123)	**(0.003)**	**(0.012)**	**(0.072)**
Democracy	0.008	0.025	**0.244****	0.080	0.025	0.017	**-0.153****
	(0.882)	(0.611)	**(0.043)**	(0.283)	(0.587)	(0.815)	**(0.010)**
Private Investment	**0.137*****	**0.105****	0.125	**0.105****	**0.105*****	**0.160*****	**0.111*****
	(0.000)	**(0.011)**	(0.104)	**(0.029)**	**(0.000)**	**(0.000)**	**(0.003)**
Public Investment	**0.263*****	**0.248*****	0.100	**0.238*****	**0.248*****	**0.305*****	**0.373*****
	(0.000)	**(0.002)**	(0.458)	**(0.005)**	**(0.000)**	**(0.000)**	**(0.000)**
Population growth	-0.198	-0.377	-0.695	-0.307	**-0.377***	-0.167	-0.244
	(0.392)	(0.121)	(0.168)	(0.330)	**(0.052)**	(0.585)	(0.327)
Observations	308	308	308	308	308	308	308

Notes. Dependent variable is Economic prosperity. *,**,***, denote significance levels of 10%, 5% and 1% respectively. Lower quantiles (e.g., Q 0.1) signify nations where economic prosperity is least. P-values in brackets. OLS: Ordinary Least Squares. LAD: Least Absolute Deviations.

Table 3: Human development ; OLS, LAD and Quantile Regressions

	Human Development Index						
	OLS	**LAD**	**Q 0.1**	**Q 0.25**	**Q 0.50**	**Q 0.75**	**Q 0.90**
				Specification 1			
Constant	**0.401*** **	**0.371*** **	**0.329*** **	**0.381*** **	**0.371*** **	**0.346*** **	**0.390*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Development Assistance	**-0.007*** **	**-0.008*** **	**-0.006*** **	**-0.008*** **	**-0.008*** **	**-0.007*** **	**-0.007*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Polity	**0.001** **	0.001	**0.004*** **	0.001	**0.001***	**0.002***	0.0001
	(0.029)	(0.197)	**(0.000)**	(0.189)	**(0.067)**	**(0.051)**	(0.861)
Trade	**0.0008*** **	**0.0005*** **	**0.001*** **	**0.0005*** **	**0.0005*** **	**0.0008*** **	**0.0008*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Inflation	**-0.0004*** **	**-0.0003*** **	**-0.0002** **	**-0.0004*** **	**-0.0003*** **	**-0.0002***	**-0.0003*** **
	(0.000)	**(0.000)**	**(0.011)**	**(0.000)**	**(0.000)**	**(0.091)**	**(0.000)**
Domestic Investment	**0.003*** **	**0.006*** **	0.0009	**0.003*** **	**0.006*** **	**0.008*** **	**0.010*** **
	(0.000)	**(0.000)**	(0.260)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Observations	308	308	308	308	308	308	308
				Specification 2			
Constant	**0.522*** **	**0.511*** **	**0.529*** **	**0.551*** **	**0.511*** **	**0.494*** **	**0.540*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Development Assistance	**-0.005*** **	**-0.008*** **	**-0.005*** **	**-0.006*** **	**-0.008*** **	**-0.006*** **	**-0.007*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Democracy	**0.003*** **	**0.003** **	**0.008*** **	**0.005*** **	**0.003*** **	0.001	**0.005*** **
	(0.001)	**(0.030)**	**(0.000)**	**(0.000)**	**(0.000)**	(0.185)	**(0.000)**
Private Investment	**0.004*** **	**0.004*** **	**0.004*** **	**0.003*** **	**0.004*** **	**0.007*** **	**0.006*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Public Investment	**0.004*** **	**0.005** **	0.002	**0.002*** **	**0.005*** **	**0.010*** **	**0.009*** **
	(0.002)	**(0.045)**	(0.233)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Population growth	**-0.043*** **	**-0.036** **	**-0.093*** **	**-0.068*** **	**-0.036*** **	**-0.044*** **	**-0.031*** **
	(0.000)	**(0.041)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Observations	308	308	308	308	308	308	308

Notes. Dependent variable is the Human Development Index. *,**,***, denote significance levels of 10%, 5% and 1% respectively. Lower quantiles (e.g., Q 0.1) signify nations where human development is least. P-values in brackets. OLS: Ordinary Least Squares. LAD: Least Absolute Deviations.

4.2 Discussion and policy recommendations

Before diving into the discussion of the findings, it is worthwhile pointing-out the intuition motivating this paper. The concern over the effectiveness of development assistance has been widely debated in the aid-development literature since the institution of the Official Development Assistance (ODA) programs five decades ago. A great proportion of the literature which focuses on the macro economic benefits of aid has been mixed at best. Beside the antagonistic picture of the macroeconomic merits of development-assistance painted by mainstream research, there has been an almost exclusive focus on the effect of aid-flows on GDP growth and other macroeconomic variables (investment or public consumption), with the

underlying assumption being the notion that aid is destined to bridge the saving-investment gap poor countries face (Rostow, 1960; Chenery & Strout, 1966; Easterly, 2005a). Surprisingly, there has been much less research conducted on the impact of foreign-aid on the evolution of human development (Masud & Yontcheva,2005), in spite of the shift in objectives announced by the donor community which have evolved from intensive industrialization programs advocated in the 1950s to more poverty reducing objectives such the Millennium Development Goals(MDGs).

The object of this paper has been to assess development thresholds of development assistance. In so doing, we have examined the effectiveness of foreign-aid through-out the conditional distributions of development dynamics. Two main findings have be established. (1) The effectiveness of aid in economic prosperity (at micro and macro levels) increases in positive magnitude across the distribution. This implies high-growth countries are more likely to benefit from development assistance (in terms of economic growth) than their low-growth counterparts. (2) Existing levels in human development do not affect the manner in which foreign-aid negatively affects human development. Thus the negative incidence of aid on human development is almost similar across the distribution of human development. As a policy implication, while blanket policies on the aid-economic prosperity nexus are unlikely to succeed in Africa and thus should be contingent on the prevailing levels of economic growth and tailored differently across the high and low growth countries, common policies could be applied within the framework of the aid-human development nexus regardless of country-specific(existing) human emancipation levels.

From a general perspective, these findings only partially validate recent results (with updated data) in the African continent which have established the existence of reversed economics and a negative aid-human development nexus (Asongu, 2012b). While the results on

human development fully reflect those of Asongu (2012b), those on economic development reflect a positive aid-economic prosperity nexus. This difference is essentially methodological and points to the interesting character of exploring the aid-development nexus through-out the conditional distributions of development dynamics (quantile regression). From a general standpoint however, findings of the paper may either reflect the first or second strand of conflicts in the literature (as summarized in Table 1). Whereas human development regressions broadly reflects the negative aid-development nexus(Mosley,1992; Reichel, 1995; Ghura, 1995; Boone, 1996; Pedersen,1996; Asongu, 2012ab), economic prosperity regressions are in generally in line with the positive aid-development nexus(Burnside & Dollar, 2000; Ghura, 1995; Guillaumont & Chauvet, 2001; Collier & Dehn, 2001; Collier & Dollar,2001; Feeny, 2003; Gomanee et al.,2003; Clement et al.,2004; Ishfaq,2004; Mosley et al.,2004; Addison et al.,2005; Fielding et al.,2006).

It is also interesting to highlight that this paper has drawn much from the globalization-development nexus. It has been well documented in the globalization-development literature that certain "threshold" levels of financial and institutional development are imperative for an economy get the full indirect benefits and reduced risks of capital account globalization (Henry, 2007; Rodrik & Subramanian, 2009; Kose et al., 2011). Empirically assessing the aid-development nexus in the light of available weight of empirical evidence on 'threshold theories' (from the openness-development literature) has provided relevant policy implications on how existing economic prosperity and human development levels matter in the aid-development African nexus.

5. Conclusion

The contribution of this paper to the literature has been fourfold. Firstly, we have deviated from the mainstream approach to the aid-development nexus and assessed the

effectiveness of foreign-aid from three dimensions (GDP growth, GDP per capita growth and human development). Secondly, a substantial body of work in the literature is based on data collected between 1960 and 1995. By using much recent data, this paper has provided an updated account of the nexus with more focused policy implications. Another novelty worth pointing-out within this contribution is the use of an updated human development index (adjusted for inequality) first published in 2010 that corrects past works of the bulk of criticisms inherent in the first index. Thirdly, owing to the debate on methodological issues in the assessment of the impact of foreign-aid, this paper has provided new dimensions to the debate by investigating the aid-development nexus, when existing development dynamics matter. Thus there has been the presumption here that certain development thresholds might be imperative for the effectiveness of foreign-aid and hence blanket aid policies might not be appropriate, unless they are contingent on prevailing levels of development dynamics (GDP growth, GDP per capita growth and human development) and tailored differently across the least and most advanced developing countries. Fourthly, with 2015 approaching it was high time to assess donors' objective of reaching the MDGs. In plainer terms, assessing the effectiveness of development assistance on human development by virtue of the three points highlighted above in the run-up to 2015 has provided crucial policy options to donor and multilateral agencies on their assistance impact.

Two main findings have been established. (1) The effectiveness of aid in economic prosperity (at micro and macro levels) increases in positive magnitude across the distribution. This implies high-growth countries are more likely to benefit (in terms of economic prosperity) from development assistance than their low-growth counterparts. (2) Existing levels of human development do not affect the manner in which foreign-aid negatively affects human development. Thus the negative incidence of aid on human development is almost similar across

the distribution of human development. Two policy implications have resulted. (1) Blanket policies on the aid-economic prosperity nexus are unlikely to succeed in Africa; thus policy measures should be contingent on prevailing levels of economic growth and tailored differently across high and low growth countries. (2) Common policies could be applied within the framework of the aid-human development nexus regardless of country-specific (existing) human emancipation levels.

Appendices

Appendix 1: Summary Statistics and Presentation of Countries

Panel A:Summary Statistics

	Variables	Mean	S.D	Min.	Max.	Observations
	Economic Prosperity(GDPg)	4.691	4.058	-12.67	33.629	308
Development	Per capita Economic Prosperity(GDPpcg)	2.261	3.880	-15.15	29.062	308
	Human Development(IHDI)	0.462	0.121	0.237	0.745	308
Foreign Aid	Development Assistance(NODA)	8.592	9.124	-0.251	95.482	308
	Democracy	2.740	4.123	-8.000	10.000	308
	Polity	0.353	5.875	-9.000	10.000	308
	Trade	70.140	35.404	17.859	209.41	308
Control	Inflation	14.364	49.451	-8.974	513.91	308
Variables	Public Investment	7.451	3.674	0.000	23.785	308
	Private Investment	12.383	6.156	1.999	49.594	308
	Population Growth	2.373	1.000	0.508	10.043	308
	Domestic Investment	19.913	6.648	2.100	59.723	308

Panel B:Presentation of Countries

Algeria, Benin, Botswana, Central African Republic, Chad, Congo Democratic Republic, Congo Republic, Ivory Coast, Egypt, Ethiopia, Ghana, Kenya, Madagascar, Mauritius, Morocco, Mozambique, Rwanda, Senegal, Sudan, Swaziland, Uganda, Zambia

S.D: Standard Deviation. Min: Minimum. Max:Maximun. GDPg: GDP growth. GDPpcg: GDP per capita growth. IHDI: Inequality adjusted Human Development Index.

Appendix 2: Variable Definitions

Variables	Signs	Variable Definitions	Source
Economic Prosperity	GDPg	GDP Growth(annual %)	World Bank(WDI)
Per Capita Economic prosperity	GDPpcg	GDP per capita Growth(annual %)	World Bank(WDI)
Human Development	IHDI	Inequality adjusted Human Development Index	World Bank(WDI)
Total Development Assistance	DA	Total Development assistance(% of GDP)	World Bank(WDI)
Development Assistance 2	DAMD	Development Assistance from Multilateral Donors(% of GDP)	World Bank(WDI)
Development Assistance 3	DADAC	Development Assistance from DAC Countries (% of GDP)	World Bank(WDI)
Democracy	Demo	Level of Institutionalized Democracy	World Bank(WDI)
Polity	Polity	Level of Polity Democracy	World Bank(WDI)
Trade(Openness)	Trade	Imports plus Exports in commodities(% of GDP)	World Bank(WDI)
Inflation	Infl	Consumer Price Index(annual %)	World Bank(WDI)
Public Investment	PubIvt	Gross Public Investment(% of GDP)	World Bank(WDI)
Private Investment	PrivIvt	Gross Private Investment(% of GDP)	World Bank(WDI)
Domestic Investment	DomIvt	Gross Domestic Investment(% of GDP)	World Bank(WDI)
Population growth	Popg	Average population growth rate (annual %)	World Bank(WDI)

WDI: World Development Indicators. GDP: Gross Domestic Product. DAC: Development Assistance Committee.

Appendix 3: Correlation Analysis

Development			Development Assistance			Control Variables								
GDPg	GDPpcg	IHDI	DA	DAMD	DADAC	Demo	Polity	Trade	Inflation	PubIvt	PrivIvt	DomIvt	Popg	
1.000	0.961	-0.063	0.232	0.267	0.181	0.098	0.037	-0.081	-0.243	0.232	0.142	0.247	0.231	GDPg
	1.000	0.092	0.125	0.143	0.098	0.132	0.053	0.024	-0.259	0.250	0.178	0.289	-0.027	GDPpcg
		1.000	-0.586	-0.637	-0.475	0.265	0.107	0.436	-0.231	0.099	0.322	0.349	-0.578	IHDI
			1.000	0.799	0.955	-0.034	0.095	-0.252	-0.030	0.138	-0.144	-0.065	0.413	DA
				1.000	0.586	0.025	0.132	-0.310	-0.034	0.237	-0.158	-0.021	0.480	DAMD
					1.000	-0.057	0.065	-0.186	-0.023	0.067	-0.115	-0.077	0.320	DADAC
						1.000	0.918	0.082	-0.272	0.331	0.186	0.356	-0.106	Demo
							1.000	-0.034	-0.139	0.267	0.130	0.266	-0.040	Polity
								1.000	-0.091	0.145	0.212	0.270	-0.407	Trade
									1.000	-0.219	-0.079	-0.197	0.039	Inflation
										1.000	-0.109	0.436	-0.028	PubIvt
											1.000	0.827	-0.126	PrivIvt
												1.000	-0.127	DomIvt
													1.000	Popg

GDPg: GDP growth. GDPpcg: GDP per capita growth. IHDI: Inequality adjusted Human Development Index. DA: Development Assistance. DAMD: Development Assistance from Multilateral Donors. DADAC: Development Assistance from Development Assistance Committee. Demo: Democracy. PubIvt: Public Investment. PrivIvt: Private Investment. DomIvt: Domestic Investment. Popg: Population growth.

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