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**Working Paper**

## Reversed Economics and Inhumanity of Development Assistance in Africa

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AFRICAN GOVERNANCE AND DEVELOPMENT  
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A G D I Working Paper

WP/12/034

**Reversed Economics and Inhumanity of Development Assistance in Africa**

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**AGDI Working Paper**

Research Department

**Reversed Economics and Inhumanity of Development Assistance in Africa**

**Simplice A. Asongu<sup>1</sup>**

February 2012

**Abstract**

**Purpose** – The purpose of this paper is to assess the aid-development nexus in 52 African countries using updated data (1996-2010) and a new indicator of human development (adjusted for inequality).

**Design/methodology/approach** – The estimation technique used is a Two-Stage-Least Squares Instrumental Variable approach. Instruments include: income-levels, legal-origins and religious-dominations. The first-step consists of justifying the choice of the estimation technique with a Hausman-test for endogeneity. In the second-step, we verify that the instrumental variables are exogenous to the endogenous components of explaining variables (aid dynamic channels) conditional on other covariates (control variables). In the third-step, the strength and validity of the instruments are examined with the Cragg-Donald and Sargan overidentifying restrictions tests respectively. Robustness checks are ensured by: (1) the use of alternative aid indicators; (2) estimation under restricted and unrestricted hypotheses; and (3) adoption of two interchangeable sets of instruments.

**Findings** – The findings broadly indicate that development assistance is detrimental to GDP growth, GDP per capita growth and inequality adjusted human development. Given concerns on the achievement of the MDGs, the relevance of these results point to the deficiency of foreign aid as a sustainable cure to poverty in Africa.

**Social implications** – It is a momentous epoch to solve the second tragedy of foreign aid; it is high time economists and policy makers start rethinking the models and theories on which foreign aid is based. In the meantime, it is up to people who care about the poor to hold aid agencies accountable for piecemeal results.

**Originality/value** – These findings are based on data collected after pioneering works on the aid-development nexus. Usage of the inequality adjusted human development index first published in 2010, corrects past works of the bunch of criticisms inherent in the first index.

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

**Keywords:** Foreign Aid; Political Economy; Development; Africa

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## **1.Introduction**

Over five decades since the Official Development Assistance(ODA) programs were instituted, the concern over the effectiveness of foreign aid remains widely debated and unsolved. In 2005 the West tried hardest to save Africa. In July of that year, the G8 agreed to double foreign aid to Africa from \$25 billion a year to \$50 billion to finance the ‘Big push’, as well as cancel African aid-loans contracted during previous attempts at a ‘Big push’. Before this effort, Africa was already the most aid-intensive region in the world. In September of that same year, world leaders gathered at the United Nations to further discuss progress on ending poverty in the continent. To point out some frustrating statistics, sub-Saharan Africa contains 11% of the world’s population, but produces only 1% of the world’s GDP(Easterly, 2005a). In the median African nation, 43% of the population live on less than one dollar a day. On the World Food Program list, of the 23 countries with more than 35% of the population malnourished, 17 are in Africa. 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 and the Democratic Republic of Congo (registering the world’s highest war casualties since World War II). In fact, seven of the 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 Zaire/Congo(beside Afghanistan).

Much literature has focused on the macroeconomic impact of aid, but mixed results have been reported and those that have revealed significant positive effects face heavy methodological criticisms. In assessing the impact of development assistance, a great chunk of studies focus on the effect of aid-flows on GDP growth and other macroeconomic variables(investment or public consumption). The underlying assumption here is 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 change in objectives announced by the donor community which have evolved from intensive industrialization programs advocated in the 1950s to more recent poverty-reducing objectives such as the Millennium Development Goals(MDGs). With 2015 drawing nigh, it is imperative to assess the donors' objective of reaching the MDGs. In plainer terms, investigating the effectiveness of development assistance on Human Development in developing countries in the run-up to 2015 could provide crucial policy options to donor and multilateral agencies on their assistance impact.

The contribution of this paper to the literature is threefold. Firstly, we cut adrift existing literature and assess the aid-development nexus from three dimensions (GDP growth , GDP per capita growth and human development). Another important fact worth pointing out is the use of a hitherto human development measure absent in the literature: the Inequality Adjusted Human Development Index(IHDI) first published in the 2010 Human Development Report. Secondly, a great bulk of the literature is based on data collected between 1960 and 1995. By using recent data(1996-2010), this paper provides an updated account of trends in the nexus. Also, results from recent data will enable a more robust projection on the MDGs. Thirdly, our focus on 52 of the 54 countries in Africa provides a universal view on the continent where the aid-development debate is most tensed. The remainder of the paper is organized in the following manner. Section 2 presents the literature on aid effectiveness. Data and methodology are presented and described respectively in Section 3. Empirical analysis is covered in Section 4. Section 5 concludes.

## **2. Literature review**

### **2.1 Theoretical highlights**

The focus on if aid improves 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 constraints on savings and export earnings that deter investment and economic growth. In spite of the severe criticisms since its inception, this model has provided the underlying principles both for early aid policies(Easterly, 1999) and regression specifications of a great many aid-growth(savings) empirical papers (Masud & Yontcheva,2005).

### **2.2 Conflicts in the literature**

The literature on the effectiveness of aid has almost exclusively been focused on the macroeconomic impacts of aid, assessing the effects of aid on economic savings, investment and growth. The lack of analytical framework, heavy reliance on empirical evidence(which is often ambiguous at best) and inconclusive results with recently refined methodologies(Masud & Yontcheva,2005), leaves the subject matter widely open to debate. For the purpose of clarity, literature pertaining to the effectiveness of aid on growth(development) could be clubbed into two strands as summarized in Table 1: one advocating the negative consequences of aid and the other acknowledging the positive rewards of development assistance.

The first strand entails authors presenting the case for the insignificant impact of aid on investment, savings or growth. Aid has been shown to improve unproductive public consumption(Mosley et al.,1992) and fails to increase investment. This later point has been supported by Boone(1996) and Reichel(1995). Ghura(1995) pointed to the negative effect of aid

on domestic savings while Pedersen (1996) asserts, foreign aid distorts development and leads to aid dependency.

In the second strand, we find studies favoring positive effects of aid on growth and development. Among these works, we shall highlight that of Burnside & Dollar(2000) who conclude that aid can be effective when policies are good. The Burnside & Dollar(2000) work has received abundant comments from researchers(Guillaumont & Chauvet, 2001; Collier & 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   |
|---|---|
| <b>First-strand: Aid does not lead to growth(development)</b> |   |
| 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.   |
| <b>Second-strand : Aid improves growth(development)</b>       |   |
| 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

The bulk of African countries lie low on standard international comparisons. In line with Easterly(2005a), they occupy most of the bottom places in income per capita, percent of population living in extreme poverty(less than one US dollar a day), life expectancy, infant mortality, literacy, AIDS prevalence and the HDI. The last four decades has been those of extreme growth disappointment in Africa. The West has responded to Africa's tragedy with intensive involvement of foreign aid agencies and international organizations. On average African countries receive much more aid as a percentage of their GDPs than other developing countries. The West does more because Africa is poor, however its efforts are supposed to have a positive impact on the GDPs of recipient countries.

The year 2005 was that during which the West tried hardest to save Africa. In July of that year, the G8 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'. Before this effort, Africa was already the most aid-intensive region in the world. In September of that same year, world leaders gathered at the United Nations to further discuss progress on ending poverty in Africa. To point out some frustrating statistics, sub-Saharan Africa contains 11% of the world's population, but produces only 1% of the world's GDP. In the median African nation, 43% of the population live on less than one dollar a day. On the World Food Program list, of the 23 countries with more than 35% of the population malnourished, 17 are in Africa. Also, human development has been greatly hampered 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 and Democratic Republic of Congo(registering the world's

highest war casualties since World War II). In fact, seven of the 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 Zaire/Congo(beside Afghanistan).

### *2.3.2 Theories and empirics of Western assistance to Africa*

#### *a) The Big-Push models and foreign aid*

Borrowing from Easterly(2005a), ‘Big-Push’ models suggest that Africa is poor because it is stuck in a “poverty trap”. To emerge from the poverty trap, it needs a large aid-financed increase in investment: a ‘Big Push’. Both the Harrod-Domar and the Solow growth models have been used to discuss the mechanisms on circumstances surrounding the poverty trap. The first mechanism is that, savings are quite low for people who are very close to subsistence(as would be predicted by a Stone-Geary utility function). In a closed economy saving equals investment, therefore investment is low. In the Harrod-Domar model with the capital constraint binding, growth of GDP per capita is simply a linear function of the investment(=saving) rate minus the population and depreciation rates. If the saving is quite low to compensate for population growth and the depreciation of per capita, then per capita 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 requirement” to meet this target: the distance between the low domestic saving rate and the “investment requirement” was termed the “Financing Gap”. The role of aid was to cover the Financing Gap(Rostow,1960; Chenery & Strout,1966). Therefore 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 literature on development, it remained interesting in international organizations like the World Bank. Current policies advocating for the promotion of foreign aid

to Africa have explicitly cited this model(Devarajan et al., 2002 at the World Bank; Blair Commission on Africa,2005; Sachs, 2005). Sach(2005) argues: “*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 generation. In a closed economy, savings depend not only on the distance from subsistence but also on the incentive to save depending on the rate of return to saving and investment. In an open economy, investment is not only a function of domestic saving but also depends on the rate of return to investment. As shown 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 investment decisions. More so bank lenders will invest in the economy if returns are attractive enough. In the Solow model, a strong relationship between income and savings rates could generate multiple equilibria at low and high levels of capital stock, resurfacing the possibility of a poverty trap. Again, the low domestic savings would not be a qualm in an open economy in which investment responds to incentives. Kraay & Raddatz(2005) have shown that the relationship between initial capital and saving must follow an S-shaped curve to generate a poverty-trap; however they fail to find evidence for this shape in the data.

The second mechanism on poverty is some 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 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 proposed a ‘Big Push’(Rosentein-Rodan,1943). This strand has had a longer shelf-life in the academic literature than the “Financing Gap” model because theorists have a great zeal in

models with multiple equilibria (Murphy et al., 1989). In emphasizing such nonconvexities, Sach (2005) suggests that Africa is in a poverty trap. ‘Big Push’ models predict strong effects of aid on investment and growth (development). This prediction has been the subject of a vast empirical literature which this paper has already detailed above (see Table 1).

*b) Project interventions: education and health*

Another view of Africa’s poverty has been that, it results from low human capital (poor health and education) and infrastructure. This emphasis which began in the 1960s is still a major theme in explaining 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 education bureaucracies and disruption of schooling by political crisis (Filmer & Pritchett, 1997). In health, some of the initial progress has slowed, possibly due to 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 cannot be solved with routine methods (Filmer et al., 2000; Pritchett & Woolcock, 2004).

*c) Policies and growth models*

The structural adjustment program is another view of why Africa remains poor. It gained prominence in the early 1980s with the advent of the “Washington consensus” and the ‘pro-free market’ arguments from personalities like the World Bank chief economist Anne Krueger. According to this view, 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 and reliance on state enterprise. This ‘bad policies’ view of Africa’s poverty led 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 conditional on such changes. Structural adjustment loans of the IMF and the World Bank were therefore embodied in this approach: which had as objective an “adjustment with growth”. How successful were these loans in facilitating “adjustment”, that is to say: changing policy? How successful was development assistance in inducing better policies? The answer appears to be that Western donors and international institutions were not very successful in changing policy(Alesina & Dollar, 2002; Burnside & Dollar, 2000; Van de Walle, 2001; Easterly,2005b). However answers from these studies are based on old data. The current paper uses updated data to find new answers, if any.

#### *d)Aid, institutions and development*

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

### e) *Dysfunctional donors*

According to 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 signs of donor dysfunction. A case in point 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?. Perhaps it is because efforts and results in aid are largely unobservable and noticed only by the voiceless poor. Thus, the lack of results visibility makes aid bureaucracies unaccountable. Unlike private firms or democratic governments in rich countries, aid agencies do not face a “voter test” or “ a market test”. Africa’s poor could be conceived as political orphans; with no voice or feedback on whether aid is helping them and nobody accountable to them.

## **2.4 The scope of the current paper**

### *2.4.1 Scope of development assistance*

Borrowing from Clement et al.(2004), aggregate aid could be divided into three categories: (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 papers 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 often pursue a different underlying agenda: allocating aid according to their own strategic interest. Masud & Yontcheva (2005) have pointed-out that if 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 asserting 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 Contribution of this paper to the literature*

The contribution of this paper to the literature is threefold: use of a novel measure of the HDI; analysis with more updated data and; broad but exclusive focus on Africa. Firstly, as suggested by Boone(1996), aid effectiveness should not only be measured by its impact on GDP growth. Contrary to existing literature, we examine the impact of aid on GDP growth , GDP per capita growth and human development. Therefore, our analysis can both capture GDP growth and human development targeted development assistance. Another important fact worth pointing out is the use of the Inequality Adjusted Human Development Index(IHDI) first published in the 2010 Human Development Report. While past research on the aid-development nexus has used the HDI unadjusted for inequality, this paper is to the best of our knowledge the first that uses the IHDI in the aid-development assessment. Secondly, a great chunk of the literature is based on data collected between 1960 and 1995. By using recent data(1996-2010), this paper provides an updated account of current trends in the nexus. Also results from recent data will enable a more robust projection on the MDGs. Thirdly, we focus mainly on Africa where the aid-development debate is most tensed. While previous studies have mixed countries in various continental regions or focused on a restricted set of countries owing to constraints in data availability, this paper uses data on 52 of the 54 African countries.

### **3.Data and Methodology**

#### **3.1 Data**

We examine a panel of 52 African countries with data from African Development Indicators(ADI) of the World Bank(WB). Details of summary statistics(Appendix 1), correlation analysis(Appendix 2), variable definitions(Appendix 3) and presentation of countries(Appendix 4) are found in the appendices. In a bid to obtain results with more updated policy implications, dataset spans from 1996 to 2010. Dependent variables include: GDP growth, GDP per capita growth and IHDI while independent variables are dynamics in Net Official Development Assistance(NODA). For robustness purposes we use three measures of NODA: total NODA, NODA from multilateral donors and NODA from the Development Assistance Committee(DAC) countries. In the regressions we control for population growth rate, regulation quality, democracy and public investment. The choice of control variables is constrained by the degrees of freedom necessary for overidentifying restrictions tests at second-stage regressions(more than two control variables will result in exact or under-identification; meaning instruments are either equal to or less than the number of endogenous explaining variables respectively). Instrumental variables are: income-levels, religious-dominations and legal-origins. These instruments have been largely documented in the economic development literature (La Porta et al., 1997; Beck et al., 2003; Agbor, 2011; Asongu, 2011ab).

#### **3.2 Methodology**

##### *3.2.1 Endogeneity*

While development assistance has a bearing on the development of the recipient country(Addison et al., 2005; Fielding et al.,2006), the reverse effect cannot be ruled-out as aid from donor agencies(countries) is conditional on development(institutional) characteristics of

recipient countries. Such factors maybe environmental(Guillaumont & Chauvet, 2001), supply-shocks(Collier & Dehn, 2001) or even effective policies and economic management standards(Burnside & Dollar, 2000). We are thus faced with an issue of endogeneity owing to reverse-causality and omitted variables, since the NODA indicators are correlated with the error term in the equation of interest. To address this issue we shall confirm the presence of endogeneity with the Hausman-test and employ an estimation technique that takes account of the endogeneity issue.

### 3.2.2 Estimation technique

In accordance with Beck et al.(2003) and recent African law-finance literature(Asongu, 2011cd) the paper adopts an Instrumental Variable(IV) estimation method. IV estimation addresses the puzzle of endogeneity and thus avoids the inconsistency of estimated coefficients by Ordinary Least Squares (OLS) when the exogenous variables are correlated with the error term in the main equation. In line with Asongu (2011cde), the Two-Stage-Least-Squares (TSLS) estimation method adopted by this study will entail the following steps.

First-stage regression:

$$NODA_u = \gamma_0 + \gamma_1(\text{legalorigin})_{it} + \gamma_2(\text{religion})_{it} + \gamma_3(\text{incomelevel})_{it} + \alpha X_{it} + \nu \quad (1)$$

Second-stage regression:

$$Growth_u = \gamma_0 + \gamma_1(NODA)_{it} + \beta_i X_{it} + \mu \quad (2)$$

In the two equations,  $X$  is a set of control variables. For the first and second equations,  $\nu$  and  $\mu$ , respectively denote the disturbance terms. Instrumental variables are legal-origins, dominant-religions and income-levels. NODA stands for Net Official Development Assistance.

We adopt the following steps in the analysis:

- justify the choice of a TSLS over an OLS estimation technique with the Hausman-test for endogeneity;
- show the instruments are exogenous to the endogenous components of explaining variables (aid channels), conditional on other covariates (control variables);
- ensure the instruments are valid and not correlated with the error-term in the main equation with an Over-identifying Restrictions (OIR) test.

### *3.2.3 Robustness checks*

To ensure robustness in the analysis, the following checks will be carried-out: (1) usage of alternative indicators of aid; (2) employment of two distinct interchangeable sets of moment conditions that encompass every category of the instruments; (3) usage of alternative indicators of growth and development; (4) account for the concern of endogeneity; (5) regressions under both restricted and unrestricted hypotheses.

## **4. Empirical analysis**

This section addresses the ability of the exogenous components of NODA dynamics to account for differences in human development, GDP growth and GDP per capita growth; the ability of the instruments to explain variations in the endogenous components of NODA dynamics and the possibility of the instruments to account for growth and human development beyond NODA dynamic channels. To make these assessments, we use the panel TSLS-IV estimation method with legal-origins, income-levels, and religious-dominations as instrumental variables.

## 4.1 Development assistance and instruments

Table 2 below assesses the validity of the instruments in explaining cross-country differences in NODA dynamics.

**Table 2: First-stage regressions**

|                         |              | Net Official Development Assistance(NODA) |                              |                              |                             |                              |                              |
|-------------------------|--------------|---|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
|                         |              | NODAgdp                                   |                              | NODAMDgdp                    |                             | NODADACgdp                   |                              |
|                         |              | 1 <sup>st</sup> Set                       | 2 <sup>nd</sup> Set          | 1 <sup>st</sup> Set          | 2 <sup>nd</sup> Set         | 1 <sup>st</sup> Set          | 2 <sup>nd</sup> Set          |
|                         | Constant     | <b>3.675*</b><br>(1.889)                  | -1.244<br>(-0.740)           | <b>1.835**</b><br>(2.271)    | <b>-1.237*</b><br>(-1.771)  | 1.794<br>(1.381)             | 0.007<br>(0.006))            |
|                         | English      | 1.009<br>(0.928)                          | ---                          | 0.677<br>(1.500)             | ---                         | 0.294<br>(0.405)             | ---                          |
|                         | French       | ---                                       | -1.009<br>(-0.928)           | ---                          | -0.677<br>(-1.500)          | ---                          | -0.294<br>(-0.405)           |
|                         | Christianity | <b>2.084*</b><br>(1.901)                  | ---                          | 0.081<br>(0.178)             | ---                         | <b>2.051***</b><br>(2.801)   | ---                          |
| Instruments             | Islam        | ---                                       | <b>-2.084*</b><br>(-1.901)   | ---                          | -0.081<br>(-0.178)          | ---                          | <b>-2.051***</b><br>(-2.801) |
|                         | L.Income     | ---                                       | <b>8.014***</b><br>(6.102)   | ---                          | <b>3.831***</b><br>(7.022)  | ---                          | <b>4.132***</b><br>(4.710)   |
|                         | M. Income    | <b>-9.093***</b><br>(-6.051)              | ---                          | <b>-4.112***</b><br>(-6.587) | ---                         | <b>-4.924***</b><br>(-4.905) | ---                          |
|                         | LMIncome     | 1.079<br>(0.674)                          | ---                          | 0.281<br>(0.422)             | ---                         | 0.792<br>(0.740)             | ---                          |
|                         | UMIncome     | ---                                       | -1.079<br>(-0.674)           | ---                          | -0.281<br>(-0.422)          | ---                          | -0.792<br>(-0.740)           |
| Control Variables       | Popg         | <b>3.342***</b><br>(5.784)                | <b>3.342***</b><br>(5.784)   | <b>1.559***</b><br>(6.496)   | <b>1.559***</b><br>(6.496)  | <b>1.755***</b><br>(4.548)   | <b>1.755***</b><br>(4.548)   |
|                         | Regulation   | <b>-2.377***</b><br>(-2.811)              | <b>-2.377***</b><br>(-2.811) | <b>-0.739**</b><br>(-2.106)  | <b>-0.739**</b><br>(-2.106) | <b>-1.625***</b><br>(-2.877) | <b>-1.625***</b><br>(-2.877) |
| Adjusted R <sup>2</sup> |              | 0.257                                     | 0.257                        | 0.285                        | 0.285                       | 0.193                        | 0.193                        |
| Fisher Statistics       |              | <b>32.845***</b>                          | <b>32.845***</b>             | <b>37.627***</b>             | <b>37.627***</b>            | <b>22.922***</b>             | <b>22.922***</b>             |
| Observations            |              | 551                                       | 551                          | 551                          | 551                         | 551                          | 551                          |

L: Low. LM: Lower Middle. UM: Upper Middle. Inv: Investment. Pop: population. \*; \*\*; \*\*\*: significance levels of 10%, 5% and 1% respectively. NODAgdp: NODA on GDP. NODAMDgdp: NODA from Multilateral Donors on GDP. NODADACgdp: NODA from DAC countries on GDP. Student statistics ratios in brackets. 1<sup>st</sup> Set: First Set of Instruments . 2<sup>nd</sup> Set: Second Set of Instruments.

Clearly, it could be observed that distinguishing African countries by legal-origins, income levels and religious-dominations help explain cross-country differences in NODA. Based on the Fisher-test, the instruments taken together enter significantly in all regressions at the 1% significance level. Broadly the following findings could be established. (1) Christian-dominant countries have received more aid than their Islam-oriented counterparts. (2) Consistent

with common sense and economic theory, Low-income countries are prone to more aid than Middle-income countries. The control variables are significant with the right signs as development-aid increases with population growth and decreases with improvement in regulation quality(which ensures better management and distribution of national wealth).

#### **4.2 Human development, growth and development assistance**

Table 3 investigates two main issues: (1) the ability of NODA channels to account for development dynamics and (2) the possibility of the instrumental variables explaining development dynamics beyond NODA channels. Whereas we address the first issue by assessing the significance of estimated coefficients, the second is investigated with the Cragg-Donald and Sargan-OIR tests for instrument strength and validity respectively. The null hypothesis of the Sargan test is the view that the instruments account for development dynamics only through NODA channels. Thus a rejection of the null hypothesis is the rejection of the view that the instruments explain development dynamics through no other mechanisms than NODA channels. The null hypothesis of Cragg-Donald test is the stance that the instruments are weak; thus its rejection points to the strength of the instruments at first-stage regressions. The Hausman-test for endogeneity precedes the IV regressions and thus justifies the choice of the estimation technique. The null hypothesis of this test is the position that OLS estimates are efficient and consistent. Therefore a rejection of the null hypothesis points to the issue of reverse causality (endogeneity) we have elucidated earlier (see Section 3.2.1) and hence lends credit to the choice of a TSLS-IV estimation technique. Otherwise we model by OLS. For robustness purposes, results are replicated using an alternative set of instrumental variables, as depicted in the second and third to the last lines of Table 3. In the unrestricted regressions of Table 3, the

null hypothesis of the Hausman-test is rejected for all the regressions; confirming the presence of endogeneity and hence the choice of the TSLS-IV approach.

With regard to the first concern which is addressed by the significance of estimated coefficients, it can firmly be established that NODA dynamics significantly decrease development and growth in Africa. The negative effect is most in aid from Multilateral donors and more in aid from DAC countries. These results are broadly consistent with the aid-development literature on developing countries(Boone,1996; Reichel,1995; Ghura,1995; Pedersen,1996).

**Table 3: Second-stage regressions(Unrestricted)**

|                           | Human Development   |                             |                             | GDP growth                 |                            |                            | GDP per capita growth        |                              |                              |
|---------------------------|---|-----------------------------|-----------------------------|----------------------------|----------------------------|----------------------------|------------------------------|------------------------------|------------------------------|
| Constant                  | 5.530<br>(1.294)  | 5.295<br>(1.269)            | 5.663<br>(1.294)            | -1.832<br>(-0.537)         | -1.822<br>(-0.535)         | -1.906<br>(-0.555)         | -2.214<br>(-0.712)           | -2.208<br>(-0.715)           | -2.326<br>(-0.734)           |
| NODAgdp                   | <b>-0.172**</b><br>(-2.036)   | ---                         | ---                         | <b>-0.105*</b><br>(-1.862) | ---                        | ---                        | <b>-0.170***</b><br>(-3.305) | ---                          |                              |
| NODAMDgdp                 | ---   | <b>-0.423**</b><br>(-2.062) | ---                         | ---                        | <b>-0.234*</b><br>(-1.829) | ---                        | ---                          | <b>-0.378***</b><br>(-3.251) |                              |
| NODADACgdp                | ---   | ---                         | <b>-0.289**</b><br>(-1.989) | ---                        | ---                        | <b>-0.188*</b><br>(-1.852) | ---                          | ---                          | <b>-0.305***</b><br>(-3.255) |
| Democracy                 | <b>1.217***</b><br>(4.845)  | <b>1.218***</b><br>(4.871)  | <b>1.219***</b><br>(4.801)  | 0.023<br>(0.107)           | 0.041<br>(0.193)           | 0.013<br>(0.060)           | 0.080<br>(0.405)             | 0.109<br>(0.566)             | 0.063<br>(0.313)             |
| Public Investment         | -0.780<br>(-1.350)  | -0.755<br>(-1.326)          | -0.797<br>(-1.354)          | <b>1.000**</b><br>(2.343)  | <b>0.980**</b><br>(2.299)  | <b>1.019**</b><br>(2.371)  | <b>0.788**</b><br>(2.025)    | <b>0.756*</b><br>(1.953)     | <b>0.819**</b><br>(2.064)    |
| Hausman-test              | <b>35.241***</b>  | <b>35.115***</b>            | <b>35.398***</b>            | <b>14.624***</b>           | <b>15.384***</b>           | <b>13.638***</b>           | <b>19.129***</b>             | <b>18.691***</b>             | <b>19.98***</b>              |
| OIR-Sargan test           | <b>1.286</b>  | <b>1.231</b>                | <b>1.361</b>                | <b>0.042</b>               | <b>0.212</b>               | <b>0.000</b>               | <b>0.186</b>                 | <b>0.789</b>                 | <b>0.002</b>                 |
| P-value                   | [0.256]   | [0.267]                     | [0.243 ]                    | [0.836]                    | [0.644]                    | [0.994 ]                   | [0.665 ]                     | [0.789]                      | [0.959 ]                     |
| Cragg-Donald              | <b>3.020**</b>  | <b>3.016**</b>              | <b>2.983**</b>              | <b>3.719**</b>             | <b>3.645**</b>             | <b>3.780**</b>             | <b>3.719**</b>               | <b>3.645**</b>               | <b>3.780**</b>               |
| Adjusted R <sup>2</sup>   | 0.052   | 0.053                       | 0.050                       | 0.010                      | 0.009                      | 0.009                      | 0.016                        | 0.016                        | 0.014                        |
| Fisher Statistics         | <b>10.827***</b>  | <b>10.957***</b>            | <b>10.567***</b>            | <b>3.723***</b>            | <b>3.718**</b>             | <b>3.652**</b>             | <b>6.581***</b>              | <b>6.529***</b>              | <b>6.338***</b>              |
| Observations              | 447   | 447                         | 447                         | 584                        | 584                        | 584                        | 584                          | 584                          | 584                          |
| First-Set of Instruments  | Constant; English; Christianity; Middle Income; Lower Middle Income |                             |                             |                            |                            |                            |                              |                              |                              |
| Second-Set of Instruments | Constant; French; Islam; Lower Income; Upper Middle Income          |                             |                             |                            |                            |                            |                              |                              |                              |

\*;\*\*;\*\*\*: significance levels of 10%, 5% and 1% respectively. (): z-statistics . []: p-values corresponding to OIR-Sargan test. OIR: Overidentifying Restrictions test. For the Cragg-Donald statistics the relative bias is probably less than 5% since the critical value for TSLS bias over OLS is 0.00. NODAgdp: NODA on GDP. NODAMDgdp:NODA from Multilateral Donors on GDP. NODADACgdp: NODA from DAC countries on GDP.

As concerns the second-issue, failure to reject the null hypothesis of the OIR test in all regressions indicates that the instruments do not explain development dynamics through other mechanisms beyond NODA channels. Thus the instruments are valid and not correlated with the error term in the main equation; the instruments do not suffer-from endogeneity. We also provide

the Cragg-Donald statistics for the strength of the instruments at the first stage of the TSLS. The null hypothesis for weak instrument is rejected in all regressions, confirming the strength of the instruments. The control variables are significant with the right signs since democracy and public investment improve growth and human development. The analysis in Table 3 is replicated with the second-set of instruments for robustness in the results.

Table 4 below presents restricted TSLS results. First and foremost, the results for the Hausman-test confirm the choice of our estimation approach. Results of the Cragg-Donald and Sargan-OIR tests confirm the strength and validity of the instruments respectively. While the null hypothesis for weak instrument is rejected(the relative bias is probably less than 5% since the critical value for TSLS bias over OLS is 9.53), the alternative hypothesis of the Sargan-OIR test is rejected. Broadly findings based on restricted regressions confirm those in Table 3 even after they are replicated with an alternative set of instruments. In substance both the endogenous regressors and control variables are significant with the right signs.

**Table 4: Second-stage regressions(Restricted)**

|                           | Human Development  |                            |                            | GDP growth                  |                             |                             | GDP per capita growth        |                              |                              |
|---------------------------|--|----------------------------|----------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|
| NODAgdp                   | -0.107<br>(-1.589)   | ---                        | ---                        | ---                         | ---                         | ---                         | <b>-0.184***</b><br>(-4.041) | ---                          | ---                          |
| NODAMDgdp                 | ---  | <b>-0.274*</b><br>(-1.645) | ---                        | <b>-0.116**</b><br>(-2.348) | <b>-0.260**</b><br>(-2.323) | ---                         | ---                          | <b>-0.410***</b><br>(-3.993) | ---                          |
| NODADACgdp                | ---  | ---                        | <b>-0.175</b><br>(-1.535)  | ---                         | ---                         | <b>-0.208**</b><br>(-2.329) | ---                          | ---                          | <b>-0.329***</b><br>(-3.974) |
| Democracy                 | <b>1.118***</b><br>(4.714)   | <b>1.119***</b><br>(4.754) | <b>1.119***</b><br>(4.688) | -0.010<br>(-0.051)          | 0.009<br>(0.049)            | -0.022<br>(-0.110)          | 0.040<br>(0.221)             | 0.071<br>(0.402)             | 0.020<br>(0.110)             |
| Public Investment         | -0.056<br>(-0.391)   | -0.056<br>(-0.394)         | -0.059<br>(-0.409)         | <b>0.779***</b><br>(7.223)  | <b>0.759***</b><br>(7.441)  | <b>0.790***</b><br>(7.035)  | <b>0.520***</b><br>(5.263)   | <b>0.488***</b><br>(5.229)   | <b>0.538***</b><br>(5.173)   |
| Hausman-test              | <b>59.718***</b>   | <b>60.848***</b>           | <b>58.845***</b>           | <b>46.555***</b>            | <b>47.966***</b>            | <b>45.426***</b>            | <b>22.303***</b>             | <b>21.634***</b>             | <b>22.657***</b>             |
| OIR-Sargan test           | <b>3.009</b>   | <b>2.889</b>               | <b>3.111</b>               | <b>0.369</b>                | <b>0.557</b>                | <b>0.345</b>                | <b>0.765</b>                 | <b>1.425</b>                 | <b>0.600</b>                 |
| P-value                   | [0.222]  | [0.235]                    | [0.211]                    | [0.831]                     | [0.756]                     | [0.841]                     | [0.682]                      | [0.490]                      | [0.740]                      |
| Cragg-Donald              | <b>15.651**</b>  | <b>15.643**</b>            | <b>15.289**</b>            | <b>17.469**</b>             | <b>17.788**</b>             | <b>16.785**</b>             | <b>17.469**</b>              | <b>17.788**</b>              | <b>16.785**</b>              |
| Adjusted R <sup>2</sup>   | 0.024  | 0.025                      | 0.022                      | 0.010                       | 0.010                       | 0.010                       | 0.017                        | 0.017                        | 0.013                        |
| Fisher Statistics         | <b>16.329***</b>   | <b>16.557***</b>           | <b>16.082***</b>           | <b>86.000***</b>            | <b>86.947***</b>            | <b>84.351***</b>            | <b>27.897***</b>             | <b>28.126***</b>             | <b>26.800***</b>             |
| Observations              | 447  | 447                        | 447                        | 584                         | 584                         | 584                         | 584                          | 584                          | 584                          |
| First-Set of Instruments  | Constant; English ; Christianity; Middle Income; Lower Middle Income |                            |                            |                             |                             |                             |                              |                              |                              |
| Second-Set of Instruments | Constant; French; Islam; Lower Income; Upper Middle Income           |                            |                            |                             |                             |                             |                              |                              |                              |

\*\*\*: significance levels of 10%, 5% and 1% respectively. (): z-statistics . []: p-values corresponding to OIR-Sargan test. OIR: Overidentifying Restrictions test. For the Cragg-Donald statistics the relative bias is probably less than 5% since the critical value for TSLS bias over OLS is 9.53. NODAgdp: NODA on GDP. NODAMDgdp:NODA from Multilateral Donors on GDP. NODADACgdp: NODA from DAC countries on GDP.

#### **4.3 Further discussion, caveats and policy implications**

Findings in this paper do not provide much grounds for the hope that Western aid can save Africa. Perhaps current views on the roots of poverty in Africa are too simplistic and attempts to change these root causes have underestimated the difficulty of doing so from the outside. The failure of the West's attempted rescue through aid does not necessarily imply a disastrous outlook for Africa. Africans on their own will have to achieve economic and political changes that promote African economic development and some of these changes are already on course(such as the movement towards freer markets and the expansion of democracy). There are therefore hopeful signs of the growth of enterprise in Africa. The explosion of cell phones for example has enabled Africa edge the phase of fixed phones in the development process. Economic development in Africa depends on African private sector entrepreneurs, African civic activists and African political reformers... not on what ineffective, unaccountable, bureaucratic , poorly informed and unmotivated outsiders do.

So if anything, what can the West do for Africa? Just because the West cannot save Africa does not logically imply there is nothing the rich countries can do for the African continent. The evidence in the literature(Easterly, 2005a) suggests that aid has been more successful at delivering tangible outcomes like education, health and water. The micro development literature using randomized controlled trails also finds positive effects of some specific development interventions from foreign aid. In a nutshell the West cannot save Africa, but foreign aid can still be beneficial to recipient countries in a piecemeal way to alleviate the sufferings of those desperately poor.

More modest goals from aid in Africa would make it easier to hold aid agencies accountable for the results of aid-targeted projects. The sweeping ambitions of the current

Western aid efforts in Africa do not lend themselves to accountability, since for the most part the outcome depends on many other factors beside aid agency efforts and attempts to isolate the effects of these efforts have proved fruitless. More accountable agencies might be encouraged to make more progress on piecemeal interventions. These modest goals would render the West much less intrusive in Africa, thus ending the historical tendency towards ever-increasing escalation of Western interventions in the continent. This could be an appealing prospect because the intrusive Western role has made African governments accountable to external actors instead of their own citizens. It follows that insiders have better information and incentives to solve their own problems than outsiders do. Arguably, local democracy that eases citizen feedback have proven to be a more effective vehicle for good government than outside pressure. On a final note, the more intrusive large-scale interventions have lots of unintended consequences that are hard to evaluate, many of which could be detrimental.

Perhaps the success of action in society depends on more particular facts than anyone can possibly know. As Hayek(1988) suggested “*the curious task in economics is to demonstrate to men how little they know about what they imagine they can design*”. The escalation of Western interventions in Africa demonstrates an arrogance in the face of very imperfect knowledge. Once economists discard arrogance, there is hope to hold donors accountable for such piecemeal outcomes as well-maintained roads, medicines, water supply, textbooks and nutritional supplements to improve the well-being of the poorest people in the world. It is thus a momentous time to solve the second tragedy of foreign aid; it is time for economists and policy makers to start rethinking the models and theories on which foreign aid is based. In the meantime, it is up to people who care about the poor to hold aid agencies accountable for results.

## 5. Conclusion

Past research on the African aid-growth(development) nexus has been based on data collected before the year 2000 and mostly focused on growth. Literature investigating the effect of aid on human development presents the shortcoming of using an index that is unadjusted for inequality. This paper has used more updated data(1996-2010) and the Inequality adjusted Human Development Index first published in 2010 to complement existing literature. The findings broadly indicate that development assistance is detrimental to GDP growth, GDP per capita growth and human development. Given concerns on the achievement of the MDGs, the relevance of these results point to the deficiency of foreign aid as a sustainable cure to poverty in Africa.

Perhaps the success of action in society depends on more particular facts than anyone can possibly know. As Hayek(1988) suggested “*the curious task in economics is to demonstrate to men how little they know about what they imagine they can design*”. The escalation of Western interventions in Africa demonstrates an arrogance in the face of very imperfect knowledge. Once economists discard arrogance, there is hope to hold donors accountable for such piecemeal outcomes as well-maintained roads, medicines, water supply, textbooks and nutritional supplements to improve the well-being of the poorest people in the world. It is thus momentous time to solve the second tragedy of foreign aid; it is time for economists and policy makers to start rethinking the models and theories on which foreign aid is based. In the meantime, it is up to people who care about the poor to hold aid agencies accountable for results.

## Appendices

### Appendix 1: Summary Statistics

| Variables              |                                  | Mean   | S.D    | Min.   | Max.   | Observations |
|------------------------|----------------------------------|--------|--------|--------|--------|--------------|
| Development Assistance | Net Development Assistance(NODA) | 10.811 | 12.774 | -0.251 | 148.30 | 704          |
|                        | NODA from Multilateral Donors    | 4.481  | 5.512  | -1.985 | 64.097 | 704          |
|                        | NODA from DAC countries          | 6.244  | 8.072  | -0.679 | 97.236 | 704          |
| Growth & Development   | Human Development                | 1.351  | 6.341  | 0.127  | 47.486 | 551          |
|                        | GDP growth                       | 4.822  | 7.351  | -31.30 | 106.28 | 744          |
|                        | GDP per capita growth            | 2.380  | 6.754  | -33.07 | 90.140 | 753          |
| Control Variables      | Population growth                | 2.359  | 1.015  | -1.081 | 10.043 | 780          |
|                        | Regulation Quality               | -0.673 | 0.673  | -2.729 | 0.905  | 620          |
|                        | Democracy                        | 2.307  | 4.089  | -8.000 | 10.000 | 735          |
|                        | Public Investment                | 7.489  | 4.535  | 0.000  | 39.984 | 641          |
| Instrumental Variables | English Common-Law               | 0.384  | 0.486  | 0.000  | 1.000  | 780          |
|                        | French Civil-Law                 | 0.615  | 0.486  | 0.000  | 1.000  | 780          |
|                        | Christianity                     | 0.634  | 0.481  | 0.000  | 1.000  | 780          |
|                        | Islam                            | 0.365  | 0.481  | 0.000  | 1.000  | 780          |
|                        | Low Income                       | 0.576  | 0.494  | 0.000  | 1.000  | 780          |
|                        | Middle Income                    | 0.423  | 0.494  | 0.000  | 1.000  | 780          |
|                        | Lower Middle Income              | 0.230  | 0.421  | 0.000  | 1.000  | 780          |
|                        | Upper Middle Income              | 0.192  | 0.394  | 0.000  | 1.000  | 780          |

S.D: Standard Deviation. Min: Minimum. Max: Maximum.

## Appendix 2: Correlation Analysis

| Growth and Development |        |        | Development Assistance |        |        | Control Variables |        |        | Instrumental Variables |        |        |        |        |        |        |        |        |        |
|------------------------|--------|--------|------------------------|--------|--------|-------------------|--------|--------|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| HDI                    | GDPg   | GDPPcg | TA                     | MLD    | DAC    | Popg              | Reg    | Demo   | PubI                   | Eng.   | Frch.  | Chris  | Islam  | LI     | MI     | LMI    | UMI    |        |
| 1.000                  | -0.026 | -0.025 | -0.072                 | -0.079 | -0.060 | -0.014            | 0.160  | 0.131  | -0.151                 | 0.185  | -0.185 | 0.101  | -0.101 | -0.080 | 0.089  | -0.081 | 0.231  | HDI    |
|                        | 1.000  | 0.987  | 0.053                  | 0.073  | 0.034  | 0.335             | 0.058  | 0.059  | 0.117                  | -0.002 | 0.002  | 0.029  | -0.029 | -0.052 | 0.052  | -0.000 | 0.067  | GDPg   |
|                        |        | 1.000  | 0.000                  | 0.013  | -0.008 | 0.187             | 0.106  | 0.075  | 0.115                  | 0.013  | -0.013 | 0.030  | -0.030 | -0.125 | 0.125  | 0.034  | 0.122  | GDPPcg |
|                        |        |        | 1.000                  | 0.900  | 0.955  | 0.368             | -0.242 | -0.031 | 0.195                  | -0.050 | 0.050  | 0.058  | -0.058 | 0.450  | -0.450 | -0.265 | -0.281 | TA     |
|                        |        |        |                        | 1.000  | 0.733  | 0.400             | -0.220 | 0.011  | 0.220                  | -0.035 | 0.035  | -0.006 | 0.006  | 0.475  | -0.475 | -0.284 | -0.293 | MLD    |
|                        |        |        |                        |        | 1.000  | 0.304             | -0.230 | -0.056 | 0.141                  | -0.056 | 0.056  | 0.098  | -0.098 | 0.382  | -0.382 | -0.222 | -0.242 | DAC    |
|                        |        |        |                        |        |        | 1.000             | -0.195 | -0.063 | 0.043                  | -0.107 | 0.107  | 0.008  | -0.008 | 0.425  | -0.425 | -0.222 | -0.296 | Pog    |
|                        |        |        |                        |        |        |                   | 1.000  | 0.519  | 0.078                  | 0.134  | -0.134 | 0.077  | -0.077 | -0.274 | -0.274 | 0.106  | 0.231  | Reg.   |
|                        |        |        |                        |        |        |                   |        | 1.000  | 0.147                  | 0.177  | -0.177 | 0.163  | -0.163 | -0.034 | 0.034  | -0.162 | 0.228  | Demo   |
|                        |        |        |                        |        |        |                   |        |        | 1.000                  | -0.138 | 0.138  | 0.008  | -0.008 | -0.049 | 0.049  | 0.002  | 0.059  | PubI.  |
|                        |        |        |                        |        |        |                   |        |        |                        | 1.000  | -1.000 | 0.189  | -0.189 | -0.043 | 0.043  | -0.057 | 0.115  | Eng.   |
|                        |        |        |                        |        |        |                   |        |        |                        |        | 1.000  | -0.189 | 0.189  | 0.043  | -0.043 | 0.057  | -0.115 | Frch.  |
|                        |        |        |                        |        |        |                   |        |        |                        |        |        | 1.000  | -1.000 | -0.003 | 0.003  | -0.153 | 0.167  | Chris  |
|                        |        |        |                        |        |        |                   |        |        |                        |        |        |        | 1.000  | 0.003  | -0.003 | 0.153  | -0.167 | Islam  |
|                        |        |        |                        |        |        |                   |        |        |                        |        |        |        |        | 1.000  | -1.000 | -0.639 | -0.569 | LI     |
|                        |        |        |                        |        |        |                   |        |        |                        |        |        |        |        |        | 1.000  | 0.639  | 0.569  | MI     |
|                        |        |        |                        |        |        |                   |        |        |                        |        |        |        |        |        |        | 1.000  | -0.267 | LMI    |
|                        |        |        |                        |        |        |                   |        |        |                        |        |        |        |        |        |        |        | 1.000  | UMI    |

HDI: Human Development Index. GDPg: GDP growth. GDPPcg: GDP per capita growth. TA: Total development assistance. MLD: Development Assistance from Multilateral Donors. DAC: Development Assistance Committee. Popg: Population growth. Reg: Regulation quality. Demo: Democracy. PubI: Public Investment. Eng: English Common-Law. Frch: French Civil-Law. Chris: Christian Religion. LI: Low Income. MI: Middle Income. LMI: Lower Middle Income. UMI: Upper Middle Income.

### Appendix 3: Variable Definitions

| Variables                        | Signs      | Variable Definitions                  | Sources         |
|----------------------------------|------------|---------------------------------------|-----------------|
| Net Development Assistance(NODA) | NODAgdp    | NODA(% of GDP)                        | World Bank(WDI) |
| NODA from Multilateral Donors    | NODAMDgdp  | NODAMDgdp(% of GDP)                   | World Bank(WDI) |
| NODA from DAC Donors             | NODADACgdp | NODADACgdp(% of GDP)                  | World Bank(WDI) |
| Human Development                | HDI        | Human Development Index               | World Bank(WDI) |
| GDP Growth                       | GDPg       | GDP Growth(annual %)                  | World Bank(WDI) |
| GDP Per Capita Growth            | GDPPcg     | GDP Per Capita Growth (annual %)      | World Bank(WDI) |
| Regulation Quality               | R.Q        | Regulation Quality (estimate)         | World Bank(WDI) |
| Population growth                | Popg       | Average annual population growth rate | World Bank(WDI) |
| Democracy                        | Demo       | Level of Institutionalized Democracy  | World Bank(WDI) |
| Public Investment                | PubI       | Gross Public Investment(% of GDP)     | World Bank(WDI) |

WDI: World Bank Development Indicators. DAC: Development Assistance Committee.

#### Appendix 4: Presentation of Countries

| <b>Instruments</b> | <b>Instrument Category</b> | <b>Countries</b>   | <b>Num.</b> |
|--------------------|----------------------------|--|-------------|
| Legal-origins      | English Common-Law         | Botswana, The Gambia, Ghana, Kenya, Lesotho, Liberia, Malawi, Mauritius, Namibia, Nigeria, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Uganda, Zambia, Tanzania, Zimbabwe.  | 20          |
|                    | French Civil-Law           | Algeria, Angola, Benin, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Congo Republic, Congo Democratic Republic, Djibouti, Egypt, Eritrea, Equatorial Guinea, Ivory Coast, Ethiopia, Gabon, Guinea, Guinea-Bissau, Libya, Madagascar, Mali, Mauritania, Morocco, Mozambique, Niger, Rwanda, Sao Tome & Principe, Senegal, Togo, Tunisia.                | 32          |
| Religions          | Christianity               | Angola, Benin, Botswana, Burundi, Cameroon, Cape Verde, Central African Republic, Congo Republic, Congo Democratic Republic, Ivory Coast, Equatorial Guinea, Ethiopia, Eritrea, Gabon, Ghana, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Rwanda, Seychelles, Sao Tome & Principe, South Africa, Swaziland, Togo, Uganda, Zambia, Tanzania, Zimbabwe. | 33          |
|                    | Islam                      | Algeria, Burkina Faso, Chad, Djibouti, The Gambia, Egypt, Guinea-Bissau, Guinea, Libya, Mali, Mauritania, Morocco, Niger, Nigeria, Senegal, Sierra Leone, Somalia, Sudan, Tunisia.   | 19          |
| Income Levels      | Low Income                 | Benin, Burkina Faso, Burundi, Central African Republic, Chad, Congo Republic, Congo Democratic Republic, Djibouti, Ethiopia, Eritrea, The Gambia, Ghana, Guinea-Bissau, Guinea, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Sierra Leone, Somalia, Togo, Uganda, Zambia, Tanzania, Zimbabwe.  | 30          |
|                    | Middle Income              | Algeria, Angola, Botswana, Cameroon, Cape Verde, Egypt, Ivory Coast, Equatorial Guinea, Gabon, Lesotho, Libya, Mauritius, Morocco, Namibia, Nigeria, Senegal, Seychelles, Sao Tome & Principe, South Africa, Sudan, Swaziland, Tunisia.  | 22          |
|                    | Lower Middle Income        | Angola, Cameroon, Cape Verde, Egypt, Ivory Coast, Lesotho, Morocco, Nigeria, Sudan, Swaziland, Tunisia.  | 11          |
|                    | Upper Middle Income        | Algeria, Botswana, Equatorial Guinea, Gabon, Libya, Mauritius, Namibia, Sao Tome & Principe, Seychelles, South Africa.   | 10          |

Num: Number of countries

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