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Financing Inclusive Development Through Aid and FDI: The Empirical Case of WAMZ

Okon Umoh[1, 2], Kenneth Onye[1]

[1]Department of Economics, Faculty of Social Sciences, University of Uyo, Uyo, Nigeria
[2]West African Institute for Financial and Economic Management, WAIFEM, Lagos, Nigeria

Email address:
Okon_umoh58@yahoo.com.com (O. Umoh), okokumoh58@yahoo.com (O. Umoh), kennethonye@yahoo.com (K. Onye)

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Abstract: West African countries are caught in a structural Poverty trap due to severe underdevelopment of their productive forces, compounded by an unfavorable international environment and lack of genuine commitment on the part of affluent countries to assist them. Despite rising income among these countries, inequality and poverty incidence seems to be rising. Of course, they could be greatly assisted through effective international actions. This paper investigates the contributions of FDI and aid in accelerating the development of WAMZ member countries. The paper relies on both the Fixed Effect and Dynamic Arellano-Bond GMM Panel Data regression frameworks to show that aid contributes powerfully to both human development and economic growth while FDI, at best, has no effect on economic growth and actually slows the rate of human development in WAMZ. The higher the level of human capital in a country, the more aid contributes to growth and development. On the basis of our findings, WAMZ require aid for inclusive development but not necessarily FDI.

Keywords: Inclusive Development, Aid, FDI, WAMZ, A-B Dynamic Panel Data

1. Introduction

Regional integration, perceived as a means of ameliorating poverty among the peoples of West African states and a prelude to the creation of an Africa-wide currency union, has been the goal of the Economic Community of West African States (ECOWAS) which was founded in 1975. In April 2000, ECOWAS adopted a strategy of two-track approach to the creation of a common currency in West Africa. For the first track, the non-West African Economic and Monetary Union (non-WAEMU) members of ECOWAS (Gambia, Ghana, Guinea, Nigeria, Liberia and Sierra Leone) were to form a second monetary union called the West African Monetary Zone (WAMZ) by July 2005, with the second track being the subsequent merging of WAEMU and WAMZ to form a single monetary union in the region with a common currency-the eco[1]. To achieve the first track, leaders of these West African countries declared their intention to proceed to a monetary union among the non-CFA franc countries of the region. As effort are ongoing towards the merging of WAEMU and WAMZ and the formation of a single currency union, one question that naturally follows is this; what has been the implications of the external sector for poverty reduction and inclusive[i] development in WAMZ?

In terms of human development, all WAMZ countries rank low and indeed belong to *low* human development group except Ghana that currently subsists at middle human development group (see Table 1). In the same regard, the Global Competitiveness Report (2015) ranks WAMZ member states in term of their Global competitiveness as follows: Ghana (111), Gambia (125), Nigeria (127) and Guinea (144) out of a maximum rank of 144. As Table 1 clearly shows, human development index averaged 0.9 in the OECD, 0.425 in WAMZ and 0.429 in WAEMU region. This shows that West African countries are the main losers of asymmetric globalization.

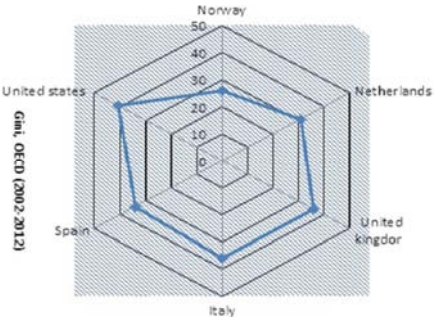
1 The first track has been realized since 2005 while efforts are still ongoing to achieve the second track.

Table 1. *Inequality Adjusted Human Development Index in Selected World Regions (2013).*

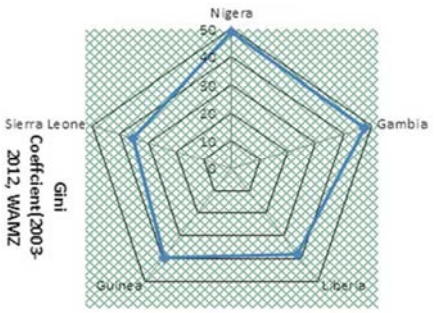
S/NO	Country-Regions	Human Development index (HDI)	Inequality adjusted HDI (HDI)	Inequality in life expectancy	Inequality adjusted life expectancy index	Inequality adjusted education index	Inequality adjusted income index	Gini coef., compound average (2003-2012)	MPI
	selected OECD Countries								
1	Norway	0.944	5.6	5.5	0.914	0.888	0.871	25.8	
2	Netherlands	0.915	6.7	6.6	0.902	0.857	0.806	30.9	
3	United states	0.914	17.4	16.2	0.851	0.83	0.609	40.8	
4	United kingdom	0.892	8.9	8.6	0.89	0.838	0.719	36	
5	Italy	0.872	11.9	11.6	0.927	0.697	0.701	36	
6	Spain	0.869	10.9	10.5	0.918	0.751	0.673	34	
	Average	0.90	10.1	9.8	0.900	0.81	0.73	33.92	
	West African Monetary Zone (WAMZ) Countries								
1	Nigeria	0.504	40.3	40.2	0.296	0.233	0.394	48.8	
2	Gambia	0.441		34.8	0.389		0.303	47.3	
3	Liberia	0.412	33.8	33.1	0.417	0.197	0.247	38.2	
4	Guinea	0.392	38	37.8	0.332	0.171	0.171	39.4	
5	Sierra Leone	0.374	44.3	43.6	0.192	0.156	0.302	35.4	
	Average	0.425	39.1	37.9	0.32	0.189	0.28	41.82	
	West African Economic and Monetary Union (WAEMU) Countries								
1	Benin	0.476	34.6	37	0.381	0.24	0.329	38.6	
2	Mali	0.407		45.6	0.293	0.193		33	
3	Senegal	0.485	32.9	29.5	0.471	0.204	0.359	40.3	
4	Togo	0.473	32.9	36.8	0.355	0.321	0.28	39.3	
5	Guinea Bissau	0.396	39.6	39.4	0.289	0.194	0.244	35.5	
6	Niger	0.337	32.4	31.8	0.367	0.12	0.269	34.6	
	Average	0.429	34.5	36.7	0.36	0.21	0.29	36.88	

Source: compiled from Human Development Report (2014). MPI = Multidimensional Poverty Index

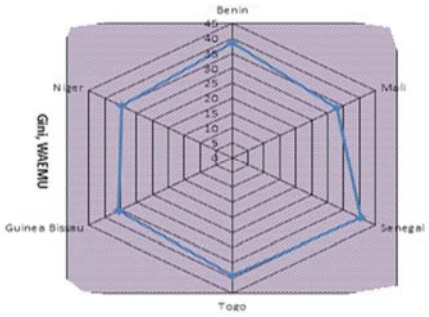
As regards inequality and poverty, the Fusion charts in Figure 1 plots the gini coefficients in different world region: panel 1, for OECD; Panel 2, for WAMZ; and panel 3, for WAEMU.



Panel 1



Panel 2



Panel 3

Figure 1. *Gini Coefficients in Selected World Regions: OECD, WAEMU and WAMZ Countries (2003-2013).*

Source: Author. Figure 1 is based on a 10-year compound average (2003-2012)

As it is obvious from Figure 1, WAMZ countries scored highest in terms of income inequality among the three World regions. Within WAMZ, worse still, Nigeria and Gambia recorded the largest degree of income inequality. These point to the fact that WAMZ require genuine commitment and effective international action, on the part of affluent countries, to lift itself out of the severe structural poverty trap.

In contemporary discourses on development, however, there seems to be growing consensus that even the most promising less-developed country often lacks resources to fund its own development and must look for foreign capital to augment domestic sources. Of the two major sources of foreign capital: aid and FDI, the later has been considered

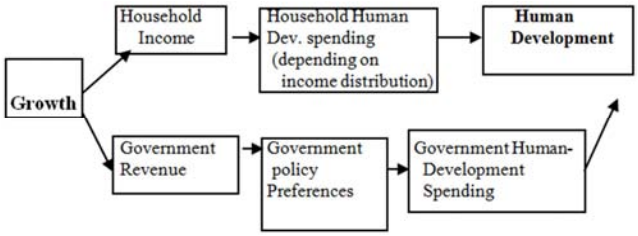
preferable and more effective because of its inherent link to the invisible hand of the market and freedom from the disruptive interference of government. As the former US secretary of state - Colin Powel - notes, as important as the official development assistance is in improving the people's lives, the reality is that it is private capital (FDI) and trade that make the real difference and of much significance (Powel, 2002). Nonetheless, the role of FDI and aid in promoting growth and development appears to remain an empirical question that may largely depend on the peculiarity of the country or region in questions. It is not surprising, therefore, that donors and international financial institutions now not only ask developing countries to make themselves more attractive to international investors but also calls for private-public partnerships that might increase foreign investment as a path to inclusive development. Yet, as Kosack and Tobin (2006) notes, behind these recommendations lurks an assumption which is, in its most general form, that all foreign capital inflows help development. In specifics, it is that aid and FDI are to some degree substitutes or complements in enhancing growth. To what extent is this true in the context of economic development in WAMZ?

The objective of this paper is to investigate the implication of aid and FDI for inclusive development in WAMZ. In specifics, has inflow of aid and FDI to WAMZ countries led to inclusive human development? This is particularly important because despite rising trend of FDI/aid inflow arising – at least partly – from the long-held development policy presumption that FDI is growth/development inducing, West African countries, as has been noted, are still caught in severe poverty trap (Fig. 1). Further, as aid and FDI constitute the two most prominent sources of external funding for development in WAMZ their implication for the inclusivity of development deserves robust empirical assessment. The balance of the paper is as follows. Section 2 lays out a new theory[ii] of aid/FDI versus development/growth nexus while 3 discuss the methodology adopted to test the empirical validity of the theory. In section 4 we present the result. The paper is concluded in section 5 with some implications for policy.

2. Brief and Relevant Literature: FDI/Aid Versus Development Nexus

Throughout this article, we use the concept of "human development" to distinguish between economic growth and economic development in its general sense. The concept of human development as enshrined in the UNDP's Human Development Reports include not only income (as in growth) but also measures of human capital – health and education – the tools that a person need both to live a successful life in the modern world and to contribute to a country's economic progress. Economic growth and development are intimately related and often used interchangeable; yet, they are distinct. Growth, defined as sustained increase in real per capita income, although necessary, has only an instrumental value. Development cannot take place without growth, yet growth itself does not warrant development. The distinction between growth and development naturally leads to the issue of the relationship between them.

Interestingly, a comprehensive theory of growth and human development nexus has been motivated by Ranis, Stewart and Ramirez (2000) and elaborated in the ensuing literature by Kosack and Tobin (2006), among others. These authors undertook a theoretical and empirical analysis of the linkage between growth and human development and show, not surprisingly, that each can contribute to the other. The evidence shows that a focus on human development tends to reinforce economic growth which they labeled "virtuous cycle". Conversely, countries that focus on increasing growth (rather than human development) tend to find themselves spiraling down the "vicious cycle" in which poor performance in human development inhibits sustained growth. The mechanisms are complex but can be briefly described in Figure 2 and 3 as follows.



Source: Adapted from Kosack and Tobin (2006)

Figure 2. *Transmission Link from Growth to Human Development.*

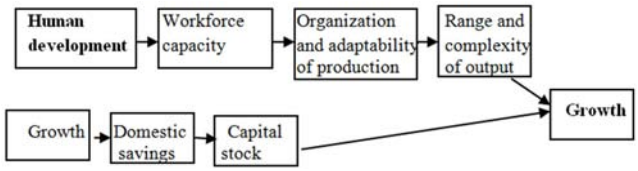


Figure 3. *Transmission Link from Human Development to Growth, and From Growth to Growth.*

Source: Adapted from Ranis, stewart and Ramirez (2000), and Kosack and Tobin (2006)

As Figure 2 shows, economic growth can contribute to human development by directly increasing government revenue, which, depending on government preferences could be re-invested further for human development. Similarly, growth can also contribute to human development by increasing household's income, which, depending on their level of income distribution (inclusivity of growth) can lead to increase in household spending on human development, namely on: health, education and welfare according to their spending priorities. Figure 3 shows that human development can contribute to economic growth by increasing workforce capacity and organizational skill, and their adaptability to production. This could increase the range and complexity of output, which depending on the policy environment, increases growth. Growth can also re-enforce more growth if it increase domestic savings and capital stock.

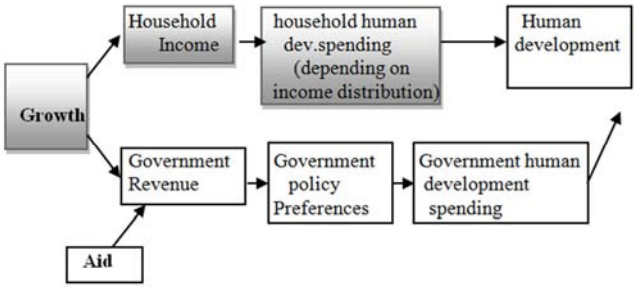
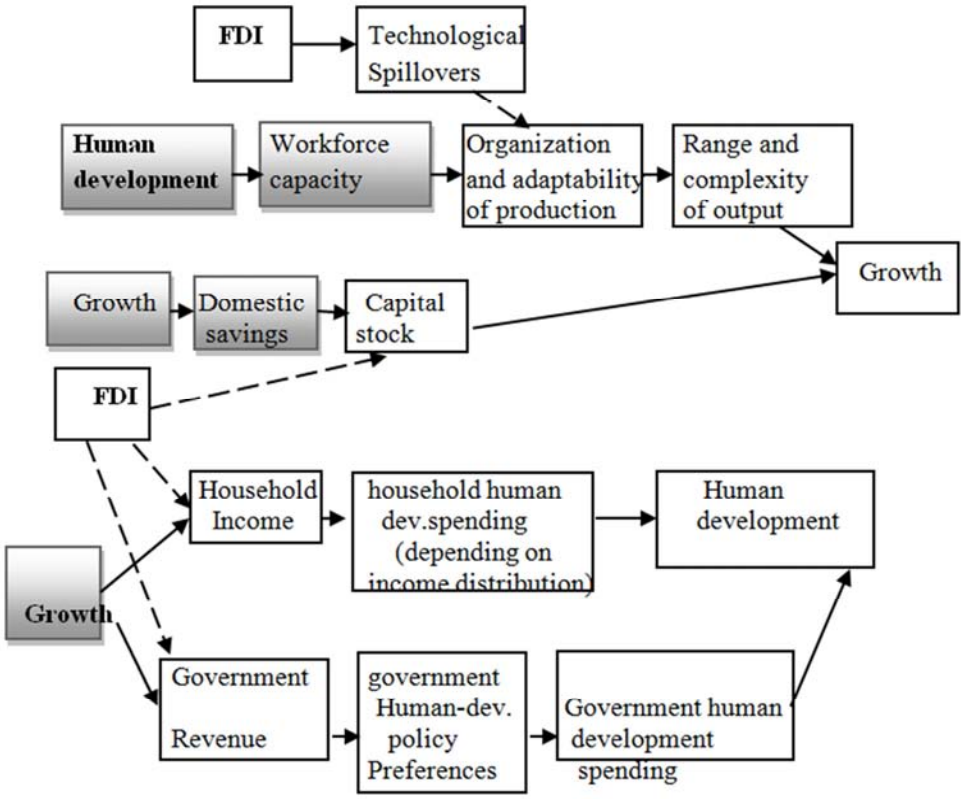


Figure 4. *Transmission Link from Aid to Development.*

Nonetheless, as Figure 2 and 3 clearly show, the only source of funding for development is domestic: economic growth. What then is the influence of external funding on inclusive development? Developing countries often has assess to external funding, from states (official aid) and from private sources (private FDI, private donations, individual remittances and commercial banks). We are concerned with aid and FDI as they constitute the two most prominent sources of external funding for development in WAMZ.

From Figure 4, aid – by which we mean Official Development Assistance (ODA) – enters into the picture directly as government revenue. As Mosley, Hudson and Horrel (1996) note, aid is somewhat different from other source of government revenue as it ends up substituting for other sources of government revenue thereby freeing up government monies to be spent as the government wants. More so, since donors have proven largely reluctant to withdraw aid when conditionality demands are not met, effort to change government priorities (by making aid conditional to changes in government priorities) have been largely unsuccessful. Thus, Donors are largely unwilling to withdraw aids when conditionality demands are not met. This is due mainly to the fact that donors do not give aid simply out of philanthropy or altruism. Instead, they are motivated by economic and strategic concerns which are largely unrelated to conditionality[iii]. This implies that aid is likely to affect human development (and, indirectly, economic growth) through government spending priorities. In countries where government gives high priority to human development, aid is likely to contribute to human development since it will add to spending on human development. Figure 4 shows the possible linkage between aid and human development. On the other hand, FDI is by nature private by contrast to government-centered aid. In this regard, it enters our picture in a way quite different from aid (see Figure 5).



Source: Adapted from Ranis, stewart and Ramirez (2000), and Kosack and Tobin (2006)

Figure 5. *Transmission Link from FDI to Development.*

FDI may increase growth indirectly through technological spillovers. More advanced technology and management practices may spill over to domestic firms as they observe foreign- firm practices or as labour – especially skilled labour and management personnel – moves between the two. Competition from foreign firms can also force domestic firms to increase their efficiency and their use of technology to keep pace. These externalities can contribute to growth by influencing the organization and adaptability of production.

FDI may also contribute to human development if it

increases household income or government's tax revenue. If so, FDI may work in much the same way as aid by increasing the fund available for government to spend. Nonetheless, even in the best of circumstances, FDI may lead to mis-development since it negative implications may easily outweighs its benefits. Any of the channels by which FDI contributes to either growth or development depend on the nature of the FDI and the ability of the country to harness the investment benefits. This will depends on the human capital and wage standard, among others. In specifics, where a country tries to attract more FDI by grating foreign firms special incentives, FDI may cause serious economic distortions. First, since FDI is attracted largely through tax incentives, then far from raising government revenue, it may actually reduce it. In the same regard, if foreign firms are disproportionately advantaged than local firms, the later may find it difficult to compete; and thus FDI may result in loss of indigenous enterprise.

Another possibility is that in countries where FDI is heavily subsidized, domestic investors that have been crowded out by the FDI may pretend to be outsiders by sending funds out of the country then bringing them back so as to benefit from the subsidy for foreign firms. For instance, as we see in Haung (1998) 15 percent of what is reported as FDI from Hong Kong in China is actually capital that originated in mainland China disguised as originating in Hong Kong in order to take advantage of benefits accorded to foreign investment in China. Similarly, by subsidizing FDI, a country may end up attracting foreign capital in areas in which it does not have comparative advantage, thus leading to inefficiency. Even if not attracted through subsidies and incentives, FDI may fail to bring benefits to a country. As Onye and Iriabije (2016) notes, FDI may bring with tacit technology that does not transfer skill. Too much FDI may even cause additional problems to a country. For instance, as Huang (2000) and Haung (2001) argue, China's FDI substitute for weak domestic[2] institutions (such as capital markets and banks) rather than inducing domestic reforms that would create a stable investment climate. In specifics, there is lack of consensus in the literature on whether FDI increase or decrease household's income or how it impact government's tax revenue. In Figure 5, we signify the uncertainty of the part from FDI to technological spillover, increased government revenues and greater household income with dotted lines in fellowship with Kosack and Tobin (2006). In the end, the influence of FDI on a country's progress is complex and empirical works in this area has just begun to explore this complexity. So far the evidence is agnostic.

Turning our attention to the empirics, literature does not always provide support for positive effect of FDI on growth. For instance, Borensztein, De Gregorio and Lee (1998), Blomstrom, Kokko and Globerman (2001), Blomstrom and Kokko (2003), Campos and Kinoshita (2002), Moudatsou (2003), Moudatsou and Krykilis (2011) find a positive relationship between FDI and growth in the host countries. Conversely, Boss, Sanders and Secchi (1974), Saltz (1992), Alfaro, Chanda, Kalemli-Ozman and Sayek (2004), Naveed and Ghalum (2006), Kosack and Tobin (2006), and Angelopoulou and Liargovas (2014) provide evidence for a negative relationship. For instance, Kosack and Tobing (2006) in specifics, challenge – on both empirical and theoretical grounds – the long-held development policy presumption that aid and FDI accelerate economic growth using the Arellano-Bond GMM panel data model. Their findings reveal that FDI does not impact growth but that aid does. Similarly, Angelopoulou and Liargovas (2014) investigate FDI-growth relationship for a sample of 27European Union (EU) countries, 16 European Monetary Union (EMU) countries and 18 countries in transition from centrally planned to market economies using a panel data framework. They found that in contrast to theoretical works that tend to suggest that FDI inflows have a positive effect on economic growth, there was no robust causality relationship between FDI and economic growth.

In the final analysis, the conclusion in the literature on FDI/aid versus growth/development nexus is that aid primarily affects human development and that FDI may affect either growth or human development but that the effect will depend on the type of FDI entering the economy and how well-equipped a country's economic is ready to harness its potential spillovers and make use of an extra capital it brings.

FDI and Human Capital

Unlike aid, the impact of FDI on development will not depend directly of government's policy preferences. Instead, it will depend primarily on the existing level of human capital[3]. In general, it is the character of the economy that is important in determining how FDI affects development. The primary effect of FDI passes through the market: the capital stock, household income, and technological spill over. The type of economy that will allow FDI impact development is, therefore, the economy with high level of human capital. The reason is straightforward. Human capital will affect the nature and type of FDI that a country attracts and the extent to which foreign investment adds to or replaces domestic sources. Further, whether an economy can exploit the beneficial effect of spillover of FDI will depend on the level of human capital in that economy. For instance, when there is a sizeable technological knowhow between foreign and domestic firms, it is difficult for domestic firms to take up foreign practices. In such case, technological advances will not spillover to domestic firms.

2 See e.g. , Blomstrom, Kokko and Globerman (2001) for an exposition on the literature of FDI spillover and Razin (2003) for FDI's impact on domestic investment.

3 As Kosack and Tobin (2006) note, this is not to say that the general political environment is not important in determining the amount and type of FDI a country receives. The point is that political environment will have little to do with how much the FDI add to a country's capital stock or whether the economy can harness the potential spillovers of investment. Past studies have, indeed, shown that political environment impacts FDI (see e.g. Abbott, 2000; Anderson 2000; Goldsmith 1995). Unstable political environment increases the cost of doing business and changes the type of investment that a country attracts.

3. Methodology and Data

3.1. Methodology

Here, we rely on two set of estimation techniques; namely, the fixed effect Panel data model and the dynamic Arellano-Bond (A-B) generalized method of moments (GMM) Panel data models to empirically investigate: (i) the key determinant of human development and economic growth in WAMZ; (ii) the independent effect of aid/FDI on rate of human development and per capita GDP and; (iii) the contingency effects of aid/FDI versus human capital on development and growth. The empirical strategy draws from Naveed and Ghalum (2006), Kosack and Tobin (2006) and Angeloupoulou and Liargovas (2014). Our motivation for a battery of estimation techniques is two-fold: (ii) we lacked sufficient theoretical justification to include lags of the dependent variable in our model – in the way the A-B model has been traditionally designed. As Achen (2000) notes, including lags of dependent variables without theoretical justification can explain away variation in the dependent variable that should be explained by theoretically justified independent variables, thereby dampening the explanatory power of the true regressors. To overcome this possibility, we include only first lags of the dependent variables while implementing the A-B GMM panel data models; and (ii) Because the verisimilitude of our results rets critically on the validity of our estimation techniques, exploring more than one estimation techniques is in order here so as to ensure robustness.

Initially, we took the approach of two-stage least squares-instrumental variable estimation (2SLS-IV) to account for potential problems of endogeneity, heteroscedasticity and serial correlation that may arise due to feedback that may exist between aid, FDI, human-development and economic growth. But this approach proved inefficient. First the 2SLS-IV does not really deal with the possibility that our model is serially correlated. Second, the instruments available in the literature on aid, FDI and human development are weak and of questionable validity[iv].

In lieu of 2SLS-IV, therefore, we decided to use the Arellano and Bond[v] estimator (a panel estimator) which uses a generalized method of moments (GMM) framework to estimate a dynamic model from panel data. Additional motivation for the use of A-B model is that it has additional benefit over the 2SLS-IV technique: for instance, it is more efficient than the 2SLS-IV and, too, it is unbiased in the class of dynamic panel models. Nonetheless, as with the 2SLS-IV, it allow us to control for the fixed effects of time and of each country on our parameters, leaving only effects that are true across countries and across time. In this regard, our result is free from country specific factor – for example, that there has been Boko Haram insurgency in Nigeria in the past 5 years – and time-specific factors – that, for example, there was global economic and financial crisis in 2008/09. The Arellano-Bond GMM technique also allows us to control for heteroskedasticity in much the same way as 2SLS-IV: with White's hetersocedasticity -consistent standard errors. It control for endogeneity in our explanatory variables and address the possibility of serial correlation. In implementing our model with the fixed effects panel data framework, we included the robustness check readily available in stata to control for potential hetreoskedasticity, multi-collinearity and autocorrelation.

In specifying our estimable regression model, we abstract from the neoclassical theory of growth: in specifics, the highly respected work of Barro (1998). Theories of growth, in general, have emphasized a range of determinants of growth, including capital accumulation, human capital, research, development and innovation, infrastructure, management and organization (see Stern 1991 for a historical review of economic growth theories). Barro (1998) empirical analysis derives from an extended version of the neoclassical growth model, where the growth rate depends on initial output, government policies, and household behaviour.

Our benchmark model (equation 1 and 2), states that the rate of human development (HDIG) or GDP per capita growth (GDPCG) depend on the level of human capital (HC), aid receipt relative to GDP (AIDY), foreign direct investment relative to GDP (FDIY), various other variables that may affect GDPCG or HDIG represented by Z, fixed time effect (T) and country effect (C) for GDPCG and HDIG, and an error term (ε_i). Table 2 reports the definition of variables and sources of our regression data.

$$HDIG_{i,t+1}=\alpha_0+\alpha_1 HC_{i,t}+\alpha_2 AIDY_{i,t}+\alpha_3 FDIY_{i,t}+\alpha_4 Z_{i,t}+T_t+C_i+\varepsilon_{i,t}^{q} \quad (1)$$

$$GDPCG_{i,t}=\alpha_0+\alpha_1 HC_{i,t}+\alpha_2 AIDY_{i,t-1}+\alpha_3 FDIY_{i,t}+\alpha_4 Z_{i,t}+T_t+C_i+\varepsilon_{i,t}^{q} \quad (2)$$

Our estimable model takes the following form:

$$HDIG_{I,t+1}=\alpha_0+\alpha_1 HC_{i,t}+\alpha_2 AIDY_{i,t}+\alpha 3 FDIY_{i,t}+\alpha_4 INF_{i,t}+\alpha_5 OPN_{i,t}+\alpha_6 GNS_{i,t}+T_t+C_i+\varepsilon_{it}^{q} \quad (3)$$

$$GDPCG_{i,t}=\alpha_0+\alpha_1 HC_{i,t}+\alpha_2 AIDY_{i,t-1}+\alpha_3 FDIY_{i,t}+\alpha_4 INF_{i,t}+\alpha_5 OPN_{i,t}+\alpha_6 GNS_{i,t}+T_t+C_i+\varepsilon_{it}^{q} \quad (4)$$

Each of the variables is indexed by country (i) and time (t). The vector z contains three variables that may affect GDPG and HDIG, namely: inflation, openness and gross national savings.

Since the contributors to human development such as hospitals, schools, better trained teachers and doctors, etc do not have instantaneous effect on a population's human development (but instead takes some time to reflect in a country's score of the HDI), we introduce HDIG in its lead (forward looking) form in equation 1. Thus, the dependent

variable in equation 1 is the rate of human development in period t+1. For the same reason, as any effect that aid will have on GDP per capita growth is likely to pass through human development (see Fig. 2), we lag the variable AIDY in equation 2.

Equations 3 and 4 are useful for examining the independent effects of AID and FDI on per capital GDP and human development. Nonetheless, the theoretical exposition earlier presented indicates that these effects may be conditional or contingent. In order to examine this possibility, we next estimate our base models with a series of interactions.

$$HDIG_{i,t+1}=\alpha_0+\alpha_1 HC_{i,t}+\alpha_2 AIDY_{i,t-1}+\alpha 3 FDIY_{i,t}+\alpha_4 INF_{i,t}+\alpha_5 OPN_{i,t}+\alpha_6 GNS_{i,t}+\alpha_7 AIDYXHC_{i,t}+\alpha_8 FDIYXHC_{i,t}+T_t+C_i+\varepsilon_{it}^{q} \quad (5)$$

$$GDPCG_{i,t}=\alpha_0+\alpha_1 HC_{i,t}+\alpha_2 AIDY_{i,t-1}+\alpha_3 FDIY_{i,t}+\alpha_4 INF_{i,t}+\alpha_5 OPN_{i,t}+\alpha_6 GNS_{i,t}+\alpha_7 AIDYXHC_{i,t-1}+\alpha_8 FDIYXHC_{i,t}+T_t+C_i+\varepsilon_{it}^{q} \quad (6)$$

Since human capital is one proxy for a government's human development priority, we interact HC with AID and FDI in fellowship with Kosack and Tobin (2006). It is this interaction that we included in equation 5 and 6. They account for contingency in the effect of aid and FDI. These equations are identical to equation 3 and 4 but each contains two interactions: AIDY*HC and FDIY *HC.

Equations 3 through 6 were initially estimated using ordinary least squares (OLS), but immediately we ran into a problem: aid, FDI, and human capital may be endogenously determined. For instance, countries with lower levels of income and human capital should be expected to receive more aid. Similarly, it is expected that FDI should be attracted to countries with higher growth but not necessarily to countries with faster human development. Lastly, we know from our theoretical model that growth may add to human capital if it adds to government revenue and/or household income. With these interactions, it is likely that the OLS estimation of equation 3 through 6 will be bias and inefficient – the reason we adopted the Arellano-Bond GMM panel data framework [vi]. To guide our choice of appropriate model: fixed or random effect model, we implemented the Hausman's specification test.

As has been noted, readers that are familiar with the A-B technique [vii] will note that it was originally developed to implement models that, unlike ours, include lagged dependent variable as an explanatory variable. We could only include first lag of each dependent variable in implementing the A-B. As Achen (2000) notes, including lags of the dependent variable without enough theoretical justification can artificially dominate a regression regardless of the variable's explanatory power. The same author argues that a lagged dependent variable is likely to be statistically significant, and that including it without theoretical justification can explain away variation in the dependent variable that should be explained by theoretically justified independent variables.

3.2. Variable Definitions and Data Sources

Our data cover an unbalanced panel of 6 countries (WAMZ member states) for 1990, 2000, and 2010 through 2014 giving rise to over 2500 data points. Data for a very limited number of years for human capital are based on projections as they were not provided by Penn Worlds Table. The data source and variable definition is presented in Table 2.

Table 2. *Data sources and Variable Definitions.*

S/NO	Variable	Definition/Description	Source
1	HDIG	Growth in the United Nation Development Programme's (UNDP) Human Development Index (HDI). The HDI consist of three elements: Life expectancy; knowledge (2/3 literacy and 1/3 combined primary, secondary, and tertiary education enrolment); and wealth	UNDP Human Development Report (2014)
2	GDPCG	GDP per capita annual growth rate	World Economic Outlook (WEO) Database (2016)
3	AIDY	Aid to Gross Nation Income ratio measured as Official Development Assistance (ODA) to GNI ratio	UNCTAD Statistics
4	FDIY	Foreign Direct Investment (FDI) to GDP ratio	UNCTAD Statistics
5	HC	Human Capital measured as Index of human capital per person, based on years of schooling (Barro/Lee, 2012) and returns to education (Psacharopoulos, 1994)	Penn Worlds Table (2014)
6	OPN	Trade Openness measured as average of export and import	UNCTAD
7	INF	Inflation rate proxied by Consumer Price Index (annual)	UNCTAD
8	GDPC	Real GDP per capita	Penn Worlds Table, 8.1
9	GNS	Gross National Saving proxying Investment	World Economic Outlook 2015
10	FDIYXHC	Interaction variables constructed from FDIY and HC	author
11	AIDYXHC	Interaction variables constructed from AIDY and HC	author
12	AIDYXHCLA	First lag of AIDYXHC	author
13	HDIGLE	HDIG in period t+1 (first lead value of HDIG)	author

Source: Author's Compilation

4. Results

Before analyzing the regression results, some model diagnostics and preliminary descriptive analysis is in order. Appendix 3 presents and discusses the result of Hausman's specification test for choice of random or fixed effect panel data regression model. It returned a probability value of 0.0004 (<0.05) that led us to reject the null hypothesis of a random effect and therefore conclude that the fixed effect model is more appropriate for our data. In terms of preliminary descriptive statistics, Appendix1 report the correlation matrix of the regression variables. It indicates that contemporaneous values of aid are positively correlated with both the rate of human development and economic growth. Contrastingly, FDI is negatively correlated with the rate of human development and economic growth. Figure 6 – comprising of panels A, B, C, and D – shows the scatter plots of aid and FDI versus rate of human development and growth in WAMZ. The result is startling. As Panel C clearly show, there is absence of appreciate pattern between FDI and human development. Similarly, from Panel D, it is uncertain whether FDI promotes growth. Panel A indicates a positive associated between aid inflow and the rate of human development.

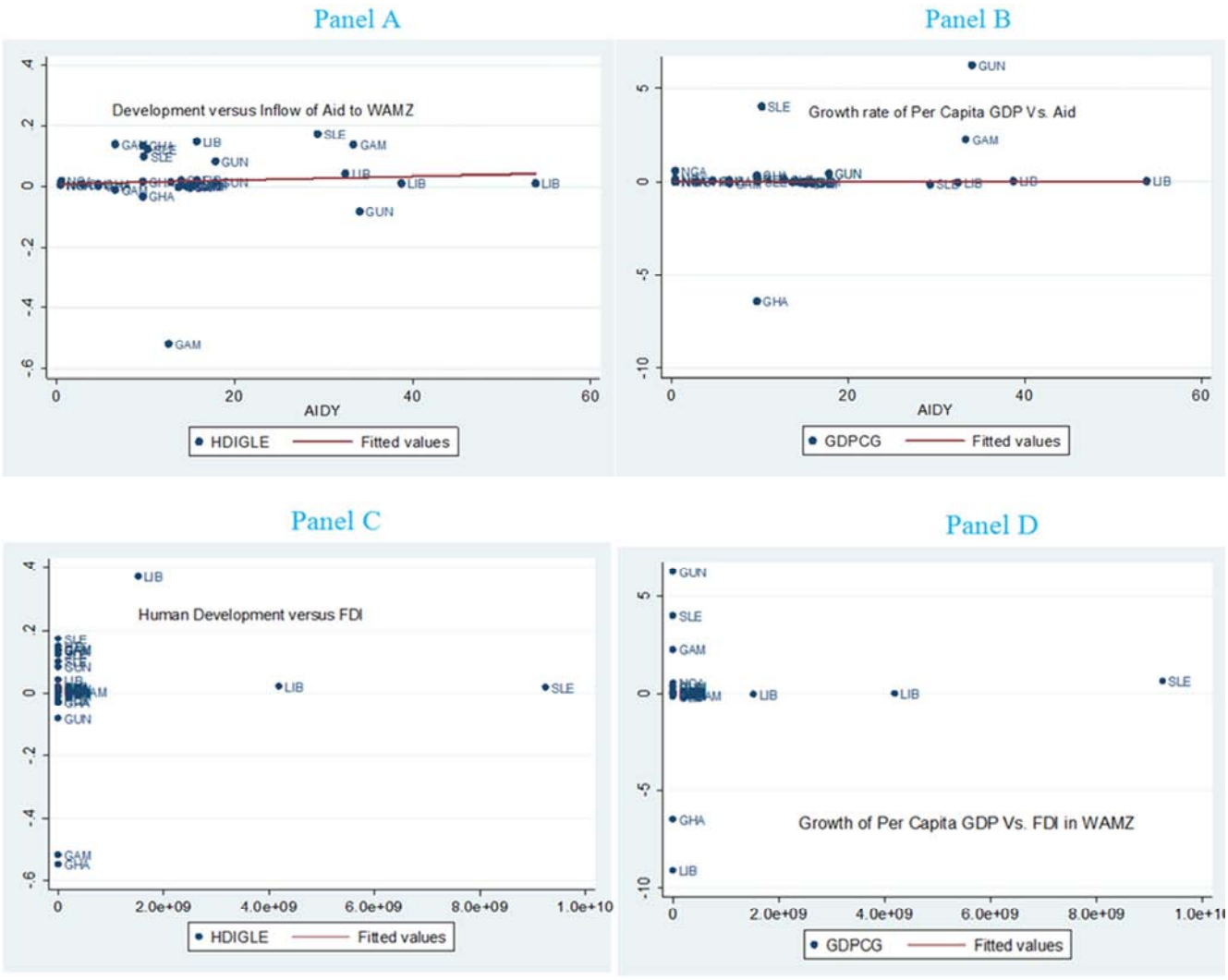


Figure 6. *Scatter Plots of Development/Growth indices Vs. Aid/FDI inflow to WAMZ.*

Turning to the analysis of our regression estimates of the fixed effect and dynamic A-B GMM panel data models by which we estimated both the independent and contingency effects – of aid, FDI and human capital on rate of human development and economic growth– (see Table 3), we set out as follows.

Table 3. *Fixed Effect and Dynamic Arellano-Bond GMM Panel Data Regression Results.*

Estimate of rate of Human Development Model					**Estimate of GDP Per Capita Growth Model**			
Dependent Variable = growth rate of HDI (HDIGLE)					**Dependent Variable = growth of per capital GDP (GDPCG)**			
	Independent Effect (Eqt.3)		**Conditional Effect (Eqt.5)**		**Independent Effect (Eqt.4)**		**Conditional Effect (Eqt.6)**	
Variable	**Fixed Effect**	**Arellano-Bon**	**Fixed Effect**	**Arellano-Bond**	**Fixed Effect**	**Arellano-Bond**	**Fixed Effect**	**Arellano-Bond**
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
HC	-0.07(-0.06)	¥	0.17(0.38)	¥	-0.53(-2.26)¥		-1.76(-0.31)¥	
AIDYLA	–	–	–	–	0.55(2.16)**	0.01[4.14]**	0.056(2.08)**	0.01[1.5]
AIDY	0.05(3.49)**	0.001[0.64]	0.01(1.75)*	0.001[0.64]	–	–	–	–
FDIY	¥	-2.03[-0.3]	¥	¥	-1.54(-1.37)	-0.00[-0.36]	-3.42(-0.93)¥	
INF	-0.00(5.88)**	0.0001[2.1]	-0.0008(-5.63)**	2.11(0.035]	-0.001(-9.55)**	0.00[0.36]	-0.0011(-9.29)**	0.003[0.17]
OPN	-6.92(-0.13)	0.00001[2.75]	-9.07(-0.56)	0.000[2.75]	1.26(2.98)**	-0.00[-0.7]	1.29(2.72)**	0.00[0.15]
GNS	-0.016(-170.21)**	-0.02[-22.06]	-0.002(-86.15)**	-0.002[-22.06]	0.11(1.29)	-0.02[-3.26]	0.11(0.93)	-0.0[-0.15]
AIDYXHC	–	–	0.004(1.03)–		–	–	–	-0.01[-0.98]
AIDXHCLA	–	–	–	–	–	–	–	–
FDIYXHC	–	–	-3.69(-1.02)	-0.000[-0.3]	–	–	0.93(2.16)**	-0.0[-0.01]
HDIGLE.L1	–	-0.23[-0.26]	–	-0.23[-0.26]	–	–	—	
GDPCG.L1	–	–	—		–	-0.006[-0.2]	–0.003[0.04]	

Note: the figures in parenthesis, ( ), are the t-values while those in square bracket, [ ], are the z-values; *and ** indicate significance at 5% and 10% levels, respectively; ¥ indicates omitted to avoid potential multi-collinearity;

'–' indicates not applicable. The dependent variable, rate of human development, is growth in the Human Development Index; the dependent variable, economic growth, is the annual growth rate in per capita GDP (retrieved from UNCTAD). The full report of the stata results are contained in the Appendices.

4.1. The Base Models – Accounting for Independent Effects

We estimated the base model but included the control variables (INF, GNS, OPN) using the fixed effect and A-B GMM techniques. Considering the independent effect of FDI and aid on human development (columns 2 and 3), FDI shows a negative but insignificant relationship with rate of human development with a t-value of -0.3 (column 3). Aid, on the other, hand appears to have a strong (positive) relationship with rate of human development. At this level, the fixed effect model indicates that aid has a significant effect with a t-value of 3.49 and a coefficient of 0.05 (column 2). Turning to the system GMM estimate of the independent effect of aid on rate of human development (column 3), we see that the coefficient of aid is 0.001 although it is insignificant at a z-value of 0.64. This is, however, not surprising. The impact of aid on rate of human development which was significant in the fixed effect model may have been attenuated (as widely suggested in the literature) by the inclusion of a lagged value of the dependent variable (rate of human development) as an argument in the A-B model.

Considering the independent effects of aid and FDI on per capita GDP growth, column 6 and 7 shows the result of our estimate from the fixed effect and A-B system GMM techniques, respectively. As with rate of human development, FDI impacted negatively on economic growth. The coefficient of fdiy and its corresponding t-value are -1.54 (-1.37) and -0.0 (-0.36) for the fixed effect and A-B models, respectively. Thus, both techniques returned results which suggest that FDI may actually retard growth and sustain mis-development. Similar result has been found by Kosack and Tobin (2006).

4.2. Contingency Effects

The theoretical expositions earlier presented in this article led us to suspect strongly that the effect of aid and FDI may be contingent or conditional on the level of human capital. We noted that the effect of aid is conditional on government's human-development policy preference (Fig. 5) and that the level of human capital in a country is an indicator of the extent to which government accord priority to human development of its populace. Thus, this paper also provides estimate of the effect of these contingency or interaction on human development and growth. Turning to the conditional effect of FDIYXHC on human development, both the fixed effect and A-B model (columns 4 and 5, respectively) indicates that this effect is negative but insignificant. The conditional effect of foreign direct investment (FDI) on growth is insightful. It is positive and insignificant (column 8); although the corresponding A-B estimate returned a negative, instead of positive, conditional impact. The positive coefficient suggests that FDI may promote growth where human capital is high enough to harness its technological spillover effects. As we have shown earlier, FDI affect human development through two major channels: household income and government revenue. The failure of FDI in our result to affect development may probably stem from its inability to impact household income or government revenue. This is not surprising as FDI is by its very nature private. FDI may in fact decrease household income (e.g by depressing wages) and government revenue (e.g if FDI is attracted through generous tax concessions). This is particularly the case in countries with limited human capital, where FDI decreases human development. Further, from our results, the fact that FDI is unable to increase growth suggests that is it has not impacted capital stock and technological spillover (the two major channels, earlier outlined, through which it can promote growth).

Turning our attention to the effect of aid, it does show a contingency relationship with both growth and development. From our theoretical discussions, we have shown that aid affect human development through government revenue. In this regard, in countries with high and extensive human capital

– where government demonstrates serious commitment to human development – aid may add to government spending on human development. Contrastingly, government spending on human development may actually decrease (as aid increases) in countries that lack serous commitment to human development. The implication is that given its relatively low level of human capital and apparent lack of commitment, what WAMZ requires is aid and stronger commitment to human development but not FDI.

To see how our result works, a few examples are in order. China is, ironically, often a poster case for the benefit of FDI. In reality, between 1980s and early 1990s (when it achieved spectacular growth and extreme vast human development), China received tremendous amount of aid far more than it received in FDI (despite its reputation). This came mostly from Germany and Japan who together provided an average of almost 1 billion United States dollars in aid annually from 1980 to 1999. Table A2 provides China's and Indonesia's aid and FDI alongside their economic growth and rate of human development. Only in late 1990s did FDI overtake aid in China. China's tremendous growth performance may have clearly resulted from her serious committed to human development given its reasonable level of human capital as at the time (China's mean level of human capital between 1980-1984 was 74.1). Indeed China's case is instead, in reality, a poster case of the role that aid – rather than FDI – may play in accelerating growth. Indonesia is another poster case. But the situation is similar to that of China. Contrarily, very limited number of countries has achieved rapid human development via FDI; and a greater majority of these countries already have substantial level of human capital. For instance, Kosack and Tobin (2006) in their study of the effect of aid and FDI on growth and rate of human development using a sample of 72 countries has shown that only seven countries– Benin, Botswana, Egypt, Malaysia, Papua New Guinea, Singapore, Swaziland and Togo – achieved a mean rate of human development (around two points each period) via FDI, and that Egypt achieved this only with substantial amount of aid mostly from US. The same authors demonstrate that none of these seven achieved the mean rate of human development through FDI for more than two consecutive times.

5. Conclusion

The study has shown, with clear analysis, that although aid and FDI, has conditional relationship with economic growth and human development, WAMZ member states require aid but not FDI to enter the part of virtuous circle of economic progress. We found that aid impacted positively on human development but that in the aggregate, FDI has no effect on growth and does actually sustains mis-development especially in poorer countries that lack extensive human capital. If as our result shows FDI is actually sustaining or promoting mis-development, then substituting investment incentives for aid should not be a priority of affluent countries that are genuinely committed to the development of poorer countries. We conclude that the long-held development policy presumption that aid and FDI are complement or substitute in promoting growth and development is wrong. In the end, what WAMZ member states require is aid and stronger policy preference for human development in order to harness the benefit that aid may bring.

Appendix 1: Descriptive Statistics of Variables and Preliminary Model Diagnostic

Table A1. *Correlation Matrix or Variables.*

	HDIG	HDIGLE	GDPCG	AIDY	FDIY	AIDYLA	FDIYXHC	AIDYXHC	AIDYXHCLA	HC	OPN	GNS	INF
HDIG	1.00												
HDIGLE	-0.36	1.0											
GDPCG	-0.90	0.41	1.00										
AIDY	0.08	0.48	0.002	1.00									
FDIY	-0.01	-0.13	-0.09	0.15	1.0								
AIDYLA	-0.15	0.22	0.14	0.64	-0.13	1.00							
FDIYXHC	-0.01	-0.13	-0.09	0.15	1.00	-0.13	1.00						
AIDYXHC	0.15	0.435	-0.06	0.96	0.13	0.69	0.138	1.00					
AIDYXHCLA	-0.11	0.17	0.10	0.56	-0.15	0.98	-0.15	0.65	1.00				
HC	0.31	-0.209	-0.31	-0.44	-0.14	-0.207	-0.14	-0.24	-0.02	1.0			
OPN	0.067	-0.23	-0.17	-0.71	-0.13	-0.65	-0.13	-0.75	-0.63	0.07	1.0		
GNS	0.20	-0.68	-0.33	-0.47	0.08	-0.08	0.07	-0.33	0.03	0.46	0.19	1.0	
INF	0.12	0.057	-0.11	0.20	-0.11	0.086	-0.11	0.126	0.03	-0.28	-0.9	-0.57	1.0

Note: the underline correlation coefficients are of particular interest to us as they indicate the direction and degree of association between aid and FDI on one hand and growth of per capital GDP and Human Development Index.

Table A2. *Aid and FDI in the development of China and Indonesia.*

Period	AID/GDP	FDI/GDP	ECONOMIC	RATE OF HUMAN DEVELOPMENT
(i)CHINA				
1980-84	1.57	0.36	7	3.4
1985-89	4.54	0.92	2.76	5.6
1990-94	6.04	3.82	9.16	4.5
1995-99	3.84	5.39	6.3	–
(ii)Indonesia				
1980-84	1.52	0.24	4.66	4.1
1985-89	2.38	0.49	3.66	4.1
1990-94	2.66	1.28	5.36	2
1995-99	1.8	3.2	3.8	–

Source: Kosack and Tobin (2006). Note: The mean amount of aid in the data set is 0.59% of GDP (s.d = 1.32). in 1980-84, China's level of human capital was 77.9, and Indonesia's was 69.4. The mean level of human capital for this period was 74.2.

```
. hausman fixed random

Note: the rank of the differenced variance matrix (5) does not equal the number of
       coefficients being tested (8); be sure this is what you expect, or there may be
       problems computing the test.  Examine the output of your estimators for
       anything unexpected and possibly consider scaling your variables so that the
       coefficients are on a similar scale.

                 ---- Coefficients ----
                 |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
                 |     fixed        random       Difference          S.E.
-----------------+------------------------------------------------------------
              hc |  -1.794813    -3.049381        1.254568        3.247921
          aidyla |  -.0831973    -.6003511        .5171538               .
            fdiy |  -2.24e-08     1.39e-07       -1.61e-07               .
             inf |   -.001917    -.0011968       -.0007202               .
             opn |   1.11e-06    -4.86e-06        5.97e-06               .
             gns |   .1030834    -.0576523        .1607357        .0299794
      aidyxhcla |   .0761556     .3410101       -.2648545               .
        fdiyxhc |   1.41e-08    -8.76e-08        1.02e-07               .
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       22.53
                Prob>chi2 =      0.0004
                (V_b-V_B is not positive definite)
```

Figure A1. *Result of Hausman's Test for choice of Fixed Versus Random Effect Model.*

Note: In Hausman's test: H_1= Random Effect model more appropriate over fixed effect model; H_0=Fixed Effect is more appropriate. Decision: Since Prob = 0.0004 falls in the rejection region, we reject H_0 and conclude that Fixed effect model is preferred over random effect model.

Appendix 2: Estimate of Human Development Model: Fixed Effect

```
. xtreg hdigle hc aidy fdiy fdiy inf opn gns, fe robust
note: fdiy omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =        24
Group variable: country1                        Number of groups   =         5

R-sq:  within  = 0.9353                         Obs per group: min =         4
       between = 0.5618                                        avg =       4.8
       overall = 0.8750                                        max =         6

                                                F(4,4)             =         .
corr(u_i, Xb)  = 0.0167                         Prob > F           =         .

                                    (Std. Err. adjusted for 5 clusters in country1)
------------------------------------------------------------------------------
             |               Robust
      hdigle |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          hc |   .0079721   .1381679     0.06   0.957    -.3756435    .3915876
        aidy |   .0050641   .0014505     3.49   0.025      .001037    .0090912
        fdiy |  -7.82e-11   5.96e-11    -1.31   0.260    -2.44e-10    8.74e-11
        fdiy |           0  (omitted)
         inf |  -.0000822    .000014    -5.88   0.004    -.0001211   -.0000434
         opn |  -6.92e-08   5.41e-07    -0.13   0.904    -1.57e-06    1.43e-06
         gns |  -.0016172   9.50e-06  -170.21   0.000    -.0016436   -.0015908
       _cons |   .0135143   .2456892     0.06   0.959    -.6686281    .6956568
-------------+----------------------------------------------------------------
     sigma_u |  .03780448
     sigma_e |  .03850005
         rho |   .4908851   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Figure A2. *Direct Stata 12.0 Fixed Effect Result: Fixed Effect Panel Data Regression Result of Equation 3 (independent effects of aidy and fdiy).*

```
. xtreg hdigle hc aidy fdiy aidyxhc fdiyxhc inf opn gns, fe robust
note: fdiy omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =         24
Group variable: country1                        Number of groups   =          5

R-sq:  within  = 0.9365                         Obs per group: min =          4
       between = 0.2595                                        avg =        4.8
       overall = 0.7970                                        max =          6

                                                F(4,4)             =          .
corr(u_i, Xb)  = -0.1980                        Prob > F           =          .

                                (Std. Err. adjusted for 5 clusters in country1)
------------------------------------------------------------------------------
             |               Robust
      hdigle |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          hc |   .0658708   .1722246     0.38   0.722    -.4123012    .5440428
        aidy |   .0105039    .005995     1.75   0.155    -.0061409    .0271487
        fdiy |           0  (omitted)
     aidyxhc |   -.003822   .0037071    -1.03   0.361    -.0141147    .0064706
     fdiyxhc |  -3.69e-11   3.62e-11    -1.02   0.366    -1.38e-10    6.37e-11
         inf |   -.000083   .0000148    -5.63   0.005     -.000124   -.0000421
         opn |  -9.07e-07   1.62e-06    -0.56   0.605    -5.40e-06    3.58e-06
         gns |   -.0016026  .0000186   -86.15   0.000    -.0016543   -.001551
       _cons |   -.0648671   .288226    -0.23   0.833    -.8651108    .7353766
-------------+----------------------------------------------------------------
     sigma_u |  .05658588
     sigma_e |  .03969018
         rho |  .67024896   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Figure A3. *Fixed Effect Panel Data Regression Result of Equation 5 (With two contingency variables).*

```
. xtreg gdpcg hc aidyla fdiy inf opn gns, fe robust

Fixed-effects (within) regression               Number of obs      =         25
Group variable: country1                        Number of groups   =          5

R-sq:  within  = 0.7564                         Obs per group: min =          3
       between = 0.9149                                        avg =        5.0
       overall = 0.0197                                        max =          6

                                                F(4,4)             =          .
corr(u_i, Xb)  = -0.9210                        Prob > F           =          .

                                (Std. Err. adjusted for 5 clusters in country1)
------------------------------------------------------------------------------
             |               Robust
       gdpcg |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          hc |  -.5303398   2.042345    -0.26   0.808    -6.200798    5.140119
     aidyla |   .0547491   .0252904     2.16   0.096    -.0154684    .1249666
        fdiy |  -1.54e-10   1.13e-10    -1.37   0.242    -4.67e-10    1.58e-10
         inf |  -.0019826   .0002077    -9.55   0.001    -.0025591   -.0014061
         opn |   1.26e-06   4.23e-07     2.98   0.041     8.47e-08    2.44e-06
         gns |   .1118444   .0868601     1.29   0.267    -.1293178    .3530066
       _cons |  -1.232529    4.22611    -0.29   0.785    -12.96609    10.50103
-------------+----------------------------------------------------------------
     sigma_u |  2.1991804
     sigma_e |  .45087869
         rho |  .95966185   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Figure A4. *Fixed Effect Panel Data Regression Result of Equation 4 (GDP Per Capita Growth Model)(independent effect).*

```
. xtreg gdpcg hc aidyla fdiy inf opn gns fdiyxhc, fe robust

Fixed-effects (within) regression               Number of obs      =         25
Group variable: country1                        Number of groups   =          5

R-sq:  within  = 0.7589                         Obs per group: min =          3
       between = 0.9001                                        avg =        5.0
       overall = 0.0168                                        max =          6

                                                F(4,4)             =          .
corr(u_i, Xb)  = -0.9183                        Prob > F           =          .

                                (Std. Err. adjusted for 5 clusters in country1)
------------------------------------------------------------------------------
             |               Robust
       gdpcg |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          hc |  -.7614544   2.180432    -0.35   0.745    -6.815303    5.292394
     aidyla |   .0564329   .0270747     2.08   0.106    -.0187385    .1316043
        fdiy |  -3.42e-08   3.67e-08    -0.93   0.404    -1.36e-07    6.78e-08
         inf |  -.0019628   .0002113    -9.29   0.001    -.0025496   -.0013761
         opn |   1.29e-06   4.73e-07     2.72   0.053    -2.54e-08    2.60e-06
         gns |   .1120959   .0884258     1.27   0.274    -.1334135    .3576054
     fdiyxhc |   2.16e-08   2.32e-08     0.93   0.405    -4.29e-08    8.60e-08
       _cons |  -.8516148   4.367445    -0.19   0.855    -12.97759    11.27436
-------------+----------------------------------------------------------------
     sigma_u |  2.1745161
     sigma_e |  .46542792
         rho |  .95619477   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Figure A5. *Fixed Effect Panel Data Regression Result of Equation 6 (GDP Per Capita Growth Model) (with one contingency variable, fdiyxhc).*

```
. xtreg gdpcg hc aidyla fdiy inf opn gns aidyxhcla fdiyxhc, fe robust

Fixed-effects (within) regression               Number of obs      =         25
Group variable: country1                        Number of groups   =          5

R-sq:  within  = 0.7620                         Obs per group: min =          3
       between = 0.8638                                        avg =        5.0
       overall = 0.0078                                        max =          6

                                                F(4,4)             =          .
corr(u_i, Xb)  = -0.9035                        Prob > F           =          .

                                    (Std. Err. adjusted for 5 clusters in country1)
------------------------------------------------------------------------------
             |               Robust
       gdpcg |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          hc |  -1.794813   5.781057    -0.31   0.772    -17.8456     14.25597
       aidyla |  -.0831973   .5196521    -0.16   0.881    -1.525983    1.359588
         fdiy |  -2.24e-08   3.85e-08    -0.58   0.591    -1.29e-07    8.43e-08
          inf |   -.001917   .0003518    -5.45   0.006    -.0028938   -.0009402
          opn |   1.11e-06   5.36e-07     2.07   0.107    -3.78e-07    2.60e-06
          gns |   .1030834    .102165     1.01   0.370    -.1805721    .3867388
    aidyxhcla |   .0761556   .2902263     0.26   0.806    -.7296419    .8819531
     fdiyxhc |   1.41e-08   2.42e-08     0.59   0.590    -5.29e-08    8.12e-08
       _cons |   1.250136   11.63704     0.11   0.920    -31.05947    33.55974
-------------+----------------------------------------------------------------
     sigma_u |  2.0255543
     sigma_e |  .48137686
         rho |  .94654086   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Figure A6. *Fixed Effect Panel Data Regression Result of Equation 6 (GDP Per Capita Growth Model) (with two contingency variable, fdiyxhc and aidyxhcla).*

Appendix 3: Direct Arellano-Bover (1995) Dynamic Panel Data Result

```
. xtdpdsys hdigle aidy fdiy opn inf gns, noconstant lags(1) maxldep(1) artests(2)

System dynamic panel-data estimation         Number of obs         =         14
Group variable: country1                     Number of groups      =          5
Time variable: years
                                             Obs per group:    min =          2
                                                               avg =        2.8
                                                               max =          3

Number of instruments =     10               Wald chi2(5)          =    1880.76
                                             Prob > chi2           =     0.0000
One-step results
------------------------------------------------------------------------------
      hdigle |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      hdigle |
         L1. |  -.2319674    .876975    -0.26   0.791    -1.950807    1.486872
             |
        aidy |   .0010951   .0017205     0.64   0.524     -.002277    .0044672
        fdiy |  -2.03e-11   6.85e-11    -0.30   0.767    -1.55e-10    1.14e-10
         opn |   1.96e-06   7.15e-07     2.75   0.006     5.63e-07    3.37e-06
         inf |   .0001442   .0000682     2.11   0.035     .0000105     .000278
         gns |  -.0015117   .0000685   -22.06   0.000     -.001646   -.0013774
------------------------------------------------------------------------------
Instruments for differenced equation
        GMM-type: L(2/2).hdigle
        Standard: D.aidy D.fdiy D.opn D.inf D.gns
Instruments for level equation
        GMM-type: LD.hdigle
```

Figure A7. *Rate of Human Development Equation: with no contingency variable, with suppressed constant term and first lagged of the dependent variable (hdigle L1.).*

```
. xtdpdsys hdigle aidy fdiy opn inf gns  fdiyxhc, noconstant lags(1) maxldep(1) artests(2)
note: fdiy dropped from div() because of collinearity
note: fdiy dropped because of collinearity

System dynamic panel-data estimation         Number of obs         =         14
Group variable: country1                     Number of groups      =          5
Time variable: years
                                             Obs per group:    min =          2
                                                               avg =        2.8
                                                               max =          3

Number of instruments =     10               Wald chi2(5)          =    1880.76
                                             Prob > chi2           =     0.0000
One-step results
------------------------------------------------------------------------------
      hdigle |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      hdigle |
         L1. |  -.2319674    .876975    -0.26   0.791    -1.950807    1.486872
             |
        aidy |   .0010951   .0017205     0.64   0.524     -.002277    .0044672
         opn |   1.96e-06   7.15e-07     2.75   0.006     5.63e-07    3.37e-06
         inf |   .0001442   .0000682     2.11   0.035     .0000105     .000278
         gns |  -.0015117   .0000685   -22.06   0.000     -.001646   -.0013774
     fdiyxhc |  -1.26e-11   4.24e-11    -0.30   0.767    -9.57e-11    7.06e-11
------------------------------------------------------------------------------
Instruments for differenced equation
        GMM-type: L(2/2).hdigle
        Standard: D.aidy D.opn D.inf D.gns D.fdiyxhc
Instruments for level equation
        GMM-type: LD.hdigle
```

Figure A8. *Rate of Human Development Equation: with one contingency variable (fdiyxhc), suppressed constant term and first lagged of the dependent variable.*

```
. xtdpdsys gdpcg aidyla fdiy opn inf gns, noconstant lags(1) maxldep(1) artests(2)

System dynamic panel-data estimation         Number of obs         =        15
Group variable: country1                     Number of groups      =         5
Time variable: years
                                             Obs per group:    min =         1
                                                               avg =         3
                                                               max =         4

Number of instruments =     11               Wald chi2(5)          =     85.62
                                             Prob > chi2           =    0.0000
One-step results
------------------------------------------------------------------------------
       gdpcg |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       gdpcg |
         L1. |  -.0057272   .0296628    -0.19   0.847    -.0638652    .0524109
             |
      aidyla |   .0100277   .0024242     4.14   0.000     .0052764    .0147789
        fdiy |  -3.71e-11   1.02e-10    -0.36   0.716    -2.37e-10    1.63e-10
         opn |  -1.43e-07   2.16e-07    -0.66   0.508    -5.66e-07    2.80e-07
         inf |   8.07e-06   .0000222     0.36   0.717    -.0000355    .0000516
         gns |  -.0025369   .0007793    -3.26   0.001    -.0040644   -.0010095
------------------------------------------------------------------------------
Instruments for differenced equation
        GMM-type: L(2/2).gdpcg
        Standard: D.aidyla D.fdiy D.opn D.inf D.gns
Instruments for level equation
        GMM-type: LD.gdpcg
```

Figure A9. *Per Capita GDP Growth Equation: with no conditional variables, suppressed constant term and first lagged of the dependent variable.*

```
. xtdpdsys gdpcg aidyla fdiy opn inf gns fdiyxhc, noconstant lags(1) maxldep(1) artests
> (2)
note: fdiy dropped from div() because of collinearity
note: fdiy dropped because of collinearity

System dynamic panel-data estimation         Number of obs         =        15
Group variable: country1                     Number of groups      =         5
Time variable: years
                                             Obs per group:    min =         1
                                                               avg =         3
                                                               max =         4

Number of instruments =     11               Wald chi2(5)          =     85.62
                                             Prob > chi2           =    0.0000
One-step results
------------------------------------------------------------------------------
       gdpcg |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       gdpcg |
         L1. |  -.0057272   .0296628    -0.19   0.847    -.0638652    .0524109
             |
      aidyla |   .0100277   .0024242     4.14   0.000     .0052764    .0147789
         opn |  -1.43e-07   2.16e-07    -0.66   0.508    -5.66e-07    2.80e-07
         inf |   8.07e-06   .0000222     0.36   0.717    -.0000355    .0000516
         gns |  -.0025369   .0007793    -3.26   0.001    -.0040644   -.0010095
      fdiyxhc |  -2.30e-11   6.31e-11    -0.36   0.716    -1.47e-10    1.01e-10
------------------------------------------------------------------------------
Instruments for differenced equation
        GMM-type: L(2/2).gdpcg
        Standard: D.aidyla D.opn D.inf D.gns D.fdiyxhc
Instruments for level equation
        GMM-type: LD.gdpcg
```

Figure A10. *Per Capita GDP Growth Equation: with one conditional variables (fdiyxhc), suppressed constant term and first lagged of the dependent variable.*

```
. xtdpdsys gdpcg aidyla fdiy opn inf gns aidyxhc fdiyxhc, noconstant lags(1) maxldep(1)
>  artests(2)
note: fdiy dropped from div() because of collinearity
note: fdiy dropped because of collinearity

System dynamic panel-data estimation         Number of obs         =        13
Group variable: country1                     Number of groups      =         5
Time variable: years
                                             Obs per group:    min =         1
                                                               avg =       2.6
                                                               max =         4

Number of instruments =     11               Wald chi2(6)          =     20.21
                                             Prob > chi2           =    0.0025
One-step results
------------------------------------------------------------------------------
       gdpcg |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       gdpcg |
         L1. |   .0034672   .0848585     0.04   0.967    -.1628524    .1697868
             |
      aidyla |   .0104857   .0067383     1.56   0.120     -.002721    .0236925
         opn |   5.55e-07   3.70e-06     0.15   0.881    -6.69e-06    7.80e-06
         inf |   .0000293   .0001769     0.17   0.868    -.0003174    .0003761
         gns |  -.0004916   .0032155    -0.15   0.878    -.0067939    .0058107
     aidyxhc |  -.0050979   .0051886    -0.98   0.326    -.0152672    .0050715
     fdiyxhc |  -2.03e-12   1.62e-10    -0.01   0.990    -3.20e-10    3.16e-10
------------------------------------------------------------------------------
Instruments for differenced equation
        GMM-type: L(2/2).gdpcg
        Standard: D.aidyla D.opn D.inf D.gns D.aidyxhc D.fdiyxhc
Instruments for level equation
        GMM-type: LD.gdpcg
```

Figure A11. *Per Capita GDP Growth Equation: with two conditional variables, suppressed constant term and first lagged of the dependent variable.*

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i As a prologue, a critical perspective on inclusive development and its relationship with growth, pro-poor growth and inclusive growth is in order here, at least for clarity of our analysis. Growth, defined as sustained increase in real per capita income, although necessary, has only an instrumental value. Development cannot take place without growth, yet growth itself does not warrant development. Growth can equally sustain mis-development in which growth of GNP goes hand in hand with increasing inequality, unemployment and poverty as it seems largely the case in many African countries. While Pro-poor growth is seen as growth which reduces income poverty, inclusive growth is that which is accompanied by lower income inequality so that the increase in income accrues disproportionately to those with lower income. The concept of development differ from that of growth in expanding the focus from income (GNP) to other dimensions of well-being particularly health, education and housing. The MDGs (and its targets) identifies a number of these dimensions and provide a good framework for measuring and identifying inclusive development (see Rauniyar and Kanbur, 2010: 3). As these MDGs goals has been fairly comprehensively synthesized in a single indicator; the Human Development Index (HDI), the latter provide a fascinating measure of the inclusivity of development – on the basis of which it is adopted for this study.

ii The new theory explains why aid and FDI affect development differently, among others.

iii There is avalanche of literature that have reached this conclusion; see e.g., Maizels and Nissanke (1984); Frey and Schneider (1986); Trumbull and Wall (1994); and Dollar and Svensson (2000). For instance, Dollar and Svensson (2000) found that in a sample of more than 220 structural adjustment reform programmes, nearly one-third of the countries involved failed to meet the conditionality demand as the conditionality has become too broad to function effectively.

iv Potential instrumental variables for aid include size (population) and colonial history of the receiving country, and the distance of the receiving country from the donor country. Literature is replete with candidate instruments for FDI.

v The Arellano and Bond (1991) has been updated and extended in the ensuing literature by Arellano and Bover (1995) and Blundell and Bond (1998). See Wawro (2002) for overview of other dynamic panel data model.

vi We have earlier advanced the rationale for our choice of A-B technique over 2SLS-IV panel data framework.

vii Readers that are unfamiliar with application of Arellano-Bond (1991) GMM panel data technique may see Kosack and Tobin (2006); Blundell and Bond 1998; and Arellano and Bover 1995 for exposition.