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## Determining the Correlates of Poverty for Inclusive Growth in Africa

John C. Anyanwu



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**AFRICAN DEVELOPMENT BANK GROUP**

## **Determining the Correlates of Poverty for Inclusive Growth in Africa**

**John C. Anyanwu<sup>1</sup>**

Working Paper No. 181  
September 2013

**Office of the Chief Economist**

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## **ABSTRACT**

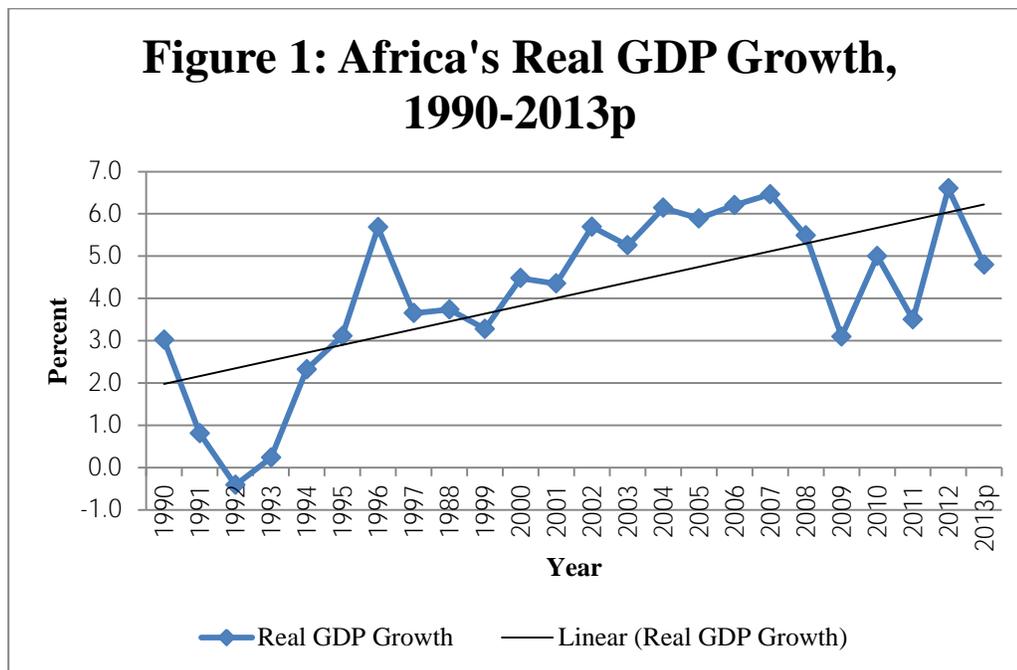
**In spite of the high growth that Africa has experienced in recent years, poverty, inequality and unemployment remain high, indicating lack of inclusion in the development process and its outcomes. But poverty, for example, can be reduced at a faster rate when inclusive growth strategies are applied and when special income distribution policies are undertaken. This study is an attempt to contribute to the design of inclusive growth policies. It examines the correlates of poverty - headcount index of international poverty line at US\$1.25 per day - with multivariate models using data on 43 African countries for the period, 1980 to 2011. Our empirical**

**estimates suggest that higher levels of income inequality, primary education alone, mineral rents, inflation, and higher level of population tend to increase poverty in Africa and therefore bad for poverty reduction and inclusive growth in the continent. On the other hand, higher real per capita GDP, net ODA, and secondary education have significant negative effect on poverty in Africa and thus good for poverty reduction and inclusive growth in the continent. Trade openness has positive but insignificant effect on poverty in Africa in spite of the huge liberalization efforts of African countries. The inclusive growth measures of these results are discussed.**

**Keywords: Poverty, Inclusive Growth, Africa  
JEL Classification: I32, I38, O40, O55**

## I. Introduction

From 2000 to 2012, Africa's economy has grown rapidly and remarkably, averaging over 5 percent (Figure 1). For example, in 2012 GDP growth in Africa was 6.6 percent, even at a time developed nations are experiencing growth contraction. However, there is growing concern that the benefits have not been inclusive and equitably shared. Such growth has not been inclusive because it has not broadened access to sustainable socioeconomic opportunities for more people, countries and regions, while not protecting the vulnerable. As Ranieri and Ramos (2013) have stated, inclusive growth (IG) is both an outcome and a process: on the one hand, it ensures that everyone can participate in the growth process, both in terms of decision-making for organizing the growth progression as well as in participating in the growth itself; on the other hand, IG makes sure that everyone shares equitably the benefits of growth. In that manner, the three pillars of IG must include social protection and promotion; productive inclusion and generation of opportunities; and territorial development and systemic competitiveness. In Africa, poverty, using the international poverty line, remains high despite the recent slight decline in incidence but the number under the poverty line has risen astronomically. Income inequality (almost 0.50 in Gini coefficient), lack of participation and opportunities in the economy, and unemployment, particularly for the youth, are also increasing. In many African economies, the unemployment rate is staggeringly high, often above 50 percent. Recognizing the negative social, economic, and political consequences of these trends, as exemplified in the Arab Spring, it is imperative to aggressively pursue inclusive growth policies. In addition, the current average growth rate is still the UN minimum target of 7 percent per annum for the achievement of the MDG1 target.



Source: Author, using data from the Statistics Department, African Development Bank.

Poverty is a complex, multidimensional, and universal socio-economic problem. The poor can be categorized, especially in the African context, as: (i) those households or individuals below the poverty line and whose income are insufficient to provide for basic needs; (ii) households or individuals lacking access to basic services, political contacts and other forms of support, including the urban squatters and

"street" children; (iii) people in isolated rural areas who lack essential infrastructure such as basic services; (iv) female - headed households (especially pregnant and lactating mothers and infants) whose nutritional needs are not being met adequately; (v) persons who have lost their jobs and those who are unable to find employment (such as school leavers and tertiary education graduates); and (vi) ethnic minorities who are marginalized, deprived and persecuted economically, socially, culturally and politically (Anyanwu, 1997). However, for the purposes of the MDG target number one (eradicating extreme poverty), the key indicator used is the proportion of the population living below the international poverty line of US\$1.25, a measure allows comparisons over space and time.

Experts (see, for example, Shorrocks and van der Hoeven, 2004) have emphasized that poverty can be reduced at a faster rate when inclusive growth strategies are applied and when special income distribution policies are undertaken. However, this calls for studies, which can inform poverty analysis and contribute to the design of inclusive growth policies (see Jolly et al, 2012; van der Hoeven, 2010). This paper makes a contribution in this direction. Indeed, poverty is one of the most serious challenges facing developing countries like those in Africa. Also, reducing poverty is one of the most important targets of the Millennium Development Goals (MDGs) of the United Nations (van der Hoeven, 2013). However, to reduce poverty, it is imperative to understand its determinants. This paper is intended to make some contribution to the Post-2015 Development Agenda.

Thus, the paper examines the correlates of poverty - headcount index of international poverty line at US\$1.25 per day - with multivariate models using data on Africa for the period, 1980 to 2011. The unbalanced cross-section time series data covers 43 countries and comprises a sample size of 147 data points. This study is useful, first, to verify the relative role of the various factors in determining poverty status, and second, to recommend policy changes to reduce poverty incidence in Africa and promote inclusive growth.

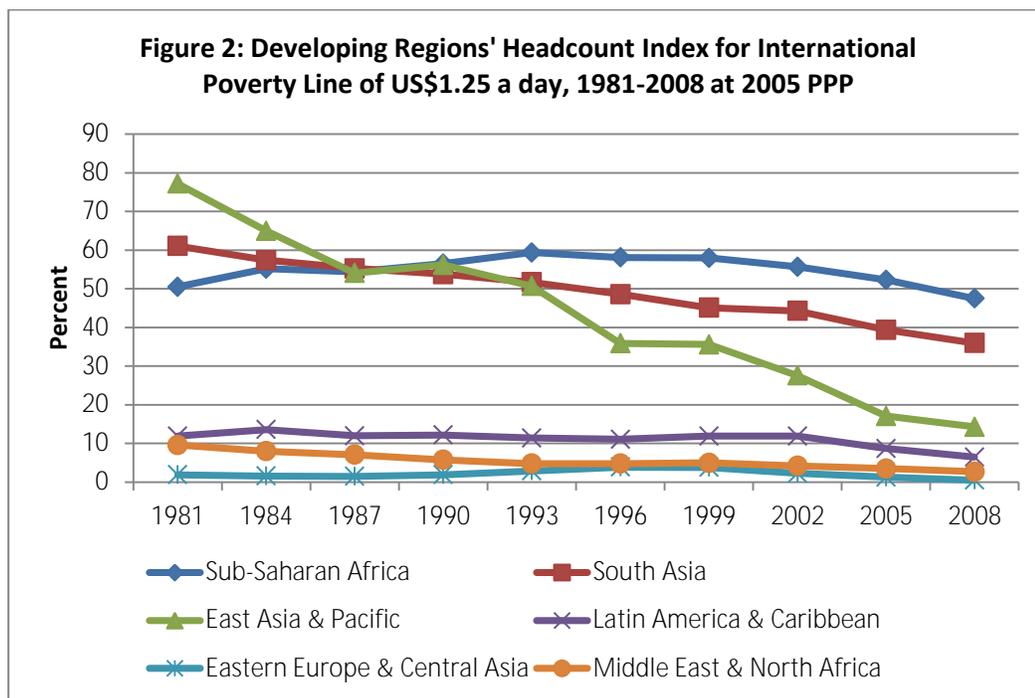
Thus, the further contents of the paper can therefore be summarized as follows. Section II discusses the incidence of poverty in Africa while Section III presents a brief literature review. Section IV presents the model and data while Section V discusses the empirical estimates of the correlates of poverty in the continent. Section VI concludes the paper with policy implications.

## **II. Africa's Poverty Profile: Trend and some Dimensions**

One of the targets for reducing extreme poverty in Africa involves halving the proportion of people living in absolute poverty from 48 percent in 1990 to 24 percent by 2015, using international poverty lines. World Bank (2012) estimates indicate that the Middle East and North Africa had 8.6 million people or 2.7% of the population living on less than \$1.25 a day in 2008, down from 16.5 million in 1981 (Figure 2). The data also indicate that though the percentage living below \$1.25 a day in Sub-Saharan Africa (SSA) declined from 51.5% in 1981 to 47.5% in 2008 the number of people living below the international poverty line increased significantly from 204.9 million in 1981 to 386 million people in 2008 – an increase of over 88% (Figure 3). In 2010, the extreme poor in Sub-Saharan Africa represented more than a third of the world's extreme poor of 1.2 billion people. This contrasts SSA accounting for only 11 percent of the world's total in 1981.

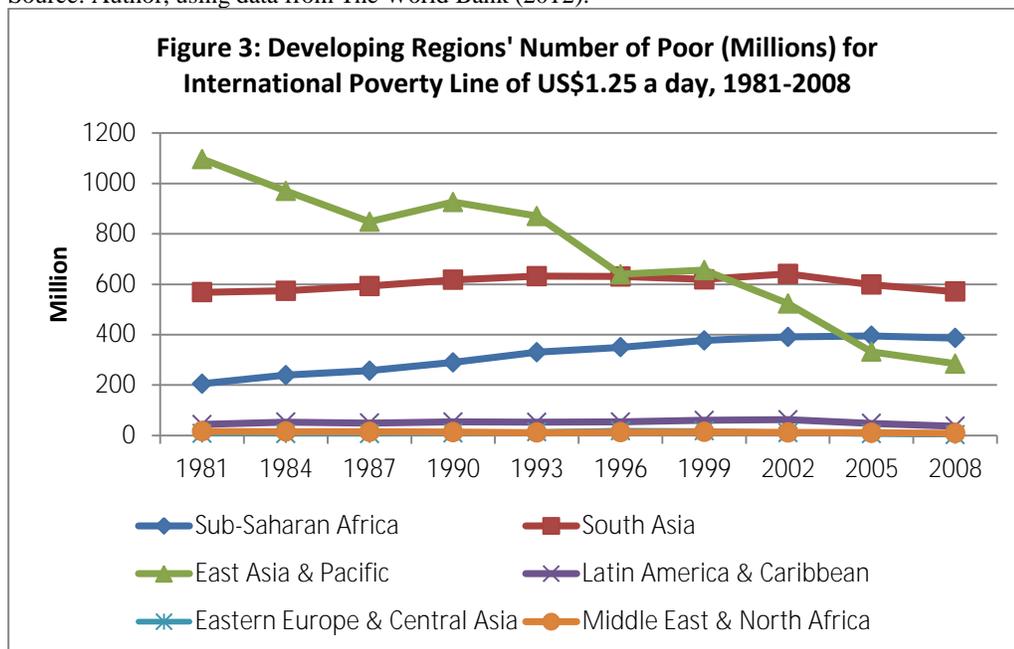
While SSA's poverty incidence is declining, it has had the highest incidence among the global regions from 1993 to 2008. It is also the only region in which the number of people living under the poverty line has maintained a sustained increase since 1981 unlike South East Asia and the Pacific regions

where there had been a decrease in both the number and percentage of those under the poverty line (Figures 2 and 3).



Note: 2005 PPP=2005 purchasing power parity exchange rate, which is the number of units of a country's currency required to buy the same amounts of goods and services in the domestic market as U.S. dollar would buy in the United States.

Source: Author, using data from The World Bank (2012).



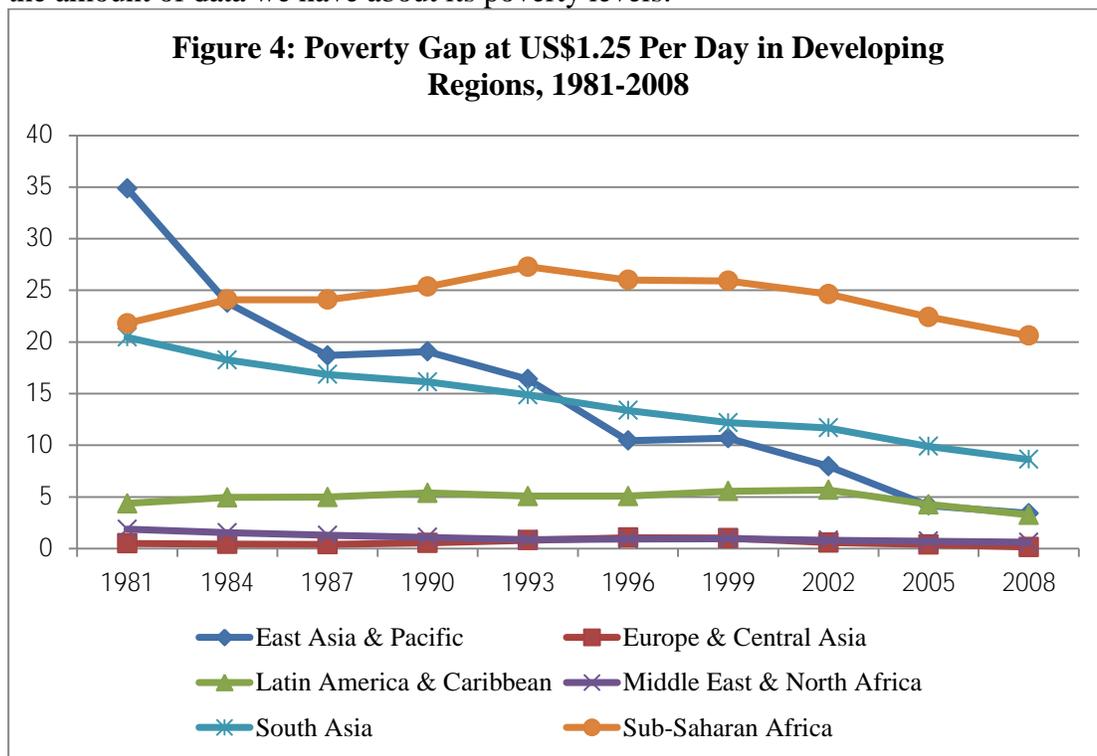
Source: Author, using data from The World Bank (2012).

If current trend continues, the proportion of people living in extreme poverty in Africa as a whole would be about 39 percent by 2015 – far greater than the targeted 24 percent.

Another key feature is that SSA's poverty is very deep with the poverty gap (the depth or intensity of poverty – measuring how far, on the average, the poor are from the poverty line) as the highest among global regions since 1987. SSA's poverty gap, which reached a peak of over 27% in 1993, was at its 1981 level in 2008 at 21% (Figure 4).

As Figures 5 and 6 indicate, apart from Senegal and Gabon, the countries with the lowest average poverty levels (between 1980 and 2011) – Egypt, Morocco, Tunisia, and Algeria - are in North Africa. The rest are in sub-Saharan Africa, but there are huge country differences. Thus, available data so far indicate that it is only the North African countries of Algeria, Egypt, Libya, Morocco and Tunisia as well as Mauritius that have already met the MDG target.

Figure 5 also shows clear and unambiguous negative correlation between real per capita GDP and poverty headcount in Africa. The reverse is true of the relationship between mineral rents as percentage of GDP and poverty in the continent (Figure 6), in line with the resource curse literature. Thus, mineral resource-rich countries appear to have higher poverty levels, on average. In fact, as can be seen in Figure 6, there is a strong positive relationship between a country's dependence on mineral rents and the amount of data we have about its poverty levels.



Source: Author, using data from The World Bank (2012).



### III. Brief Literature Review

Using survey data between 1980 and 1998, Naschold (2005) shows that for a given level of consumption, increases in inequality lead to higher levels of poverty. Anyanwu and Erhijakpor (2010) show that the finding of a positive and significant coefficient for the Gini index for poverty headcount, depth and severity measures indicates that greater inequality is associated with higher poverty. These results are consistent with that of Richard (2002). Based on African data, Ali and Thorbecke (2000) find that poverty is more sensitive to income inequality than it is to income. At the country level, a number of studies have found positive effects of inequality and income on poverty (e.g., Datt and Ravallion, 1992 for Brazil and India; Kakwani, 1993 for Cote d'Ivoire). Adams (2004) provides elasticity estimates showing that the growth elasticity of poverty is larger for the group with the smaller Gini coefficient (less inequality). More recently, Fosu (2008; 2009; 2010a, b) make similar observations for the Africa region. For example, Fosu (2010b) finds that the responsiveness of poverty to income growth is a decreasing function of inequality, and that the income elasticity of poverty is actually smaller than the inequality elasticity.

The literature also posits that the level of economic development —as measured by real GDP per capita — will reduce poverty. As Shorrocks and van der Hoeven (2004) have noted, increased economic welfare in a country on average makes everyone better-off hence Sachs (2005) had observed that the main pro-poor growth strategy is to ensure that countries “climb the ladder” of economic development. Ulriksen (2012) finds that higher levels of economic wealth, measured as GDP per capita, the lower the rate of poverty in selected developing countries, a result consistent with Anyanwu and Erhijakpor (2009, 2010).

With respect to ODA effects, the results of Alvi and Senbeta (2012) suggest that aid has a significant poverty-reducing effect even after controlling for average income. Specifically, foreign aid is associated with a decline in poverty as measured by the poverty rate, poverty gap index and squared poverty gap index. They also find that the composition of aid matters—multilateral aid and grants do better in reducing poverty than bilateral aid and loans. Bahmani-Oskooee and Oyolola (2009), using pooled time-series and cross sectional data from 49 developing countries, also find that foreign aid is effective in reducing poverty. Using data from 69 districts in Kenya, Oduor and Khainga (2009) show that net ODA from 69 districts in Kenya has significantly reduced poverty in the country, emphasizing that net ODA disbursements have had stronger impacts on the poorest of the poor more than those who are less poor. However, Calderón et al., (2006) find that aid by itself does not appear to have a statistically significant effect on poverty reduction. This result agrees with their later finding (Chong et al., 2009). Connors (2012) also finds that foreign aid does not exert a significant impact on reductions in poverty rates, suggesting that foreign aid, as currently practiced, is ineffective at reducing poverty.

Investment in human capital is important, not only for economic growth but also, more directly, for poverty reduction (Hughes and Irfan, 2007). In particular, the literature shows that education increases the stock of human capital, which in turn increases skills, labor productivity and wages. Since labor is by far the most important asset of the poor, increasing the education of the poor will tend to reduce poverty. Indeed, Plamer-Jones and Sen (2003) and Anyanwu (2005, 2010, 2011, 2012) have found rural households in India and Nigeria, respectively, whose main earning member does not have formal education or has attended only up to primary school are more likely to be poor than households whose earning members have attended secondary school and beyond. Sadeghi et al (2001) have noted higher levels of education were not seriously needed in rural areas where only a few well-educated people live.

However, Anyanwu (2012) has found that for Nigeria as a whole, it is only general post-secondary education that significantly reduces poverty while having no education significantly increases the level of poverty in the country.

In the case of India, Awana et al (2011) find that educational achievement is negatively related with the poverty incidence in 1998/99 and 2001/02. Also, as one goes for higher levels of education, the chances of being non-poor increases. In a study of Paraiba, Brazil, Verner (2004) finds that educational attainment is the single most important poverty-reducing factor. According to the author's results, all levels of education from primary to tertiary are significant and negatively associated with the probability of being poor. Botha's (2010) results indicate a clear negative relationship between education and poverty in South Africa. According to the author, households in which the head has a low level of education are more likely to be poor compared to a household where the head has a higher level of education.

According to Tilak (2007), literacy (mere literacy) and primary education are positively related to poverty ratio. It is only when people have at least completed middle/upper primary level of education, the relationship between education and poverty becomes negative and important; and the negative relationship becomes stronger when the level of education is raised to secondary (and above). Therefore, middle level education (secondary level) may serve as a threshold level for education to influence poverty.

Some studies, such as Davis (1995), suggest that resource wealth – particularly mineral wealth – enhances the welfare of the poor. However, Ross (2003), finds that, after controlling for initial income, a state's dependence on mineral exports in 1970 is robustly associated with worsened conditions for the poor in the late 1990s. Other types of primary commodities are not linked to poverty. While both oil and nonfuel minerals are associated with poverty, the causal mechanisms are different, according to Ross (2003): in states dependent on nonfuel minerals, the problem has been slow growth; in oil-dependent states, it has been the crowding-out of growth in the manufacturing sector, and a lack of democracy.

Ormonde (2011) examines the question of whether mineral resource rents have helped to reduce poverty rates in countries with an extensive mineral base in a cross country case study analysis involving Botswana, Nigeria, Zambia, Bolivia, Chile, and Venezuela. The results indicate that Chile and Botswana have managed to utilize mineral rents to propel strong economic growth and reduce poverty but inequality levels remain high in both countries. Levels of poverty are noticeably the lowest in Chile while Nigeria and Zambia, which have been unable to capitalize on their extensive mineral bases to poverty rates, have the highest poverty rates among the countries. On the other hand, Venezuela and Bolivia have experienced both volatile economic growth and varied levels of poverty. Recently, Ulriksen (2012), using natural resource dependence, measured as natural resource exports as percentage of GDP, find that natural resource dependence has a significant positive effect on poverty in selected developing countries, including Botswana.

It has also been argued that inflation increases poverty in two ways. First, the inflation tax can reduce disposable real income. Second, if nominal wages increase less than the price of goods consumed by wage earners, workers' real income will decline. Also, inflation (which is a tax on non-indexed financial assets, such as currency holdings) lowers the overall purchasing power of households and tends to raise poverty (Agénor, 2005). Cardoso (1992) studies the effect of inflation on poverty between 1970 and 1990 in Latin American countries and finds evidence that inflation affects the poor

through inflation tax but the effect is very small. However, the author shows that the main effect of inflation on poverty was manifested through real wages. In the same manner, Powers (1995) studies the effects of inflation on poverty in the United States, using data from 1959 through 1992, and finds a robust and relatively large positive relationship between inflation and the consumption poverty rate. Powers argues that inflation affects the poor directly through a decline in their real wages owing to the short-run rigidity of nominal wages. Braumann (2004), Adeyemi, Ijaiya and Raheem (2009), and Anyanwu and Erhijakpor (2010) also find that there is a positive correlation between inflation and poverty. Chani et al (2011) study the determinants of poverty in Pakistan between 1972 and 2008 and find that inflation has positive effect on poverty; economic growth has negative effect on poverty; and the effects of investment and trade openness in poverty reduction are not significant.

A number of empirical studies using panel and cross-section data (e.g. Edwards, 1997; Ghura *et al.*, 2002; Dollar and Kraay, 2004) found no link between openness and the well-being of the poor beyond those associated with higher average per capita income growth. Some recent results indicate that trade openness has significant positive effect on poverty in Africa (see, for example, Anyanwu and Erhijakpor, 2010). Fosu and Mold (2008) reassesses the gains from trade for sub-Saharan Africa, and draw their implications for labor market adjustment and poverty reduction. Their findings support the hypothesis that African countries cannot expect substantial gains from further multilateral liberalization. In addition, given the sharp contraction of import-competing sectors in response to trade liberalization in many African economies, coupled with insufficient compensation through labor market adjustments in other sectors, the study suggests that the ultimate impact on poverty reduction is likely to be small or even negative. A conceptual framework decomposing the links between trade policy and poverty has been developed by Winters (2000, 2002), while exploring policy responses to the possibility that liberalization causes poverty (Winters et al, 2004).

Adeyemi, Ijaiya and Raheem (2009) analyze the determinants of poverty in sub-Sahara Africa by using cross country data of 48 countries and find that increase in population causes increase in the level of poverty in the sub-region. Klasen and Lawson (2007) find strong empirical evidence that the currently high population growth puts a considerable break on per capita growth prospects in Uganda. Moreover, it contributes significantly to low achievement in poverty reduction and is associated with households being persistently poor and moving into poverty. At the micro-level, the literature is also full of evidence that large households are associated with poverty (Lanjouw and Ravallion, 1994; Szekely, 1998; Gang, Sen and Yun, 2004; and Anyanwu, 2005, 2010, 2013).

#### **IV. The Model and Data**

##### **1. The Empirical Model**

Using the basic growth–poverty model suggested by Ravallion (1997; 2008) and Ravallion and Chen (1997) as well as the frameworks posited by Dollar and Kraay (2002), Ghura, Leite and Tsangarides (2002), Berg and Krueger (2003) and empirical works of Agénor (2004, 2005), Islam (2004), and Anyanwu and Erhijakpor (2010, 2012) the relationship that we want to estimate can be written as:

$$\log P_{it} = \alpha + \beta_1 \log(g_{it}) + \beta_2 \log(y_{it}) + \beta_3 \log(X_{it}) + \epsilon_{it} \quad (1)$$

$(i = 1, \dots, N; t = 1, \dots, T)$

where  $P$  is the measure of poverty in country  $i$  at time  $t$ ;  $U_i$  is a fixed effect reflecting time differences between countries;  $V_1$  is the elasticity of poverty with respect to income inequality given by the Gini coefficient,  $g$ ;  $V_2$  is the “growth elasticity of poverty” with respect to real per capita GDP given by  $y$ ;  $X$  is the control variables, including inflation rate, trade openness (measured as the ratio between exports + imports as percentage of GDP), primary school gross enrolment ratio, secondary school gross enrolment ratio, ODA as a percentage of GDP, mineral rents as percentage of GDP, population, time trend and sub-regional dummies used as fixed effects; and  $\gamma$  is an error term that includes errors in the poverty measure.

The dependent variable in Equation (1), which is poverty, is the headcount index of international poverty line at US\$1.25 per day. The headcount measure is considerably the most commonly calculated and used poverty measure.

The measure of income inequality is the Gini coefficient. The Gini coefficient is the ratio of the area between the Lorenz curve and the diagonal (the line of perfect equality) to the area below the diagonal. As a measure of income inequality, the Gini coefficient ranges from 0 to 1. The larger the coefficient is, the greater the degree of inequality. Thus, the Gini coefficient limits 0 for perfect equality and 1 for perfect inequality. The model assumes that the level of income inequality affects poverty reduction. Since past work has shown that a given rate of economic growth reduces poverty more in low-inequality countries, as opposed to high-inequality countries, the income inequality variable is expected to be positive and significant. Therefore, the worse the income distribution and an increase in inflation tend to have a negative impact on poverty reduction so that their coefficients are expected to be positive.

The model also assumes that economic development —as measured by real GDP per capita— will reduce poverty. The relationship between poverty and the income variable is therefore expected to be negative and significant. Thus, the negative coefficient of  $V_2$  is expected.

The coefficient associated with trade openness to poverty reduction is ambiguous (Berg and Krueger, 2003). On the one hand, trade liberalization could benefit the poor at least as much as the average person (Jongwanch, 2007). Trade liberalization could increase the relative wage of low-skilled workers and reduce monopoly rents and the value of connections to bureaucratic and political power. On the other hand, trade liberalization might also worsen the income distribution, particularly by encouraging the adoption of skill-biased technical change in response to increased foreign competition. Thus, if trade liberalization worsens the income distribution enough, particularly by making the poor poorer, then it is possible that it is not after all good for poverty reduction, despite its positive overall growth effects.

While an increase in primary and secondary school enrolments increase the opportunity of the poor to generate income in a low education continent, the coefficients associated with primary and secondary school enrolments are expected to be negative.

Sub-regional dummies (West Africa, East Africa, Central Africa, North Africa and Southern Africa – as defined by the African Development Bank) were introduced to control for fixed effects.

For robustness, our estimations are done with OLS, FGLS, IV-2SLS and IV-GMM. One possible problem with Equation (1) is that it assumes that all of the right-hand side variables in the model—

including net ODA (% of GDP) — are exogenous to poverty. However, it is possible that net ODA may be endogenous to poverty. Reverse causality may be taking place: net ODA may be reducing poverty, but poverty may also be affecting the level of net ODA being received. Without accounting for this reverse causality, all of the estimated coefficients in Table 2 may be biased. One way of accounting for possible endogenous regressors is to pursue an instrumental variables approach. Therefore, to deal with this problem, we estimate the equation, instrumentalizing the net ODA variable with its fourth and seventh lagged levels (since these show up as appropriate instruments), using a two-step (IV) efficient generalized method of moments (GMM) estimation method. The log transformation of all the variables allows us to interpret the coefficients as elasticities.

## 2. The Data

Making use of national representative poverty surveys from 1980 to 2011, the dataset consists of 43 African countries. The poverty and inequality measures used here are from the World Bank’s PovcalNet database. The poverty measure is the headcount index of international poverty line at US\$1.25 per day. The income distribution measure, the Gini coefficient, is available from the same survey data. The rest of the data series are from the World Bank World Development Indicators Online (see Appendix Table 1) database. The income variable is real GDP per capita in constant 2000 U.S. dollars while inflation rate is the percent change in the consumer price index. Other variables used are trade openness, primary school gross enrolment ratio, secondary school gross enrolment ratio, ODA as a percentage of GDP, mineral rents as percentage of GDP, time trend and sub-regional dummies as fixed effects. Table 1 provides detailed descriptions of the raw dataset.

**Table 1: Descriptive Statistics of Regression Variables**

Variable	Observations	Mean	Median	Standard Deviation
Poverty Headcount	147	44.93	49.14	25.59
Gini Index	145	44.29	42.39	8.54
Real Per Capita GDP	1500	996.03	375.1	1445.23
ODA to GDP	1474	12.31	9.1	13.29
Primary Education Enrolment (Gross)	1362	86.6	90.88	31.02
Secondary Education Enrolment (Gross)	1097	31.83	24.54	24.57
Mineral Rents (% of GDP)	1472	1.13	0.0002	3.61
Inflation Rate	1336	66.1	7.78	952.71
Trade Openness	1485	7.36	62.34	37.74
Population	1643	13.74	6.90	20.29

Note: These are raw data before the log transformation

Source: Author’s calculations, using data from the World Bank WDI (2012).

## V. Empirical Results

Table 2 shows the results when Equation (1) is estimated using Ordinary Least Squares (OLS), Feasible Generalized Least Squares (FGLS), two-stage Least Squares Instrumental Variables (2SLS) and Generalized Method of Moments Instrumental Variables (IV-GMM). The estimates from our sample conform to the predictions of the model. The results are also robust to changes in estimation methods.

Our subsequent analysis is based on the pooled OLS results given the results of the IV and IV-GMM estimates.

A positive and significant coefficient for the Gini index for poverty indicates that greater inequality is associated with higher poverty in Africa. Our estimates suggest that, on average, a one percent increase in income inequality will lead to a 1.31 percent increase in the share of people living in poverty. Thus, income inequality is very bad for the poor in Africa.

Economic development (or growth) is good for poverty reduction in Africa. Regardless of the method used, per capita income has a negative and significant coefficient. This indicates that any inclusive growth strategy in the continent has to be one that ensures that countries “climb the ladder” of economic development. Our point estimates suggest that a one percent increase in real per capita GDP would reduce poverty in Africa by 0.74 percent.

Foreign aid matters for poverty reduction in Africa. Net ODA has a negative and statistically significant impact on poverty. Our estimates suggest that, on average, a one percent increase in net ODA as a percentage of GDP will lead to a 0.29 percent decline in the share of people living in poverty.

**Table 2: Estimates of the Determinants of on Poverty in Africa**

Variable	Pooled OLS	FGLS	IV-2SLS	IV-GMM
Gini Index	1.314 (2.97***)	1.314 (3.69***)	1.335 (3.64***)	1.338 (4.91***)
Real Per Capita GDP	-0.741 (-4.81***)	-0.741 (-5.97***)	-0.619 (-4.46***)	-0.622 (-4.19***)
ODA to GDP	-0.292 (-3.48***)	-0.292 (-4.31***)	-0.241 (-2.64***)	-0.246 (-3.90***)
Primary Education Enrolment (Gross)	0.824 (3.01***)	0.824 (3.74***)	0.837 (3.83***)	0.850 (3.00***)
Secondary Education Enrolment (Gross)	-0.679 (-4.31***)	-0.679 (-5.35***)	-0.776 (-4.92***)	-0.784 (-5.01***)
Mineral Rents (% of GDP)	0.065 (2.41**)	0.065 (2.99**)	0.070 (2.97***)	0.071 (2.78***)
Inflation Rate	1.719 (1.65)	1.719 (2.04**)	2.118 (2.27**)	2.135 (2.79***)
Trade Openness	0.082 (0.32)	0.082 (0.40)	0.071 (0.33)	0.065 (0.31)
Population	0.190 (1.73*)	0.190 (2.14**)	0.235 (2.59**)	0.232 (2.77***)
Trend	-0.0006 (-3.09***)	-0.0006 (-3.83***)	-0.0006 (-3.86***)	-0.0006 (-3.60***)
West Africa	-0.390 (-1.20)	-0.964 (-4.30***)	-0.941 (-3.86***)	-0.946 (-4.73***)
East Africa	-0.250 (-0.87)	-0.825 (-3.75***)	-0.791 (-3.52***)	-0.789 (-3.83***)
Central Africa		-0.575 (-2.19**)	-0.551 (-2.12**)	-0.560 (-2.05**)
North Africa	-1.520 (-4.20***)	-2.095 (-8.51***)	-2.105 (-8.35***)	-2.110 (-10.18***)
Southern Africa	0.575 (1.77*)			
Constant	-4.993 (-0.97)	-4.418 (-1.04)	-7.059 (-1.56)	-17.879 (-1.62)

R-Squared	0.9571		0.9580	0.9581
Adjusted R-Squared	0.9357			
F-Statistic	0.0000			
Wald chi2		960.11	945.44	1722.63
Log likelihood		-2.956198		
Prob>F/chi2		0.0000	0.0000	0.0000
F-Statistics of excluded instruments			15.4461	22.5781
P-value			0.0000	0.0000
Durbin (score) chi2(1)			1.02639 (p=0.3110)	
WU-Hausman F-test			0.651298 (p=0.4270)	
Sargan (score) chi2(1)			0.023456 (p=0.8783)	
Basman chi2(1)			0.014529 (p=0.9041)	
GMM C statistic chi2(1)				1.14623 (p=0.2843)
Hansen's J chi2(1)				0.038776 (p=0.8439)
N	43	43	42	42

Source: Author's calculations. Note: \*\*\* 1% significant level; \*\* 5% significant level; \* 10% significant level.

Not all levels of education are “created equal” for poverty reduction in the continent. According to our results, primary education is positively and significantly related to poverty headcount. It is only when people have at least secondary education that the relationship between education and poverty becomes negative and important. For example, our point estimates suggest that a one percent increase in secondary education enrolment would reduce poverty by 0.68 percent. Therefore, secondary level education may serve as a threshold level for education to reduce poverty in Africa. This may not be surprising since secondary school enrolment is a commonly used indicator of the capability of the workforce. As Tilak (2007) argues, secondary and higher education are more relevant for poverty reduction than primary education as they strengthen and build upon knowledge begun in the primary levels, provide essential skills for the labor market, and have greater potential to bring people higher above the poverty line (with less danger of falling back into poverty). Thus, for most African countries, education beyond primary level is good for poverty reduction but as argued in the last section below, this has to be based on the acquisition of relevant and world of work skills through technical and vocational educational and training (TVET) so as to avoid an “army” of unemployed graduates.

Our results also show that a country's dependence on mineral rents is robustly associated with worsened conditions for the poor in Africa. In other words, a higher share of mineral rents in GDP leads to significantly higher levels of poverty in African countries. Our estimates show that a one percent increase in mineral rents as a percentage of GDP would result in increase of poverty by at least 0.07 percent.

Another important dimension of our results relates to the hugely positive and significant effect of inflation on poverty in Africa, presenting high level of uncertainty. For example, our point estimates suggest that a one percent increase in inflation rate would increase poverty by as much as 1.7 percent.

There was consistent, positive but insignificant effect of trade openness on poverty in Africa. This indicates that the recent trade liberalization efforts in Africa have not benefitted poverty and the poor.

Our results also indicate that increase in population causes increase in the level of poverty in the Africa. For example, a one percent increase in population size would result in increase of poverty by over 0.19 percent. This result conforms to the reality on the ground since African population growth and structure cannot be described as a pure demographic gift. Africa has been unique demographically because fertility rates have remained relatively high, even as significant progress has been made in decreasing the mortality rates. This has led to a continuing population explosion and has contributed to socio-economic problems in a number of African countries. This means that Africa is still a long way to reaping the demographic dividend since the magnitude of the dividend depends on the ability of the economy to absorb and productively employ the extra workers, especially the burgeoning youth size. Indeed, without the unlikely quick development of large labor-absorbing industries, the fast-growing population in Africa will not only worsen poverty but may also escalate conflicts (especially over natural resources), environmental degradation, diseases, food insecurity, and of course, political instability as the recent experience in North Africa has shown.

The time trend results conform to our observation on Figure 1, showing that the poverty headcount is falling at a slow rate, at a time when the size of the population below the poverty line is increasing. The coefficients on the sub-regional dummy variables represent the impact on poverty of unobservable sub-regional-specific factors with respect to the reference group. In the FGLS, IV-2SLS and IV-GMM estimations, West Africa, East Africa, Central Africa and North Africa dummies are negative – and positive for Southern Africa.

## **VI. Conclusions and Policy Proposals for the Reduction of Poverty and Inclusive in Africa**

Our empirical estimates, using available cross-sectional data over the period, 1980 and 2011 suggest that, higher levels of income inequality, primary education alone, mineral rents, inflation, and higher level of population tend to increase poverty in Africa and therefore bad for poverty reduction and inclusive growth in the continent. On the other hand, higher real per capita GDP, net ODA, and secondary education have significant negative effect on poverty in Africa and thus good for poverty reduction and inclusive growth in the continent. Trade openness has positive but insignificant effect on poverty in Africa in spite of the huge liberalization efforts of African countries.

Our findings point to some key policy recommendations for poverty reduction and hence inclusive growth in Africa. First, given the finding that inequality fuels poverty in African countries, policy makers need to tackle this challenge head-on. The literature has identified a number of possible policy instruments to deal with inequality, including, conditional cash transfers, guaranteed employment schemes, labour market training, greater access to health, nutrition and education through increased social investments, affirmative action, and land and property rights reforms, especially to benefit rural dwellers (particularly women). Evidence has shown that conditional cash transfers and expenditures (for education, for example given our results that education is important in reducing poverty) are effective safety nets and levers of poverty reduction and redistribution (see Levy, 2006; Kanbur, 2008; Anyanwu and Erhijakpor, 2010). Using community-based approaches, some important development successes have been achieved under conditional cash transfers, including those that dealt with nutrition in Tamil Nadu, total sanitation in parts of Bangladesh and Indonesia, oral re-hydration in Bangladesh and Egypt, and the reduction of the burden of several neglected tropical diseases in sub-Saharan Africa. Successes occur when conditional cash transfers achieve the best outcome, at the lowest cost and in a sustainable manner (Skolnik, 2011). Indeed, recently, Rosenberg (2011a, b) had extensively discussed success stories in using cash transfers to reduce poverty in Brazil and Mexico. Improving access to

education will reduce poverty both by increasing individual productivity and by facilitating the movement of poor people from low-paying jobs in agriculture to higher-paying jobs in industry and services. More importantly, public spending on education, when targeted toward the poor, can produce a double dividend, reducing poverty in the short run and increasing the chances for poor children to access formal jobs and thus break free from the intergenerational poverty trap. Increasing educational levels (and its quality) should be accompanied by a strong investment climate to ensure that productive jobs are created for the newly educated. Another recent successful example has come from Africa: Miller (2011) has shown that cash transfers in Malawi benefited both the recipients, non-recipients and local businesses given that the transfers strengthened local markets by providing a steady source of customers and cash.

Second, the significant positive effect of net ODA on poverty in Africa demonstrates a positive “infrastructure effect” by which foreign aid improves the recipient country’s economic and social infrastructure (such as physical/economic infrastructure, including transport, telecommunications, and power/energy (electricity) as well as social infrastructure, including education, health or a reliable and well-functioning bureaucracy) (Harms and Lutz, 2006; Kimura and Todo, 2010; Anyanwu, 2012a) and hence raises the marginal product of capital in the country.

Third, African countries must increase their national incomes. To increase per capita income, African countries must deepen macroeconomic and structural reforms to increase their competitiveness, create increasing and more quality jobs and hence increase participation in economic activity, dismantle existing structural bottlenecks to private and public investment, scale-up investments in hard and soft infrastructure, check rapid population growth, and increase productivity, especially in agriculture, through creating incentives and opportunities for the private sector and increasing government support to small farm holders in terms of finance, formalization of land ownership, and technical advice.

Fourth, effective inclusive growth policies that invest in human capital of the citizens and workforce are needed. Thus, in the educational sector, there is very urgent need to re-orientate the thinking and value system of both parents and their children through mass educational campaign regarding the importance of education (particularly technical and vocational education that bestows life skills for self-employment) and the need for parents to insist on their children (male and female) going to school (at least up to technical and vocational secondary education level) before seeking employment or going into business. In addition, apart from quantitative expansion (including through private participation and public-private partnership), there is urgent need for a fundamental reform of content (e.g. curriculum reforms, availability of school books equipment/facilities, and other teaching materials) towards more emphasis on skill acquisition through technical and vocational education and training (TVET) and problems faced by the poor. It will also be necessary to devise means to assist poor households with school fees, textbooks and other school materials for their children. Non-formal education programs should also be expanded to help the poor gain literacy and most importantly, to acquire skills. These will have to be complemented with increased employment opportunities through public works and infrastructural development using labor-intensive technology so as to encourage children to go to school and hence have greater assurance of finding more quality jobs on graduation and hence reduce poverty.

In addition, for those with low education (such as just primary education), policies that promote the up-skilling, better training and education for the low-skilled workforce are imperative. Both the up-skilling, labor market training, educational reforms that conform to industry needs will also help address the skills mismatches existing in many African countries. African governments also need to dialogue

with large employers in creating employment for the youth through strategic skills planning, skills development, and skills matching. Labor market observatories that are based on labor market information systems are also needed to predict the needs of private sector employers, thereby strategically ensuring that the youth choose the relevant form of education and training for the world of work. Addressing the skills mismatch in the short-run will require improved training programs and closer links between tertiary and vocational educational institutions on the one hand, and the private sector on the other. Training programs should include on-the-job initiatives targeting those already working, as well as graduates with a general education who lack specific work skills. In addition, governments need to develop innovative public-private partnerships and the opportunities for collaboration among large employers, governments and other relevant stakeholders such as higher and vocational educational institutions to transform institutional structures and strengthen the region's economy (Ncube and Anyanwu, 2012). As the OECD/AfDB/UNECA (2008) had stated, African governments need to undertake reforms to promote TVET, including the development of a clear vision, coherent strategic approach, improving forecasting and planning for skills needs, setting up clear legal and regulatory framework and hence promoting public and private TVET schools, workplace training in enterprises, and informal apprenticeship. For feedback and effectiveness, the establishment of well-functioning labor market observatories should facilitate the measurement of the effectiveness of the various technical and vocational education and training interventions, supplemented by randomized evaluation methods to estimate impacts of youth vocational education and training interventions (Kingombe, 2012).

Fifth, following our finding that mineral rents exacerbate poverty in Africa, international financial institutions like the African Development Bank have a critical role to play in helping these countries acquire the much-needed capacity not only to negotiate beneficial contracts and earn higher rents but also for effective management of mineral rents and other related revenues. In particular, a new natural resources management framework is needed for better governance, sectoral linkages, economic growth and human, capacity and infrastructure development – with strong parliamentary legislation, oversight, and representation throughout the mineral resources value chain. Key effective mineral resource management practices will require the following measures:

- Enhanced good governance, especially as it relates to the way public money is spent, is a crucial factor in turning a mineral resource boom into an opportunity for poverty reduction in Africa. Prioritizing public investment management system is imperative. Checks and balances need to be maximized through parliaments.
- Integrating the mining sector into national development frameworks - Revenue optimization needs to be integrated with the downstream sector. Value-addition and mineral resource-industry linkages are paramount. There are many opportunities for improving positive linkages between the natural resource sector and development initiatives.
- Reinforcing institutional capacity and building strong and capable institutions.
- Sound fiscal policy and diversification of economy while using windfall taxes to protect against renegeing on taxation.
- There has to be full disclosure of terms of mineral resources contracts and activating third-party brokers such as development partners (e.g. AfDB) and NGOs to ease information availability and reduce information asymmetry.
- African countries' company and financial laws should be reformed to require all mining companies to use the EITI template in their annual financial reports by law.

Sixth, central banks should continue with tight monetary policies through aggressive policy rates cuts, supported by prudent fiscal management to ensure that the macroeconomic environment remains

conducive to continuing growth and poverty reduction. In addition, governments, especially those in East Africa where inflation remains very high, should embark on measures to tackle the huge binding structural constraints that affect efficient performance of markets in order to improve resource allocation and reduce costs and vulnerability. Such measures should include upgrading infrastructure facilities, including ports, to reduce on inefficiency and smooth the flow of goods and services within countries and across sub-regions (see Simpasa and Gurara, 2011).

Seventh, trade openness has insignificant effect in reducing poverty in Africa. Part of the problem is that Africa's exports remain dominated by primary commodities, with fuels accounting for about 40 percent and natural resources exports as a whole accounting for over 73 percent (Anyanwu, 2012b). Thus, without further improvements to their business environments and the competitiveness of their export commodities, African countries risk being competitively trapped—selling low-skill, low-value products and services, with little chance to increase value-added share in global trade. In other words, without market knowledge, particular expertise, or competitive products and services, trade openness cannot work for poverty reduction in the continent. The value-chain approach needs to be adopted by African countries to add value to their products. In addition, there is a need for investment of all kinds of physical, human, social and institutional capital, and innovation and technological progress adapted to the conditions of African countries as engines of growth, with trade fuelling that engine. In addition there is need for the promotion of developmental linkages or complementarities between growing export activities and the rest of the economy (UNCTAD, 2004).

In addition, apart from promoting increased regional trade, especially through the removal of cross-border barriers and infrastructure bottlenecks, the promotion of diversification away from natural resources dependence is imperative. Indeed, developing a successful modern economy based on natural resource exports is, in principle, feasible, given the right institutions and policies, as demonstrated by OECD countries such as Canada, Australia, or the Scandinavian countries like Norway. However, it is critical to use natural resources to develop a more diversified economic structure. Some policies are helpful in fostering diversification. These include establishing a conducive business environment and providing sufficient incentives to invest in non-natural resources sectors. A conventional measure is to use the tax system to assist the development of non-natural resource sectors. In addition to tax policy, there is also need for structural reforms, including financial sector and administrative reforms, to facilitate the diversification of economic activity. In many natural resource-dependent African economies, there is a large scope to reduce the burdens imposed by heavy regulation and an often corrupt bureaucracy, which, in addition to strengthening the financial system, would help create a more level playing field and decrease barriers to entry.

Eight, given that poverty increases with the number of household members (or family size), there is urgent need to intensify family planning services efforts and activities in African countries so as to improve knowledge, acceptance and practice (KAP) of family planning. This will involve not only increased financial outlay but also research on fertility determinants as well as decentralized planning, delivery and supervision of family planning services (Anyanwu et al, 1998a, b). Indeed, recent developments have shown that several countries in Eastern, Southern and Northern Africa are well on their way in the transition to smaller families. For example, Rwanda's increased investments in voluntary family planning and child survival have led to significantly lower fertility. Greater political commitment and increased resources for family planning and child survival have put the country on a path to making the demographic transition a reality. Unfortunately, family planning use and fertility declines in West and

Central Africa, however, are lagging, particularly due to underfunding and inadequately managed family planning programs (Gribble and Bremner, 2012).

In sum, there are three requirements for inclusive growth through poverty reduction, and these include: economic and social inclusion to ensure equal access to socio-economic opportunity (especially through social protection and promotion such as conditional transfers to reduce income inequality); production inclusion and generation of opportunities (especially high, efficient, and sustained growth to create productive jobs and economic opportunity); and promotion of competitiveness (especially through diversification away from natural resource dependence and establishing economy-wide linkages). Finally, we believe that these complementary inclusive growth-promoting socio-economic strategies and policies will go a long way in effectively reducing poverty in Africa.

## References

- Adams, R. H. (2004), "Economic growth, inequality and poverty: estimating the growth elasticity of poverty", *World Development*, 32(12), 1989-2014.
- Adeyemi, S.L., Ijayia, G. T. and Raheem, U. A. (2009), "Determinants of Poverty in SubSahara Africa", *African Research Review*, Vol. 3, No. 2, 162-177.
- Agénor, P-R. (2004), "Macroeconomic Adjustment and the Poor: Analytical Issues and Cross-Country Evidence," *Journal of Economic Surveys*, Vol. 18, No. 3, 351-396.
- Agénor, P-R (2005), "Unemployment-Poverty Tradeoffs", in *Labor Markets and Institutions*, edited by Jorge E. Restrepo and Andrea Tokman R., Central Bank of Chile, Santiago, Chile.
- Ali, A. A. and Thorbecke, E. (2000), "The state and path of poverty in Sub-Saharan Africa: some preliminary results", *Journal of African Economies*, 9, Supplement 1, 9-40.
- Alvi, E and Senbeta, A. (2012), "Does Foreign Aid Reduce Poverty", *Journal of International Development*, Vol. 24, No.8, November, 955-976.
- Anyanwu, J. C. (1997), "Poverty in Nigeria: Concepts, Measurement and Determinants", in Nigerian Economic Society (NES), *Poverty Alleviation In Nigeria, Proceedings of the 38th Annual Conference*, NES, Ibadan, 93 – 120.
- Anyanwu, J. C. et al (1998b), *The Role of Men in Family Planning in Nigeria: A Case Study of Edo State*, NISER, Ibadan.
- Anyanwu, J. C. et al (1998c), *The Role of Men in Family Planning in Nigeria: A Case Study of Cross River State*, NISER, Ibadan.
- Anyanwu, J. C. (2005), "Rural Poverty in Nigeria: Profile, Determinants and Exit Paths", *African Development Review*, Vol. 17, Issue 3, December, 435-460.
- Anyanwu, J. C. (2010), "Poverty in Nigeria: A Gendered Analysis", *African Statistical Journal*, Vol. 11, November, 38-61.

Anyanwu (2012a), “Why Does Foreign Direct Investment Go Where It Goes?: New Evidence From African Countries”, *Annals of Economics and Finance*, Vol. 13, No. 2, 433-470.

Anyanwu, J. C. (2012b), *State of Affairs – Natural Resources in Africa*, Presentation at the AWEPA Seminar on Managing Africa’s Natural Resources: Towards Achieving the MDGs, Rome, 28 September.

Anyanwu, J. C. (2013), “The correlates of poverty in Nigeria and policy implications”, *African Journal of Economic and Sustainable Development*, Vol. 2, No. 1, pp.23–52.

Anyanwu, J. C. and Erhijakpor, A. E. O. (2009), “The Impact of Road Infrastructure on Poverty Reduction in Africa”, in Thomas W. Beasley (Ed), *Poverty in Africa*, Nova Science Publishers, Inc., New York, 1-40.

Anyanwu, J. C. and Erhijakpor, A. E. O. (2010), “Do International Remittances Affect Poverty in Africa?”, *African Development Review*, Vol. 22, No. 1, March: 51-91.

Anyanwu, J. C. and Erhijakpor, A. E. O. (2012), *The Effects of Youth Employment on Poverty in Africa: Cross-Country Evidence and Lessons for Nigeria*, Paper Presented at the 53<sup>rd</sup> Annual Conference of the Nigerian Economic Society, 27-30 August, 2012.

Awana, M. S. et al (2011), *Impact of Education on Poverty Reduction*, MPRA Paper No. 31826.

<http://mpra.ub.uni-muenchen.de/31826/1/Impact.pdf>

1.0

Bahmani-Oskooee, M. and Oyolola, M. (2009), "Poverty reduction and aid: cross-country evidence", *International Journal of Sociology and Social Policy*, Vol. 29, Issue 5/6, pp.264 – 273.

Berg A. and Krueger, A. (2003), “Trade, Growth, and Poverty: A Selective Survey”, IMF Working Paper 03/30, International Monetary Fund, Washington DC.

Botha, F. (2010), “The Impact of Educational Attainment on Household Poverty in South Africa”, *Acta Academica*, Vol. 42, No. 4, 122-147.

Braumann, B. (2004), *High Inflation and Real Wages*, IMF Staff Papers, Vol. 51, No. 1, International Monetary Fund, Washington, D.C.

Cardoso, E. (1992), *Inflation and Poverty*, NBER Working Paper, No. 4006. Cambridge, MA.

Calderón, M. C., Chong, A. and Gradstein, M. (2006), *Foreign Aid, Income Inequality, and Poverty*, Working Paper #547, Research Department, Inter-American Development Bank, October.

Chani, M. I. et al (2011), *Poverty, inflation and economic growth: empirical evidence from Pakistan*, MPRA Paper No. 34290.

[http://mpra.ub.uni-muenchen.de/34290/1/MPRA\\_paper\\_34290.pdf](http://mpra.ub.uni-muenchen.de/34290/1/MPRA_paper_34290.pdf)

Chong, A. Gradstein, M. C. and Calderon, C. (2009), “Can Foreign Aid Reduce Income Inequality and Poverty?”, *Public Choice*, July 2009, Vol. 140, Issues 1-2, pp. 59-84.

Connors, J. (2012), *Foreign Aid and Global Poverty*, Working Paper no. 17 Department of Political Science, Duke University, January.

Datt, G. and Ravallion, M. (1992), "Growth and Redistribution Components of Changes in Poverty Measures: A Decomposition with Applications to Brazil and India in the 1980s, *Journal of Development Economics*, 38, 275-296.

Davis, Graham A. (1995), "Learning to Love the Dutch Disease: Evidence from the Mineral Economies," *World Development*, 23, 1765-1779.

Dollar, D. and A. Kraay (2002), "Growth Is Good for the Poor", *Journal of Economic Growth*, Vol. 7, No. 3, pp. 195-225.

Dollar, D. and A. Kraay (2004), "Trade, Growth, and Poverty", *Economic Journal*, Vol. 114 (493): F22-F49.

Edwards, S. (1997), "Trade Policy, Growth, and Income Distribution", *American Economic Review*, Vol. 87 (2): 205-10.

Fosu, A. K. (2008), "Inequality and the growth-poverty nexus: specification empirics using African data", *Applied Economics Letters*, 15(7-9), 563-566.

Fosu, A. K. (2009), "Inequality and the impact of growth on poverty: comparative evidence for Sub-Saharan Africa", *Journal of Development Studies*, 45(5), 726-745.

Fosu, A. K. (2010a), "The effect of income distribution on the ability of growth to reduce poverty: evidence from rural and urban African economies", *American Journal of Economics and Sociology*, 69(3), 1035-1053.

Fosu, A. K. (2010b), *Inequality, income and poverty: comparative global evidence*, BWPI Working Paper 140, December 2010.

Fosu, A. Kwasi and Mold, A. (2008), "Gains from Trade: Implications for Labour Market Adjustment and Poverty Reduction in Africa", *African Development Review*, Vol. 20, No. 1, April, 1-19.

Gang, I. N., Sen, K., and Yun, M-S (2004), *Caste, Ethnicity and Poverty in Rural India*.  
(See: [www.wm.edu/economics/seminar/papers/gang.pdf](http://www.wm.edu/economics/seminar/papers/gang.pdf))

Ghura, D., C.A. Leite and C. Tsangarides (2002), 'Is Growth Enough? Macroeconomic Policy and Poverty Reduction', IMF Working Paper 02/118, International Monetary Fund, Washington DC.

Gribble, J. and Bremner, J. (2012), *The Challenge of Attaining the Demographic Dividend*, Population Reference Bureau Policy Brief, September.

Harms, P. and Lutz M. (2006), "Aid, governance, and private foreign investment", *Economic Journal*, 116(513), 773-790.

Hughes, B. and Irfan, M. T. (2007), "Assessing Strategies for Reducing Poverty", *International Studies Review*, Vol. 9, No.4, 690-710.

Islam, R. (2004), *The Nexus of Economic Growth, Employment and Poverty Reduction: An Empirical Analysis*, Issues in Employment and Poverty Discussion Paper 14, International Labor Office, Geneva, January.

Jolly, R. et al (2012), *Be Outraged: There are Alternatives*.  
[http://policydialogue.org/files/events/Be\\_Outraged-finalhi\\_rez\\_1.pdf](http://policydialogue.org/files/events/Be_Outraged-finalhi_rez_1.pdf)

Jongwanich, J. (2007), Workers' Remittances, Economic Growth and Poverty in Developing Asia and the Pacific Countries, UNESCAP Working Paper, WP/07/01, January.

Kakwani, N. (1993), "Poverty and economic growth with application to Cote d'Ivoire", Review of Income and Wealth, 39, 121-139.

Kanbur, R. (2008), Poverty and distribution: twenty years ago and now, paper presented at the 3<sup>rd</sup> African Economic Conference, African Development Bank, Tunis, November.

Kimura, H. and Todo, Y. (2010), "Is Foreign Aid a Vanguard of Foreign Direct Investment?: A Gravity-Equation Approach", World Development, 38(4), 482-497.

Kingombe, C. (2012), Lessons for Developing Countries from Experience with Technical and Vocational Education and Training, ODI Working Paper 11/1017, January.

Klasen, S. and Lawson, D. (2007), The impact of population growth on economic growth and poverty reduction in Uganda, Diskussions beiträge aus dem Volkswirtschaftlichen Seminar der Universität Göttingen, No. 133.  
<http://www.econstor.eu/dspace/bitstream/10419/31966/1/534768717.pdf>

Lanjouw, P. and Ravallion, M. (1994), Poverty and Household Size, Policy Research Working Paper 1332, World Bank, Washington, D. C.

Levy, S. (2006), Progress against Poverty: Sustaining Mexico's Progres-Opportunidades Program, Brookings Institution Press, Washington DC.

Miller, C.M. (2011), "Cash transfers and economic growth: a mixed methods analysis of transfer recipients and business owners in Malawi", Poverty & Public Policy, Vol. 3, No. 3, Article 3.

Naschold, F. (2005), "Growth, Distribution, and Poverty Reduction: LDCs are Falling Further Behind", in Shorrocks, A. and van der Hoeven, R. (eds), Growth, Inequality, and Poverty: Prospects for Pro-Poor Economic Development, OUP, Oxford, 107-124.

Ncube, M. and Anyanwu, J. C. (2012), Inequality and the Arab Spring Revolutions in North Africa and the Middle East, AfDB Africa Economic Brief, 3 (7), July.

Oduor, J. and Khainga, D. (2009), Effectiveness of Foreign Aid on Poverty Reduction in Kenya, Working Paper No. 34, GDN Working Paper Series, November.

OECD Development Centre, the African Development Bank and the United Nations Economic Commission for Africa (2008), African Economic Outlook 2008, OECD Centre, Paris, May.

Ormonde, P. (2011), The Relationship between Mineral Rents and Poverty: Evidence from Sub-Saharan Africa and South America, Submitted in partial fulfillment of the requirements for the degree of Master of Development Economics at Dalhousie University Halifax, Nova Scotia, August.

<http://dalspace.library.dal.ca/bitstream/handle/10222/14226/Ormonde.%20Pamela.%20MDE.%20ECON.%20August%202011.pdf?sequence=2>

Palmer-Jones, R. and Sen, K. (2003), "What Luck Has Got to do With It: A Regional Analysis of Poverty and Agricultural Growth in Rural India", Journal of Development Studies, Vol. 40 No. 1.

Powers, E. T. (1995), "Inflation, Unemployment, and Poverty Revisited", Economic Review, Federal Reserve Bank of Kansas City, Qtr III.

- Ranieri, R. and Ramos, R. A. (2013), *After All, What is Inclusive Growth?*, International Policy Centre for Inclusive Growth (IPC-IG), IPC One Pager, No. 188, March, 2013.
- Ravallion, M. (1997), “Can High-Inequality Developing Countries Escape Absolute Poverty?”, *Economics Letters*, Vol. 56, pp. 51–57.
- Ravallion, M. (2008), “Inequality is Bad for the Poor”, in J. Macklewright and S. Jenkins (eds.), *Inequality and Poverty Re-Examined*, Oxford University Press, Oxford.
- Ravallion, M. and S. Chen (1997), “What Can New Survey Data Tell Us About Recent Changes in Distribution and Poverty?”, *World Bank Economic Review*, Vol. 11, pp. 357–82.
- Richard, A. P. (2002), “Macro Economic Adjustment and the poor: Analytical issues and Cross country evidence”, Policy research working paper, Report No. WPS2788, Vol. 1.
- Rosenberg, T. (2011a), “To beat back poverty, pay the poor”, *The New York Times (NYT)*, 3 January.
- Rosenberg, T. (2011b), “Helping the world’s poorest for a change”, *The New York Times (NYT)*, 7 January.
- Ross, M. (2003), *How Does Mineral Wealth Affect the Poor?*, Department of Political Science, UCLA, April.
- Sachs, J. (2005), *The End of Poverty: How we can make it happen in our lifetime*, Penguin Books, Harmondsworth.
- Sadeghi, J. M. et al (2001), *Determinants of Poverty in Rural Areas: Case of Savejbolagh Farmers in Iran*, World Bank Working Papers 0112.
- Shorrocks, A. and van der Hoeven, R. (eds), *Growth, Inequality, and Poverty: Prospects for Pro-Poor Economic Development*, Oxford University Press, Oxford.
- Simpassa, A. and Gurara, D. (2011), *Inflation Dynamics in selected East African countries: Ethiopia, Kenya, Tanzania and Uganda*, AfDB Brief.
- Skolnik, R. (2011), *Conditional Cash Transfers – Learning as We Go*, 21 March 2011 [online] <http://endtheneglect.org/2011/03/conditional-cash-transfers-%E2%80%93-learning-as-we-go/>.
- Szekely, M. (1998), *The Economics of Poverty, Inequality and Wealth Accumulation in Mexico*, St. Anthony’s Series, New York.
- Tilak, J. B. G. (2007), “Post-elementary education, poverty and development in India”, *International Journal of Educational Development*, 27(4), 435-445.
- Verner, D. (2004), *Education and Its Poverty-Reducing Effects: The Case of Paraíba, Brazil*, World Bank Policy Research Working Paper 3321, June.
- Ulriksen, M. S. (2012), “Questioning the Pro-Poor Agenda: Examining the Links between Social Protection and Poverty”, *Development Policy Review*, Vol. 30, No.3, 261-281.
- UNCTAD (2004), *The Least Developed Countries Report 2004: Linking Trade with Poverty Reduction*, UNCTAD, New York and Geneva.

van der Hoeven, R. (2010), "Employment, Inequality and Globalization: A Continuous Concern", *Journal of Human Development and Capabilities: A Multi-Disciplinary Journal for People-Centered Development*, Special Issue, Volume 11, Issue 1, 2010, February.

Van der Hoeven, R. (2013), *The Inclusion of Full Employment in MDG1, What Lessons for a Post - 2015 Development Agenda?*, Harvard School of Public Health, FXB Center for Health and Human Rights Working Paper Series, May 2013.

Winters, L. A. (2000), "Trade and Poverty: Is There a Connection?" in Ben David, D., Nordstrom, H. and Winters, L. A. (eds), *Trade, Income Disparity and Poverty*, Special Study 5, WTO, Geneva.

Winters, L. A. (2002), "Trade Liberalization and Poverty: What Are the Links?", *World Economy*, Vol. 25, No. 9, 1339–67.

Winters, L. A., McCulloch, N. and McKay, A. (2004), *Trade Liberalization and Poverty: The Evidence So Far*, *Journal of Economic Literature*, Vol. XLII, March, 72–115.

**Appendix Table 1: Definition of Variables and Data Sources**

<b>Variable</b>	<b>Definition</b>	<b>Source</b>
Poverty headcount	Log of poverty headcount ratio is the percentage of the population living on less than \$1.25 a day at 2005 international prices	PovcalNet database (World Bank)
Gini Index	Log of Gini Index measures the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution	World Development Indicators 2012
Real GDP per capita	Log of gross domestic product per capita (2000 US\$)	World Development Indicators 2012
Net ODA	Log of net foreign official development assistance (ODA) (% of GDP).	World Development Indicators 2012
Primary education	Log of primary school enrolment (% gross)	World Development Indicators 2012
Secondary education	Log of secondary school enrolment (% gross).	World Development Indicators 2012
Mineral Rents (% of GDP)	Log of Mineral Rents (% of GDP)	World Development Indicators 2012
Inflation	Log of consumer prices (annual %)	World Development Indicators 2012
Trade Openness	Log of trade ((imports + exports)/GDP)	World Development Indicators 2012
Population	Log of population	World Development Indicators 2012
Regional Dummies	Central, East, North, Southern, and West Africa	Author's transformation.

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