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Genuine Wealth Per Capita as a Measure of Sustainability and the Negative Impact of Corruption on Sustainable Growth in Sub-Saharan Africa

Joseph Ato Forson, Ponlapat Buracom, Guojin Chen, and Theresa Yaaba Baah-Ennumh

Abstract

In this paper we argue that the answer to the question of whether the impact of corruption on development is homogenous, is no. Our optimism rest on how development may be conceptualized. When equated to a narrow measure in economic-wise which fundamentally ignores critical issues, then there is a possibility the outlook could be positive. But when conceptualized using a broad-based approach such as sustainable development, then the outlook could be negative. We assess a panel of 22 economies in Sub-Saharan Africa with the most recent dataset (1996-2013) from the World Bank and other reputable agencies. Our finding is quite robust. It holds in POLS, Fixed effects and GMM within IV settings; and it also holds for different measures of institutions and different measures of development using growth per capita GDP and genuine wealth per capita respectively. Taking stock of major policy blue-prints of selected countries in the region on the fight against corruption, we are able to point out that institutions play important role in insulating citizens against the devastation caused by corruption. Overall, through this comparison, we are able to signal that both incidental and systematic corruption poses a long-term threat to sustainable development.

Keywords: Corruption; Sustainable Growth; Sub-Saharan Africa; Institutions; Governance.

JEL codes: D72; D73; D78.

1. Introduction

Contemporary works on the devastating effects of corruption have mainly been explored in relation to economic development at the macro and micro levels (see Bardhan, 1997; Forson et al., 2015; Mauro, 1995; Mo, 2001; Pellegrini, 2011; Saha & Mallik, 2012; Sharma, 2007; Ugur, 2014), ignoring issues that pertain to sustainability. As a consequence, resource-rich economies are increasingly at risk of losing out through over exploitation. It is a well-established fact that Sub-Saharan Africa (SSA) is blessed with diverse natural resources and thus has often been described as the resource basket of the world. Yet it is the continent housed to over two-thirds of the world's poorest (Oxfam, 2014). A preliminary report to assess performance of countries in meeting the Millennium Development Goals (MDGs) have shown that most countries in the region might not be able to meet the set targets (UN- MDG, 2013). That notwithstanding, donor supports to extricate the continent from the doldrums of poverty has been unprecedented. A recent report

suggest that even though there has been a significant drop in development assistance by 16% from the Organization for Economic Cooperation and Development (OECD) to least developed economies, the fraction of foreign aid was close to a record peak after donors were reported to have spent a staggering \$135 billion in 2014 (see Anderson, 2015).

With the link between foreign aid inflows and development in the region being so fuzzy, it has generated another discourse laden with a conjecture that the plight of Africa may be as a result of the continued inflows of aid undercut by all forms of corruption (see Forson et al., 2015; Knack, 2013; Ohler et al., 2012). Thus corruption regardless of its form and magnitude is generally devastating and inimical to well-being. Yet the bane can be mitigated when government machinery is reinvented through institutional reforms and effective policy decisions (Forson et al., 2016; Osborne & Gaebler, 1992). It should be pointed out that until Ugur's comprehensive meta-analysis on this linkage (Ugur, 2014), it was thought the corruption-development relationship have always supported the notion of promoting growth (Bardhan, 1997; Forson, 2016; Leff, 1964; Saha & Mallik, 2012; Wang & You, 2012).

The contribution of this paper therefore is to reexamine and compare contemporary macroeconomic question of the effect of corruption on growth in Africa taking into account the element of sustainability drawn from the concept of sustainable development. This feeds into the general question of whether the impact of corruption on development is homogenous regardless of how development is conceptualized. We as a result compare the effects of corruption on two but related development outcomes; economic development (ED) and sustainable development (SD). Our research in this regard differs from others regarding the context and analytical rigor. We in this attempt emphasize the need for Africa to conceptualize its development trajectory on the basis of sustainability using a broad-based approach as opposed to the reliance on Gross Domestic Products (GDP) per capita which measures progress in economic dimension given the flaws it has. GDP may under or overestimate the impact of corruption given that a higher level of GDP growth may be misconstrued to imply the economy is doing well in the light of the explanatory variable(s) being considered. However, when development is conceptualized on the basis of sustainability with a corresponding measure that takes into account the four dimensions of sustainable development, the true state of the effect is well appreciated. This is something that is conspicuously lacking on the academic and policy circles on the African continent. We operationally define an economy to be sustainable when the course of actions or inactions by policy makers does not in any way decrease the inter-temporal welfare of generations over time.

It is also important to note that even though there are studies that purport to have explored this connection on the continent, they rather turned to be qualitatively inclined needing empirical proof (see Bamidele, 2013; Claros, 2013; Nwaobi, 2013). We also observed most of these studies fundamentally lost track of the basic principle of sustainable development (see Harris, 2000) by either focusing on just an aspect to represent the whole. It is our belief working on the flaws of the World Bank sanctioned measure of sustainability using the Adjusted Net Savings (ANS) allows us to contribute on the empirics of sustainable development on the continent using corruption as a key explanatory variable. Thus the use of genuine wealth per capita addresses these flaws by incorporating population dynamism.

On the analytical rigor, genuine wealth per capita is computed by the authors for the sample following accounting procedure suggested in the literature (Aidt, 2010; Arrow et al., 2003;

Dasgupta & Maher, 2000). For consistency, three estimation techniques are used. These estimation strategies and the number of controls allow the authors to deal with issues pertaining to endogeneity and omitted variable bias. Moreover, the authors' decision to link anti-corruption initiatives in SSA adds to the uniqueness of the paper as it allows a direct synergy to be made between the data and what is indeed on the ground. Readers can easily relate the empirical findings to the efforts in place to better understand the points being driven at.

We organize the paper as follows. Section 2 reviews the extant literature with respect to economic and sustainable outcomes. Sub of this section is a snapshot of anticorruption initiatives in selected countries. Data and methodology are presented and outlined in Section 3. Empirical analysis and discussion are concurrently covered in Section 4. Section 5 concludes and draws important implications for future recommendation.

2. Corruption-Development Perspectives

2.1. Grease vs. Sand

Since 1987 when the official definition of sustainable development became known as meeting the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland Commission, 1987), it has suffered from operational challenges due to variation in living standards across countries. Consequentially, research activities have increasingly been tied to economic rather than sustainable outcomes, thus allowing considerable number of research publications brought out on the theoretical linkages between corruption and economic outcomes. Early proponents of this relationship such as Leff (1964) and others controversially posits that where the institutional framework is not appropriate, especially where there is bureaucratic restrictions, corruption facilitates trade that would not have occurred without it (see Saha, & Mallik, 2012). Various researchers have responded to this assumption, with both theoretical and empirical studies. Mauro was among the early scholars who was able to demonstrate the existence of significant negative correlation between corruption and private investment; with a consequential result that suggested that corruption reduces economic growth Mauro (1995). This created a fertile ground for other researchers to wade into the debate which has given rise to divisions between supporters of the positive effect of corruption on economic development on one side, who apparently came to be known as the “grease-in-the-wheel” strand, and proponents of the negative effect, also known as the “sand-in-the-wheel” strand.

Thus the sympathizers of these perspectives document extensive relationship between corruption and economic growth but with divergent views. Some researchers argue that corruption may serve to ensure that projects are awarded to the most efficient firms, who may cut their way through bribe payment (Bardhan, 1997). Yet competing arguments point out that existing practice in more corrupt societies tend to encourage the most able to engage in rent-seeking activities. There is therefore an assumption that the most successful in rent-seeking in the society are the beneficiaries of corrupt practices, and not the most economically efficient. The reallocation of talents from productive to rent-seeking activities is seen to impact negatively on economic growth. Other literature further documents that corruption reduces both investment and growth (Murphy et al., 1993). In addition, Romer (1994) suggests that corruption, by imposing a tax on ex-post profits may in general reduce the flow of new goods and technology, particularly in a situation where an initial fixed cost investment is a prerequisite (see Sharma 2007). In other words, there is a general assumption that suggests that corruption poses as an uncertainty in itself which ultimately serve to reduce investment flows. Mo in his seminal paper shares this analogy and concludes that corruption reduces the level of human and private investment (Mo, 2001). Corruption could be a

barrier to investors, with less investment leading to slower economic growth. Likewise, a high level of corruption negatively affects foreign direct investment. In other circles, corruption could introduce an element of competition for government resources, and such competition could lead to government services being offered more efficiently (Wang & You, 2012).

2.2. *Going beyond GDP per capita: Sustainability Perspective*

A consideration of the perspectives briefly discussed here and elsewhere shows that most of the empirical studies on the consequences of corruption on wellbeing country-wide have mainly focused on the use of GDP per capita albeit the delimitation it harbors. Yet according to Aidt (2010), development is supposed to be concerned with sustainable improvements in human welfare and not spontaneous improvement. Indeed, the same study suggests that GDP per capita is not necessarily a good measure of such improvements. There is therefore a general call to direct research questions to *sustainable development* rather than *economic development* (Costanza et al., 2009; Forson, 2016; Smits & Hoekstra, 2011).

In response to this call, recent studies make use of an alternate measure of development which is welfare driven. This measure has been sanctioned by the World Bank owing to environmental concerns on climate change among others. Thus the adjusted net savings (ANS) or genuine investment emerged as an appropriate measure of sustainability. However, it has been criticized among others as being unable to incorporate population dynamisms (Dietz & Neumayer, 2005; Everett & Wilk, 1999). Pending these limitations, the World Bank and others have extended this measure with some accounting deductions (see Aidt, 2010; Arrow et al., 2003; Hamilton, 1999). The indicator genuine wealth per capita became the by-product of these adjustments and is now being used as a measure of sustainability to reflect the true level of investment and disinvestment in the productive base of an economy.

Since then, there have been quite a few number of empirical research on the sustainability strand. For instance, Venard (2013), using genuine wealth growth per capita as a proxy for sustainable development concludes that corruption has a negative effect on sustainable development, but was quick to also point out that such a negative effect was well understood when institutional variables such as democracy and governance was used as control variables. Similar finding has been reported by Aidt (2010) in which a negative correlation was found between a range of wider corruption indices and growth in genuine wealth per capita. In investigating the relationship between corruption, resource curse and genuine savings, Dietz et al. (2007) points out that institutional quality depresses growth. When genuine and gross saving is regressed on three indicators of institutional quality (rule of law, bureaucratic quality and corruption), the finding reported suggest that reducing corruption has a positive impact on genuine saving in interaction with resource abundance.

From these perspectives, it can be pointed out that the corruption-development connection is not straightforward but then the linkage is much clearer pending the pro-activeness of institutions and other economic and noneconomic fundamentals. These factors are used in the baseline econometric model in this study.

2.3 *An Overview of Anti-Corruption Strategies in Selected African Countries*

In SSA, combating corruption has been a major component in the repertoire of rationalizations for the overthrow of governments, both constitutional and unconstitutional. Notable among a host of strategies adopted to mitigate this social canker includes executions by firing squad and the imposition of lengthy custodian sentences. In addition to these efforts, major blue-prints (manifestoes) of successive political parties have captured an aspect of these anti-corruption strategies which include promises to fight corruption, with each party pledging on rally platforms to fight corruption better than their opponents. Other anti-corruption strategies have focused on the moral aspect of the society where the help of religious and community leaders have been the target to goad citizens to uphold the values of integrity and to manifest high moral ethics in their personal lives. Ghana and other countries in the western corridor of Africa have ratified other international pacts on corruption such as the UNCAC and the AU Convention in 2005, and the ECOWAS Protocol in 2003 (GoG 2011). Regardless of these developments, corruption still remains a reality.

Similar anti-corruption initiatives have been formulated and implemented in other countries in the sub-region. But in Nigeria, previous anti-corruption initiatives have just been in theory with less practicality in tracking down the menace. As a result, the Independent Corrupt Practices Commission (ICPC) and Economic and Financial Corruption Commission (EFCC) was established in 2003 in reaction to pressure from Financial Action Task Force on Money Laundering (FATF) and among other things to combat corruption at various levels (Aibieyi, 2007). The impact has been less desirable. In Tanzania, public sector corruption used not to be a problem especially after independence, but in the early 90s crippling problem of incidental and systematic corruption undermined the economically liberalized Multi-party state. Presidential inquiry into alleged corruption became common (Warioba, 1997). Since 1994, there have been many corruption scandals in Tanzania and as such government had to respond against the backdrop of the impending election in 1995. Promises to fight corruption (anti-corruption commitments) became the central theme of the messages preached by politician. The Prevention and combating of Corruption Bureau (PCB) was established to spearhead the fight on corruption, although the Warioba Commission reported in its inquiry that the anticorruption agency lacked political commitment, hence being ineffective. The ineffectiveness of the bureau stemmed from it being under-resourced to act (Riley, 1998; Warioba, 1997). Since 2008, a major reform swept across this agency to streamline its mandate and efficiency in dealing with the canker. This led to the name being changed to Prevention and Combating Corruption Bureau (PCCB) to reflect the agency's mandate (von Wogau, 2010). Even though the agency has worked to increase the awareness of corruption in Tanzania; the lack of resource capacities has indeed militated against its core mandate. Indeed, recent report in the wildlife industry buttresses this claim with corruption and abuse reported to be rife within the wildlife sector with impunity. Tourist and hunt operators have consistently failed to pay fees to authorities, and authorities have likewise failed to pay villages royalties due them.

In Kenya, a conscious effort has been made to combat corruption as reflected in the vision and mission of the Kenyan anti-corruption commission. These anti-corruption strategies have been aligned with the country's 2030 development agenda and on a larger scale aims to strengthen existing institutional framework to foster zero tolerance to corruption in Kenya. Having realized the challenges besetting socio-economic transformation and the need to address corruption, the Government established the Kenya Ant-corruption commission (KACC) in 2003 under section 6 of the Anti-corruption and Economic Crimes Act (ACECA) of 2003 to combat and prevent

corruption. The first strategic plan covering 2006-2009 was implemented to its logical conclusion and this was followed by the second strategic plan covering 2009-2012 (KACC, 2009).

In the year 2000, the government of Sierra Leone enacted the Anti-corruption Act which paved the way for the establishment of the Anti-Corruption Commission (ACC). The Act was repealed and replaced with the 2008 Act in an attempt to effectuate and enhance efficiency regarding its core mandate. These measures have been instituted to enhance existing strategies. For example, the enactment of anti-corruption laws such as the 1991 Constitution of Sierra Leone as amended, the Anti-Corruption Act 2008, the National Public Procurement Act, 2004 and its Regulations of 2006, the Criminal Procedures Act, 1965, the Anti-Money Laundering Act, 2005, the Finance Act, 2009, the Banking Act, 2000, and other Common Law offences relating to financial accountability and Government and Accountability Act 2006 attest to this drive (ACA, 2012). It should be pointed out that the measures afore discussed have been tailored towards combating existing forms and manifestation of corruption as shown in Table 1. Moreover, most of these initiatives have been harmonized with emerging international initiatives to fight corruption, including the world community's adoption of the United Nations Convention against Corruption (UNCAC) in 2003. The African Union (AU) Convention against Corruption 2005 and the ECOWAS Protocol on the Fight against Corruption (ECOWAS Protocol) were adopted at the regional and sub-regional levels respectively.

Regardless of these measures, the forms and manifestation of corruption listed in Table 1 drawn from DeLeon (1993) and Riley (1998) are still prevalent which could undermine the ideals of sustainable development.

Table 1. Types of Corruption in sub-Sahara Africa

1. Incidental

- Small-scale;
- Involves junior public officials: policemen, custom and tax officials
- Impact on economy mild, but profound public alienation;
- Difficult to check

2. Systematic

- Impact on development larger
- Affects most or all government departments or agencies
- May substantially impact upon government revenues and trade diversion;
- Sustained reform rather than individualized response needed

3. Systemic

- Government by theft
 - Impact to development huge (e.g. Mobutu's Zaire, Charles Taylor's Liberia, Moi's Kenya etc.)
 - Honesty is 'irrational'
-

Source: Authors' construct drawn from DeLeon (1993) and Riley (1998)

In Table 2 except South Africa and Botswana, the control of corruption in Africa have consistently fallen below the 70 mark global percentile score which seriously cast doubts on the effectiveness of anticorruption measures. The devastating effect is well magnified (see Figure A-1) when genuine wealth per capita is compared with GDP growth rate per capita. This tentatively has the implication to suggest that existing institutions in the region may not been able to insulate the ordinary citizenry from the impact of corruption. Yet the core mandate of institutions is to control

the prospects and incentives for politicians and bureaucrats to engage in the “sale of public assets for private gains” (Shleifer & Vishny, 1993).

Table 2. World Bank measure of Control of Corruption in selected years (1996-2013) in SSA

Region	Year	Global percentile score				
		1996	2000	2004	2007	2013
Sub-Sahara Africa						
	<i>Ghana</i>	49.27	58.05	49.76	58.74	56.46
	<i>Nigeria</i>	8.78	5.85	6.34	14.08	9.09
	<i>South Africa</i>	78.54	73.17	70.73	61.65	54.55
	<i>Kenya</i>	15.12	14.15	22.44	18.93	12.92
	<i>Senegal</i>	49.27	57.07	56.10	35.44	50.24
	<i>Malawi</i>	49.27	52.20	23.90	35.92	31.10
	<i>Zimbabwe</i>	44.39	15.12	5.85	3.40	2.87
	<i>Cameroun</i>	7.32	8.78	11.71	16.02	9.57
	<i>Botswana</i>	74.63	75.12	80.00	79.13	79.43
	<i>Uganda</i>	28.78	20.98	24.88	21.84	13.88
	<i>Gabon</i>	16.10	36.59	23.41	12.14	36.36

Source: Authors’ construct data from World Bank

3. Data and Methodology

3.1 Data

We assess a panel of 22 countries with the most recent dataset (1996-2013) from the World Bank and other reputable agencies. The criteria for selecting these countries was purely based on data availability. There are two dependent variables: growth in GDP per capita and genuine wealth per capita. Our main research variable is the perceived level of corruption. We depend on thirteen variables made of the governance indicators and growth related factors from the literature to infer relation: government effective, bureaucratic quality, regulatory quality, rule of law, press freedom, British colonial heritage, ethno-linguistic fractionalization, population growth, openness (economic freedom), economic prosperity, foreign aid inflows, natural resources and human capital endowments using primary and secondary enrollments. Most of these variables have broadly been classified as policy variables in the growth literature.

These variables have been extensively used in the corruption literature (Asongu, 2013; Dong & Torgler, 2013; Forson et al., 2015; Jain, 2002; Treisman, 2000). Most of these studies have stressed on the importance of institutions and for that matter governance structures in understanding the relationship between corruption and development in the contemporary world (Asongu, 2013; Pellegrini, 2011). Thus on this basis, the choice of variables in this research is fully justified by empirical and theoretical literature. Corresponding summary statistics, variable descriptions and presentation of countries (Table A-1), and correlation matrix (Table A-2) are detailed in the appendices respectively.

3.2 Derivation of Sustainability Measure and Model Specification

Following the analytical approaches of Aidt, (2010), Arrow et al., (2003), Dasgupta & Maher, (2000), Pellegrini (2011) and others, the study assumes that a society populated by many identical individuals will live forever, where time (t) is continuous. Further modification is made by assuming that the population size is fixed. The economy produces an all-purpose good (Y_t) from factor inputs: labor (L_t), manufactured capital (K_t), and the flow of natural resources (R_t). The production technology is represented as:

$$Y_t = F(L_t, K_t, R_t) \quad (1)$$

Where F increases in each of the three arguments and is continuously differentiable. The production function need not be concave. This relation allows the findings to be applicable to a range of economies factoring in other externalities including market and government failures. Manufactured capital changes over time according to the following law of motion:

$$\frac{dK_t}{dt} = F(L_t, K_t, R_t) - C_t \equiv I_t^k \quad (2)$$

Where C_t is aggregate consumption, I_t^k is investment in manufactured capital assumed to be without any depreciation. The natural resource base (S_t) changes according to the following law of motion:

$$\frac{ds_t}{dt} = M(S_t) - r_t \equiv I_t^s \quad (3)$$

Where $M(S_t)$ is the natural rate of regeneration of the resource and I_t^s is the net investment in the resource base. Other assumptions include: Non-renewable resources regeneration rate is zero for all S_t , but for renewable resources it is positive. Individual derive utility from consumption and disutility from labor supply.

Applying the method suggested by Arrow et al. (2003), genuine investment can be converted into estimate of growth in genuine wealth per capita. This is possible by converting the estimate of average genuine investment (ANS) on percentage of GNI into a growth of genuine wealth by multiplying by a presumed GNI-wealth ratio (v). Ratios of 0.2 has been suggested for industrialized countries and 0.15 for developing and oil-rich countries (Arrow et al., 2004). Population growth rate (n) is then deducted from the coefficient left. Empirically, the measure of sustainability is presented as:

$$\frac{dgw}{gw} = \frac{GI}{GNI} v - n \quad (4)$$

Where gw represents genuine wealth per capita, v is the presumed ratio and n is rate of population growth.

The analogies presented above suggests that growth in genuine wealth per capita is a function of the productive base or economic related factors, the shadow prices of resources and

the institutions that govern resource allocation (a). For the purpose of statistical analysis and data availability, the study employs an unbalanced panel approach on the selected 22 countries in Africa from 1996 to 2013. Using the two dependent variables, growth per capital GDP and the computed genuine wealth per capita, the baseline specification assumes the following panel model:

$$Y_{it} = \alpha_0 + \beta_1 Corr_{it} + \beta_j \sum_{j=2}^{13} Control_{it} + \mu_i + \gamma_t + \varepsilon_{it} \quad (5)$$

Where Y_{it} represents the dependent variables genuine wealth per capita and GDP growth per capita, i is a country index and t is the time dimension. Visible from the model is an error term with three sub-components: μ_{it} represents unobserved country-specific effects of sustainability that is stationary; γ_t stands for the common time specific shocks to sustainability, and ε_{it} is the unobserved determinants of sustainability that vary over time in a country. Corruption is measured by perception corruption index (CPI). The variables institutions, stocks (growth-related factors) and shadow are the categories of control variables espoused by the growth theory in contemporary literature. Every attempt is made to lag these variables to account for persistence.

It should be pointed out that previous studies on the corruption – development dichotomy are predominantly based on one estimation technique, say ordinary least square (OLS) estimation, which focuses on parameter estimates at the conditional mean. More so, conventional OLS may be misleading when there are serious issues regarding endogeneity. OLS loses its credibility in the wake of these challenges. Both the conventional fixed effects and OLS estimators according to Nickell (1981) becomes inconsistent when the time span is small (Phillips & Sul, 2007). Bearing these in mind, we employed three estimation techniques for consistency in robustness: pooled OLS, fixed effects and Generalized Method of Moments (GMM). The GMM technique estimates the parameter of linear and nonlinear models in which the parameters are chosen to provide the best fit to multiple equations, each of which sets a sample moment to zero. The Two Staged Least Square (TSLS) estimator is a member of the class of GMM estimators of the linear model. In GMM, the coefficients are estimated by making the sample covariance between the regression error and the exogenous as small as possible. According to Stock and Watson (2007), when the errors are homoscedastic, the asymptotically efficient GMM estimator in the linear instrumental variable (IV) regression model is TSLS. We chose the GMM over the conventional IV due to its efficiency in the face of heteroskedasticity (see Han & Phillips, 2010) and in a bid to deal with endogeneity problem. To minimize collinearity, the condition numbers and variance inflation factors in each of the panel regressions were controlled to be lower than 100 and 10 respectively.

4. Estimation Results and Discussion

We begin the analysis with pooled OLS (POLS) estimates which provides a baseline effects. We compare the coefficients with the conventional fixed effects and GMM respectively. In the interpretation of the signs of the estimated coefficients, note should be taken of the fact that a negative inference on the governance indicators underscores the effect of worsening governance on the development outcomes being investigated. The dynamics of the connection between corruption and the two development outcomes are pretty much the same. However, one is more comprehensive and seem to magnify the enormity of the impact whiles the other does not. Thus a negative inference on the impact of corruption on sustainability simply imply a reduction in the inter-temporal social welfare over time, and it cuts across the four dimensions of sustainability.

But on economic development, it is possible a negative inference is an indication economically, there is a down turn on per capita GDP. The latter relation only give credence to one aspect of sustainability (economic dimension) but ignores concerns on environment, social and political strata. There are countries with low GDP outlook but in other sphere of the human endeavour, they are really doing well and are happy (e.g. Bhutan). We present the results in Table 3.

Regressing only with the perceived level of corruption on economic and sustainable outcomes shows a negative effect on genuine wealth per capita whiles on per capita GDP, it is positive (see Figure A-2). We elucidate this finding from two perspectives: First, corruption may favor the few who are in key positions, and their wealth when placed in the basket for the estimation of GDP might give a misleading outlook to suggest the economy in the broader sense is doing well, but in reality deprivation and inequality may continue to linger to push ordinary citizens into the doldrums of poverty.

Table 3. Impact of corruption on development outcomes: POLS, Fixed Effects and GMM.

	Pooled OLS			Fixed Effects			GMM		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
<i>Economic Development</i>									
<i>Specification 1</i>									
Constant	9.014 (4.713)	-19.148 (13.650)	-123.77*** (32.890)	2.748 (2.021)	-19.921 (13.304)	-64.906** (26.639)	2.315** (1.025)	-11.830 (5.222)	-18.801** (8.968)
Perceived corruption	-0.286 (0.669)	-0.351 (0.727)	-0.088 (0.701)	-0.031 (0.629)	-0.507 (0.684)	-0.414 (0.701)	0.105 (0.273)	0.404* (0.384)	0.637** (0.493)
Secondary Enrollment		0.289** (0.140)	0.392*** (0.130)		0.0862 (0.059)	-0.047 (0.082)		-0.002 (0.021)	0.014 (0.026)
Government Effectiveness		-4.740*** (1.668)	-3.830** (1.642)		-5.179*** (1.546)	-4.733*** (1.619)		-2.774** (1.199)	-2.875* (1.541)
Economic Freedom		0.184 (0.191)	0.104 (0.191)		0.150 (0.173)	0.001 (0.184)			0.357*** (0.108)
Foreign Aid			-3.975*** (1.407)			-3.208** (1.424)			-0.169 (0.938)
Economic Prosperity			51.112*** (12.368)			33.499** (11.177)			-1.051 (1.259)
Press Freedom			0.046 (0.071)			-0.029 (0.065)			-0.003 (0.020)
Natural Resources			0.152 (0.126)			0.070 (0.122)			0.189** (0.096)
Year Dummy	No	No	No	yes	Yes	Yes	No	No	No
Country Dummy	No	No	No	Yes	Yes	Yes	No	No	No
Observation	142	72	109	142	119	109	142	119	109
R ²	0.158	0.210	0.393	0.001	0.008	0.0014	0.0012	0.047	0.185

Note: Dependent variable is GDP per capita. Robust Standard errors are presented in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3. Impact of corruption on development outcomes: POLS, Fixed Effects and GMM (cont....)

	Pooled OLS			Fixed Effects			GMM		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
<i>Sustainable Development</i>									
<i>Specification 2</i>									
Constant	-1.655 (1.050)	0.514 (3.119)	-21.557** (8.342)	-1.657*** (0.449)	-3.293 (2.288)	-27.667*** (5.918)	-5.642 (0.420)	-14.893*** (3.253)	-10.548*** (4.450)
Perceived corruption	-0.027 (0.150)	-0.136 (0.169)	-0.294* (0.167)	-0.007 (0.139)	-0.159 (0.161)	-0.308** (0.154)	-1.242 (0.132)	-0.682** (0.291)	-0.273** (0.135)
Secondary Enrollment		-0.053 (0.032)	-0.051* (0.031)		0.014 (0.014)	-0.029 (0.018)		0.015 (0.009)	-0.035 (0.026)
Government Effectiveness		-0.281 (0.558)	-0.285 (0.545)		-0.041 (0.521)	0.086 (0.496)		-0.545 (0.516)	-2.397*** (0.705)
Economic Freedom		-0.007 (0.044)	-0.045 (0.045)		0.028 (0.040)	-0.018 (0.041)		0.178*** (0.059)	-0.066 (0.046)
Foreign Aid			-1.042*** (0.335)			-0.819*** (0.317)			-0.049 (0.497)
Economic prosperity			6.072** (3.078)			7.901*** (2.456)			3.318*** (1.102)
Press Freedom			0.001 (0.017)			0.000 (0.014)			-0.016 (0.020)
Natural Resources			-0.080*** (0.030)			-0.070*** (0.027)			-0.084*** (0.031)
Year Dummy	No	No	No	Yes	Yes	Yes	No	No	No
country dummy	No	No	No	Yes	Yes	Yes	No	No	No
Observation	140	118	108	140	118	108	140	118	108
R ²	0.880	0.882	0.906	0.472	0.255	0.494	0.472	0.572	0.698

Note: Dependent variable is genuine wealth per capita. Robust Standard errors are presented in brackets. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

For instance, Nigeria is known to be one of the wealthiest economies in Africa, and yet this wealth is controlled by the top 1% leaving more than 90% of its population in hardcore poverty (Aderounmu, 2015). Secondly, the activities of the few in key positions abusing offices for personal gains have an enormous consequences on the political, social, economic and environmental landscape of an economy which could undermine posterity. Thus the negative relation amplifies a decrease in the inter-temporal welfare of the populace over time.

Contrary to mainstream literature (e.g. Mauro, 1995; Mo, 2001; Ugur, 2014), there were no evidence to suggest corruption reduces economic development in Table 3. Corruption rather had a positive effect on economic development when inferred from the GMM technique. Consistently across the three techniques but for the GMM, the relationship was insignificant. Focusing on the host of other variables used in this paper, especially under the POLS when simultaneously controlling for year and country fixed effects, we find human capita (secondary enrollment) to be significantly relevant in SSA economic trajectory, but such relationship is inconsistent across the techniques. Yet one of the governance indicators (government effectiveness) is seen to dampen economic progress as it consistently had a negative sign across the estimators. We thus argue that the pace of development in SSA can be attributed to worsening governance systems that stems from the quality of public services and the degree to which public institutions are independent from political pressures. Column (3) of the POLS and GMM estimates provide further evidence on the debate on the ostensible impact of foreign aid on Africa's development journey. Indeed, contrary to what many proponents alludes to, foreign aid reduces economic growth in the region from the negative sign. This evidence has two implications: (1) donors of development aid do not necessarily pay attention to better or worse institutions in most cases. Aids are given to protect the interest of the donor which in most cases are not made known to the general public, (2) donor conditions are implicitly skewed to their advantage no matter the superficial impact the said aid is supposed to have on certain outcomes in the recipient economy.

However, when the element of sustainability is considered using genuine wealth per capita, the impact shows a negative relationship consistently across the three techniques. The impact of government effectiveness and foreign aid corroborates earlier results by negatively affecting sustainable outcome in the broader sense. We expound on this perspective by arguing that development aid tends to distort economies in Africa and may potentially slow sustainable growth indirectly. For instance, aid has the propensity to dampen domestic revenue mobilization, and systematically increase inflation in the recipient economies in the absence of sound economic policies from strong institutions. This contrast what other seminal researchers have converged at, suggesting foreign aid has a long-term effects on desirable outcomes (Arndt *et al.*, 2011; Bourguignon & Sundberg, 2007). Moreover, although resource endowment is significant to imply it is relevant in SSA development outcomes, it should be emphasized that such impact is consistently negative on sustainability. The inference regarding sustainable outcome provides evidence that supports the "resource-curse" hypothesis theorized in other studies. Two reasons may have accounted for this: (1) probable reflection of dynamic Dutch disease effects and, (2) incentives for rent-seeking in resource-rich economies.

Economic prosperity is positively associated with both sustainable and economic development. This is possible as most African countries have experienced double digit growth in recent years. This growth is propelled by the insatiable demand for natural resources such as minerals, oil and gas by emerging economies in Asia (e.g. China).

Table 4. Corruption and development in Sub-Sahara Africa: GMM estimation

	<i>Sustainable Development</i>					<i>Economic Development</i>				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Coefficients of corresponding instrumental variable										
Variable Instrumented										
Ethnic Fractionalization	-5.618 (6.693)	-6.993 (6.287)	-0.966 (1.501)	-29.199*** (3.111)	-21.830*** (3.815)	47.302* (20.178)	18.113 (13.810)	-12.746 (17.786)	99.442*** (26.500)	192.373*** (21.981)
Instruments										
Perceived Corruption	-0.247*** (0.233)	-0.289** (0.229)	-0.091*** (0.082)	-0.060*** (0.067)	0.083 (0.085)	0.374 (0.836)	1.342** (0.603)	2.257*** (0.711)	-1.422*** (0.355)	-1.138** (0.492)
Secondary Enrollment	-0.074*** (0.014)	-0.054** (0.021)	0.007 (0.011)	-0.081*** (0.010)	-0.040* (0.0213)	0.167* (0.099)	0.175*** (0.055)	-0.140 (0.125)	-0.095 (0.087)	0.419*** (0.123)
Economic Freedom	-0.036 (0.027)	-0.086** (0.044)	-0.072*** (0.010)	0.034*** (0.008)	0.016 (0.011)	-0.115 (0.074)	-0.270*** (0.081)	0.006 (0.149)	0.003 (0.071)	-0.230*** (0.064)
Press Freedom	-0.036*** (0.009)	0.036*** (0.010)	-0.018*** (0.002)	0.000 (0.003)	-0.0002 (0.003)	-0.049** (0.019)	-0.024* (0.014)	-0.044** (0.022)	-0.131*** (0.024)	-0.140*** (0.016)
Economic Prosperity	-1.320 (1.335)	-1.037 (1.244)	-0.052 (0.154)	9.025*** (0.843)	8.198 (0.757)	-14.138*** (3.261)	-11.453*** (2.936)	-10.544*** (2.359)	-40.016*** (7.550)	-50.457*** (4.363)
Natural Resources	-0.093*** (0.024)	0.101*** (0.029)	-0.080*** (0.008)	-0.097*** (0.006)	-0.114*** (0.008)	-0.229*** (0.036)	-0.105* (0.057)	-0.014 (0.090)	-0.004 (0.038)	-0.217*** (0.048)
Foreign Aid		0.636 (0.415)	1.060*** (0.098)				2.334*** (0.802)	0.132 (1.473)		
CPI*Institutional quality			0.275*** (0.053)	0.325*** (0.058)	0.316*** (0.052)			0.161 (0.637)	0.779 (0.508)	0.660* (0.301)
Population Growth				2.947 (0.257)	3.087 (0.205)				-8.374*** (2.325)	-6.606*** (1.180)
British colonial heritage					0.284* (0.115)					3.582*** (0.665)
Constant	14.204*** (2.981)	11.209 (3.349)	-4.281*** (1.089)	-9.497*** (1.314)	-13.827*** (1.861)	9.749 (13.034)	13.863 (9.267)	53.567*** (12.585)	70.191*** (10.498)	15.593 (10.722)
Hausman Test					15.25 [0.67]					15.30 [0.60]
Anderson Canon	18.76	11.25	9.98	13.34	19.11	17.88	14.55	16.74	16.90	18.10
Correlation LM Statistics	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Observation	116	120	120	116	116	116	120	120	116	116

Note: Standard errors are presented in parenthesis; p-value in brackets * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note should be taken that the major drawback to the causal inference in Table 3 could stem from endogeneity and omitted variable bias. Therefore, to address this, we resort to the IV within GMM regression as emphasized in section 3. As a result, two concerns are tackled in this section: (1) the ability of the exogenous components of development to explain Africa's trajectory, (2) the capacity of ethno-linguistic fractionalization instrument to explain development outcomes through its effects on institutional efficiency. We instrumented with ethno-linguistic fractionalization as shown in Table 4. All the other variables are thereafter used as exogenous variables to assess the channels of development.

We further interact corruption with institutional quality to assess whether it can dampen the positive effect of corruption on economic development while increasing the coefficient of sustainability. In congruence with our prior thought, the interaction effect decreases the coefficients of corruption on sustainable development while on economic development, we find it inconclusive. Interestingly, there is a change on the coefficient of corruption but no effect on the sign on the sustainability strand. Yet on economic development, there is a change in both coefficient and the sign. These changes could possibly be viewed and explained from the perspective of the performance of some countries in the fight against corruption. Theoretically, there is growing awareness on the need to fight corruption, but in practice there is apathy on the part of institutions mandated to do so. The level of impunity could possibly be responsible for the changes in the coefficients. Sitting governments are in most cases shielded and protected by institutions whose heads were appointed by the executive branch of government.

The regression results are in fact congruence with earlier ones in Table 3. However, a further assessment of the impact of colonial heritage on development points to a positive relationship. We explain the ensuing result from the perspective of the efficiency of British administrative machinery as opposed to the French legacy which encourages corruption. After independence, British colonies were allowed to carve their own trajectory. That was not the case of the French. Through the system of assimilation, colonies were made to be semi-autonomous allowing France to continue to meddle and dictate the course of actions and inactions policy makers should embark. However, regressing colonial heritage and ethno-linguistic fractionalization on openness exclusively point to a negative relationship on both explanatory variables. That notwithstanding, linking this analogy to the negative influence of economic freedom on sustainable and economic development has the implication to suggest SSA slow pace could be attributed to inherited administrative machinery from colonial legacy.

5. Conclusion and Policy Recommendation

In this paper, we have shown that the impact of corruption on development may not necessarily be homogenous. Our optimism rests on how development may be conceptualized. We as a result reexamine and compare between corruption and two but related development outcomes: economic and sustainable development in Sub-Saharan Africa.

Our finding is quite robust. It holds in POLS, Fixed effects and GMM within IV settings; and it also holds for different measures of institutions and different measures of development using per capita income for economic development on one hand, and genuine wealth per capita for sustainable development on another. Taking stock of major policy blue-prints of selected countries in the region on the fight against corruption, we are able to point out that institutional effectiveness plays an important role in providing the much needed shock absorbers on the devastation caused by corruption. Overall, through this comparison, we are able to signal that both incidental and systematic corruption poses a long-term threat to sustainable development and that Africa's poor

choices of economic policy over the last four decades could be as a result of inherited administrative machinery from colonial heritage. Thus, there is the need to intensify efforts in reforming existing institutions to make them more assertive to rise up to the development needs of the region. We also propose the development trajectory of SSA ought to be assessed on the basis of sustainability and not just on spontaneity as has been the norm using GDP. This will create better awareness on the true state of investment and disinvestment in the productive base of each economy and at the same time portray the economy in the light of whether the inter-temporal welfare of intergenerational citizens are on the rise or plummeting.

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APPENDIX

Table A-1. Summary Statistics and Presentation of Countries

Variables	Years	Description	Mean	Std. Dev.	Source
PANEL A: Summary Statistics					
Corruption Index	1996-2013	Perceived level of corruption. Countries ranked on a scale of 10 (very clean) to 0 (highly corrupt)	3.181	1.143	<i>Transparency International</i>
GDP per cap	1970-2013	Annual percentage growth rate of GDP per capita based on constant local currency	1.114	6.776	<i>World Bank</i>
Genuine wealth	1980-2013	True level of investment and disinvestment in the productive base of an economy after adjustments	-2.245	2.384	<i>World Bank</i>
Secondary ENR	1970-2013	Total enrollment in secondary education, regardless of age	25.063	20.398	<i>World Bank</i>
Population Growth	1970-2013	Exponential rate of growth of midyear population	2.663	0.852	<i>World Bank</i>
Natural Resources	1970-2013	Sum of all rents (natural gas, coal (hard and soft), mineral, and forest)	11.967	13.755	<i>World Bank</i>
Foreign Aid	1970-2013	Logarithm of Aid inflow is the transfer of capital for the benefit of recipient country or its population	8.147	0.742	<i>World Bank</i>
Economic Prosperity	1970-2013	A proxy of natural logarithm of per capita gross domestic product in a given country (constant, 2005 US\$)	2.817	0.381	<i>World Bank</i>
Gov't Effectiveness	1996-2013	The quality of public services, civil service and the degree of independence from political pressures, ranges from -2.5 to 2.5, higher values= better governance outcomes	-0.290	0.523	<i>WGI</i>
Economic Freedom	1998-2013	A measure of the fundamental right of every human to control labor and property. Countries ranked on a scale of 100 (very free) to 0 (less free).	57.826	5.118	<i>Heritage Foundation</i>
British heritage	1970-2013	Dummy variable for countries that have been under British control	0.642	0.480	<i>World Flag</i>
Ethno-linguistic Fract.	1961-1995	The probability that two randomly selected individuals in the population belong to different groups	0.758	0.125	<i>Alesina et al. (2002) and Roeder (2001)</i>
Press Freedom	1996-2013	The degree to which country permits the free flow of news and information. Scored from 0 (best) to 100 (worst)	45.237	14.780	<i>Freedom House</i>
Institutional quality	1996-2013	Aggregate governance indicators	-0.220	0.480	<i>WGI</i>
PANEL B: Presentation of countries (22)					
Zimbabwe, Ghana, Cameroun, Kenya, Congo, Rep., Nigeria, South Africa, Mali, Gambia, Guinea Bissau, Mozambique, Liberia, Senegal, Togo, Uganda, Tanzania, Zambia, Malawi, Burkina Faso, Botswana, Côte d'Ivoire, Namibia					

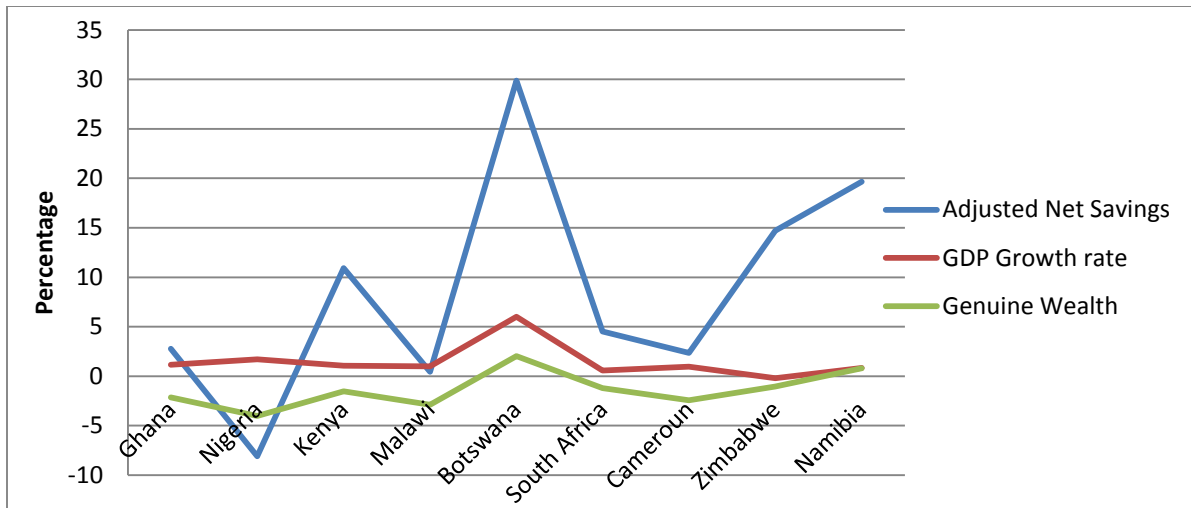
Source: *Authors' construct*

Table A-2. Correlation Matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Corruption (1)	1													
Genuine wealth (2)	0.687*	1												
GDP per capita (3)	0.034	0.151*	1											
Secondary ENR (4)	0.664*	0.264*	0.024	1										
Gov. Effectiveness (5)	0.747*	0.635*	-0.059	0.588*	1									
British Heritage (6)	0.040	0.106*	0.009	0.132*	0.176*	1								
Ethnic Fractionalization (7)	-0.680*	-0.217*	-0.265*	-0.066	-0.394	-0.102	1							
Press freedom (8)	-0.619*	-0.340*	-0.059	-0.365*	-0.477*	-0.231*	0.631*	1						
Foreign Aid (9)	-0.293*	0.017	0.039	0.228*	-0.260*	0.039	0.015	0.054	1					
Economic Prosperity (10)	0.672*	0.270*	0.036	0.683*	0.648*	0.174*	0.290*	-0.314*	-0.012	1				
Natural Resources (11)	-0.293*	-0.613*	-0.050	0.092*	-0.417*	-0.083*	0.231*	0.085	-0.031	-0.027	1			
Population Growth (12)	-0.640*	0.687*	0.034	0.664*	-0.597*	0.124*	0.171*	0.326*	-0.021	-0.030	-0.030	1		
Institutional quality (13)	0.502*	0.453*	-0.173	0.276*	0.712*	0.016	-0.699*	-0.382*	-0.060	0.166	-0.555*	-0.159	1	
Economic Freedom (14)	0.724*	0.677*	0.037	0.618*	0.838*	0.248*	-0.720*	-0.418*	-0.220*	-0.012	-0.517*	0.326*	0.696*	1

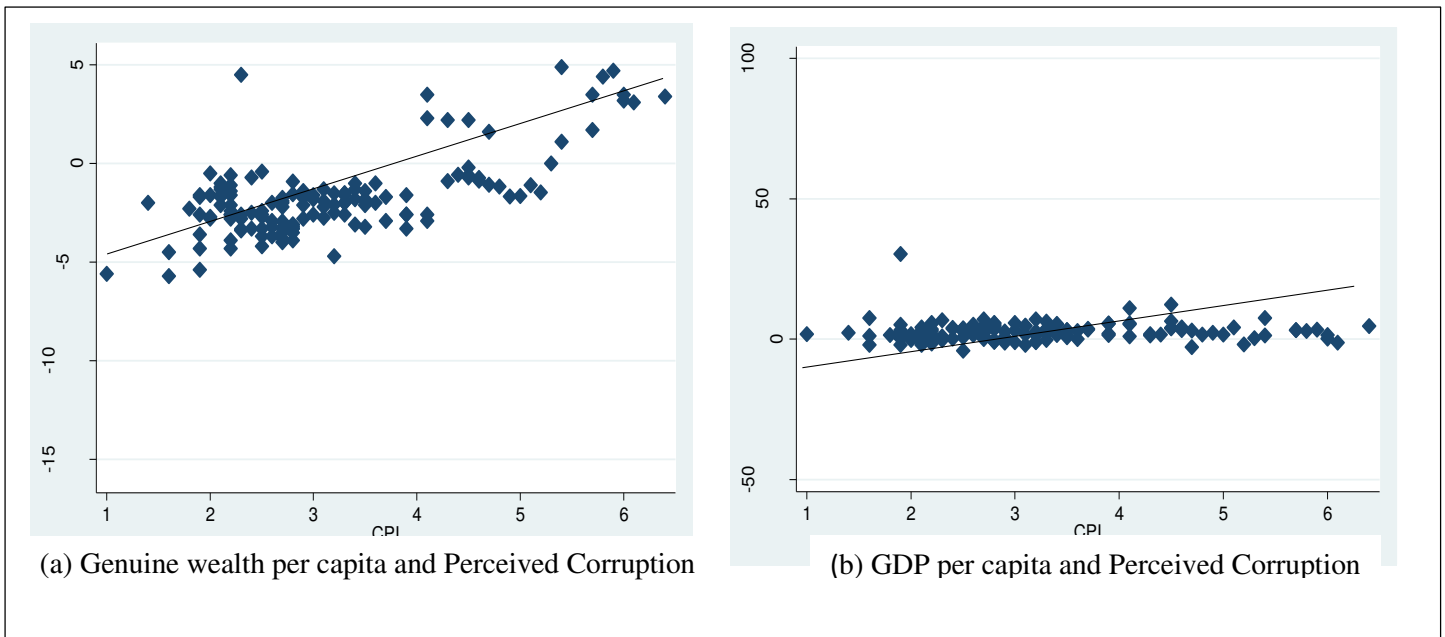
Note: Significant at * $P < 0.05$

Figure A-1. Trend of Adjusted Net Savings (ANS) and Genuine Wealth per capita in selected countries, Average (1988-2013)



Source: Authors' construct

Figure A-2. Perceived Corruption and Development outcomes



Source: Authors' construct

Note: The relationship between corruption and the two development outcomes appears to be approximately linear in SSA.